

LOW-IMPACT HYDROPOWER POWER INSTITUTE CERTIFICATION APPLICATION

Freedom Falls Hydroelectric Project

(FERC NO. 14421, exempt)



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1.0 FACILITY DESCRIPTION

Freedom Falls hydroelectric project is located in Freedom, Maine, a small rural town in Central/Mid-Coast Maine 16 miles west of Belfast, 20 miles east of Waterville, and 30 miles northeast of Augusta in Waldo County.

The run-of-river project received a FERC exemption (#14421) in 2013 to rehabilitate the old mill that had fallen into complete disrepair and add hydro generation (See Figures 1 and 2). The site now houses one turbine with 35 kW capacity. A school and The Lost Kitchen restaurant also occupy the mill building.

The dam is a stone-masonry concreted-capped structure about 12 feet tall and 90 feet long. There are no flashboards. The dam creates a small 1.6-acre mill pond at the downstream end of Sandy Pond which is a shallow warmwater pond with a total area of 435 acres. Water is conveyed from the dam to the powerhouse by a 60-foot long penstock that creates a short bypassed reach in Sandy Stream. More information about the project can be found here <http://www.millatfreedomfalls.com/>.

In December 2019, Natel Energy installed their latest turbine, the Restoration Hydro Turbine (Figure 3, see <https://www.natelenery.com/restoration-hydro/>). This new Francis turbine replaced the Natel linear Pelton machine installed in 2017. Natel wanted to have their latest, more efficient and reliable design at this site, which is their demonstration site on the east coast. The project generates approximately 65 MWh per year. The project includes upstream and downstream passage facilities for American eel.



Figure 1. Impoundment, dam and powerhouse



Figure 2. Tailrace (at right) and bypassed reach (at left)

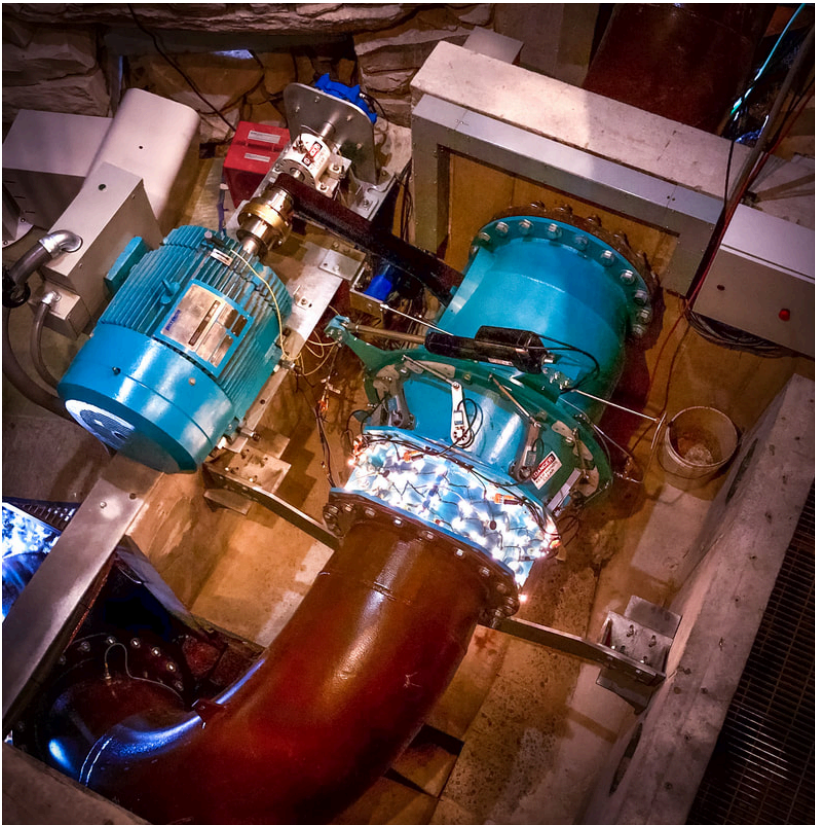


Figure 3. Natel Restoration Hydro Turbine

There are two dams in the pond upstream of the project - Sandy Pond #2 is a breached dam owned by Freedom Falls LLC but not part of this FERC project, and Upper Sandy Pond #3 is located about ¼ river miles upstream, owned and recently repaired by the Town of Freedom (see Figure 4). The project creates a 1.6-acre pond and Sandy Pond #2 dam creates a 14-acre pond. Upstream of Sandy Pond #3 dam, the pond is about 435 acres, which provides recreational access for fishing and boating, as well as having a few residences on its shores.



Figure 4. Sandy Pond Dams

The watershed area at the dam is about 7.8 square miles. Sandy Stream flows north to Unity Pond and then into Twenty-Five Mile Stream which flows northwest to its confluence with the Sebec River, which is a tributary to the Kennebec River (see Figure 5).

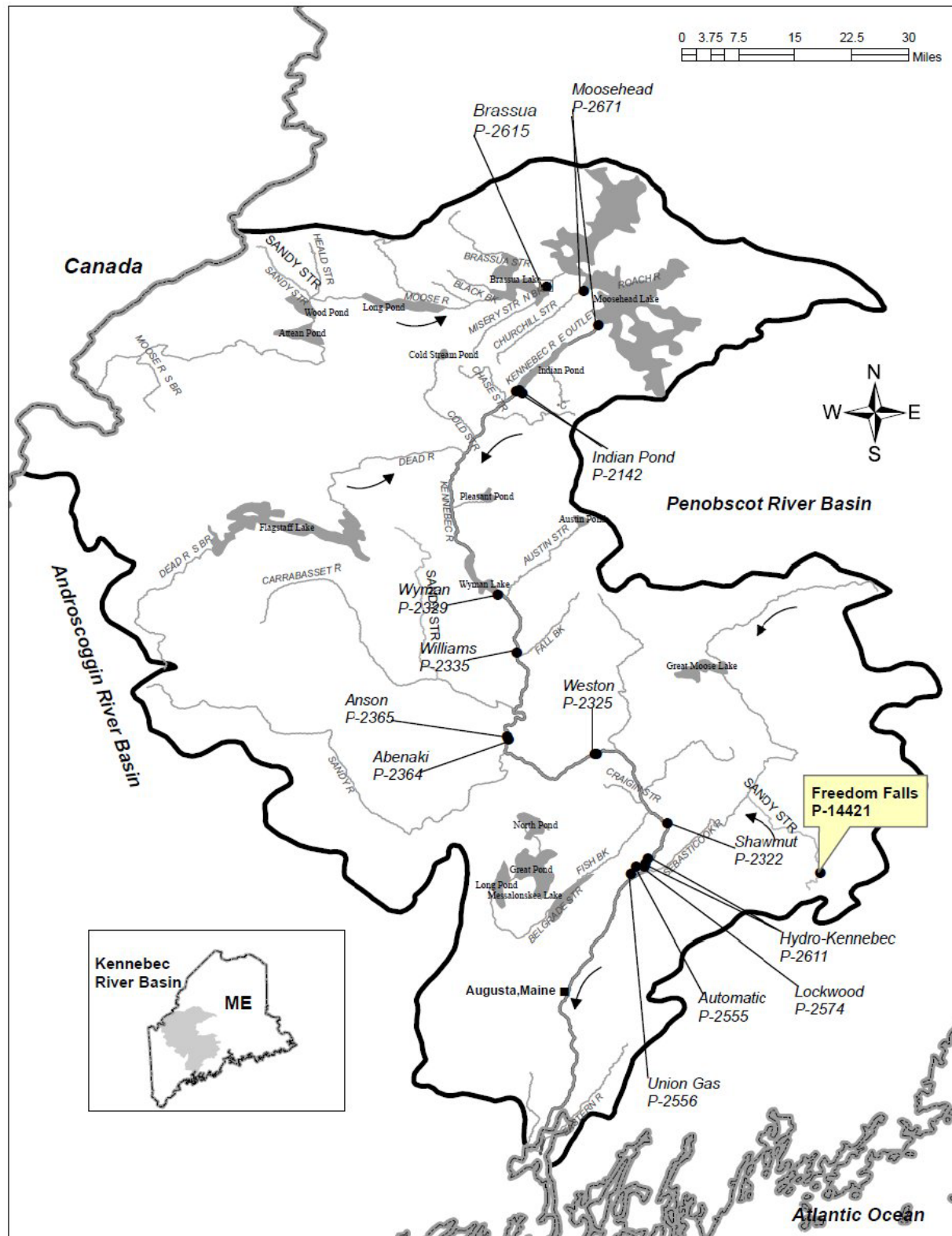


Figure 5. Project Location and Watershed

Table 1. Facility Description

Item	Information Requested	Response (include references to further details)
Name of the Facility	Facility name (use FERC project name or other legal name)	Freedom Falls
Reason for applying for LIHI Certification	<ol style="list-style-type: none"> 1. To participate in state RPS program 2. and specify the state and the total MW/MWh associated with that participation (value and % of facility total Mw/MWh). 3. To participate in voluntary REC market (e.g., Green-e) 4. To satisfy a direct energy buyer's purchasing requirement 5. To satisfy the facility's own corporate sustainability goals 6. For the facility's corporate marketing purposes 7. Other (describe) 	<p>To participate in Massachusetts REC program</p> <p>Facility is a 35KW generator, producing about 65,000kWh per year</p>
	If applicable, amount of annual generation (MWh and % of total generation) for which RECs are currently received or are expected to be received upon LIHI Certification	No RECs currently received, but entire production available for REC market once certified
Location	River name (USGS proper name)	Sandy Stream
	Watershed name - Select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: https://water.usgs.gov/wsc/map_index.html	HUC 01030003
	Nearest town(s), county(ies), and state(s) to dam	Freedom, Waldo County, Maine
	River mile of dam above mouth	Approximately 10 river miles to Unity Pond, and from there approximately 90 more river miles to mouth of the Kennebec River
	Geographic latitude of dam	44.32
	Geographic longitude of dam	69.18
Facility Owner	Application contact names (Complete the Contact Form in Section B-4 also):	Anthony P. Grassi Owner Freedom Falls LLC
	Facility owner company and authorized owner representative name. For recertifications: If ownership has changed since last certification, provide the effective date of the change.	SAME
	FERC licensee company name (if different from owner)	SAME
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	P-14421-000 Exemption Date 3/25/2013

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	Exemption
	Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments.	N/A
	Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories	FERC Exemption https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13214933 FERC Environmental Assessment (EA) https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13212940
Powerhouse	Date of initial operation (past or future for pre-operational applications) Total installed capacity (MW) For recertifications: Indicate if installed capacity has changed since last certification	2013 35KW
	Average annual generation (MWh) and period of record used For recertifications: Indicate if average annual generation has changed since last certification	65 MWh per year
	<u>Mode of operation</u> (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.) For recertifications: Indicate if mode of operation has changed since last certification	Run-of-River
	Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit	One 35KW turbine and generator
	Trashrack clear spacing (inches) for each trashrack	3/4" Originally the spacing was 1". That was inadequate, so it has been supplemented by a new trash rack with 3/4" spacing and a different orientation relative to the flows
	Approach water velocity (ft/s) at each intake if known	1.8 fps
	Dates and types of major equipment upgrades For recertifications: Indicate only those since last certification	New Turbine: Natel Energy RHT D55 Installed 11/2019
	Dates, purpose, and type of any recent operational changes For recertifications: Indicate only those since last certification	Upgrade to earlier Natel turbine installed in 2016

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	N/A
<i>Dam or Diversion</i>	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	Original Dam installed 1834; repaired numerous times, most recently after a flood in 1987. Current owner rebuilt dam in 2012/13.
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like	Length Approx. 90 feet Height 12 feet Spillway 25 feet wide No flashboards
	Spillway maximum hydraulic capacity	418 cfs
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	60 feet long, 30-inch diameter steel pipe (39 feet from dam to entry into powerhouse)
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	power
<i>Conduit Facilities Only</i>	Date of conduit construction and primary purpose of conduit	n/a
	Source water	n/a
	Receiving water and location of discharge	n/a
<i>Impoundment and Watershed</i>	Authorized maximum and minimum impoundment water surface elevations For recertifications: Indicate if these values have changed since last certification	1.6 acre impoundment at water surface elevation of 453 feet
	Normal operating elevations and normal fluctuation range For recertifications: Indicate if these values have changed since last certification	425.5' to 453'
	Gross storage volume and surface area at full pool For recertifications: Indicate if these values have changed since last certification	Less than 10 acre feet storage volume 1.6 acre surface area
	Usable storage volume and surface area For recertifications: Indicate if these values have changed since last certification	See Below
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	Maintain impoundment within more than 0.5' fluctuation during normal operations Spill a minimum of 2 cfs through eel pipe or 3 cfs over spillway if incoming flows are sufficient

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
	Upstream dams by name, ownership and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.	Sand Pond #2- Breached Owners Freedom Falls LLC Upper Sandy Pond #3, ¼ river miles upstream Owner: Town of Freedom
	Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage	None on Sandy Stream
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	NONE
	Area of land (acres) and area of water (acres) inside FERC project boundary or under facility control. Indicate locations and acres of flowage rights versus fee-owned property.	1.6 acres of water Approximately 0.25 acres of land
<i>Hydrologic Setting</i>	Average annual flow at the dam, and period of record used	Not measured. For FERC application Estimated Flow Duration Curve was based on Johnson Brook, Albion Maine, 1980-1991
	Average monthly flows and period of record used	Not measured
	Location and name of closest stream gaging stations above and below the facility	NONE
	Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.	7.8 square miles
	Other facility specific hydrologic information	N/A
<i>Designated Zones of Effect</i>	Number of zones of effect	2
	Type of waterbody (river, impoundment, bypassed reach, etc.)	Zone 1: impoundment Zone 2: tailrace
	Upstream and downstream locations by river miles	
	Delimiting structures or features	Zone 1: impoundment - from dam upstream about 600 ft to Sandy Pond #2 dam Zone 2: de minimis bypass (50 ft long) and tailrace - from dam downstream about 130 ft long, within the FERC boundary
<i>Pre-Operational Facilities Only</i>		
<i>Expected operational date</i>	Date generation is expected to begin	n/a

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
<i>Dam, diversion structure or conduit modification</i>	Description of modifications made to a pre-existing conduit, dam or diversion structure needed to accommodate facility generation. This includes installation of flashboards or raising the flashboard height. Date the modification is expected to be completed	n/a
<i>Change in water flow regime</i>	Description of any change in impoundment levels, water flows or operations required for new generation	n/a

2.0 ZONES OF EFFECT

The Project includes two zones of effect, the impoundment and tailrace/downstream reach (see Figure 6). The impoundment and tailrace/downstream Zones of Effect are shown in Figure 2. The impoundment extends approximately 600 feet upstream from the dam to the Sandy Pond #2 dam. The tailrace/downstream zone extends approximately 130 feet downstream from the dam. A very short bypassed reach (about 50 feet long) includes a set of water falls (see Figure 2).



Figure 6. Zones of Effect

ZOE #1: Impoundment Zone

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	PLUS
A	Ecological Flow Regimes		X			
B	Water Quality	X				
C	Upstream Fish Passage	X				
D	Downstream Fish Passage		X			X
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		X			X
H	Recreational Resources			X		

ZOE #2: Tailrace/Downstream Zone

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	Plus
A	Ecological Flow Regimes		X			
B	Water Quality	X				
C	Upstream Fish Passage		X			
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		X			X
H	Recreational Resources	X				

3.0 SUPPORTING INFORMATION

A. Ecological Flow Regimes

Both Zones qualify for Standard A-2.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
A	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none">• Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).• Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.• Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife.• Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations). <p>Explain how flows are monitored for compliance.</p>

The Project is operated in an instantaneous run-of-river mode with a one-half foot impoundment fluctuation limit per US Department of Interior conditions included in the FERC exemption.

When not generating, all flow is passed over the spillway and/or through the downstream eel passage facility. A minimum flow of 3 cfs or inflow is provided most of the year over the spillway and into the short bypassed reach. The minimum flow level was determined to be sufficient to ensure that the bypassed reach remains wetted at all times and to maintain aesthetic flows over the dam during day time hours. The minimum flow is reduced to 2 cfs through the downstream eel passage facility during the night time from August 1 to October 15 (exemption article 26) but leakage flow is still available over the dam spillway during the downstream passage operation.

The project can generate power between 8 and 30 cfs, the hydraulic range of the turbine, but with minimum flows the operating range is 10-32 cfs during eel passage and 11-33 during other times. All flows over 32 or 33 cfs are spilled over the dam's spillway. The project often shuts down in the summertime due to low inflows that are less than the turbine's minimum hydraulic capacity.

FERC article 27 required an Operation Compliance Monitoring Plan (<https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13815087>) that details how flows are monitored and controlled. Flows are controlled by the turbine guide vanes in response to electronically monitored impoundment levels that are controlled to remain between 452.5 ft and the normal water surface elevation of 453 ft NGVD. Below elevation 452.61 feet (equivalent to 3 cfs) the turbine vanes close, and the unit shuts down. If the water level rises above 452.76 feet, equivalent to 11 cfs, the turbine vanes open and the unit run. The vanes are then adjusted to maintain a pond level of 452.61 feet until the vanes are fully open at which point the pond level will rise based on incoming flows.

B. Water Quality

Both Zones qualify for Standard B-1.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
B	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none">Explain the rationale for why the facility does not alter water quality characteristics below, around, and above the facility.

Sandy Stream is not listed as impaired by the State of Maine in the 2016 Integrated Water Quality Monitoring and Assessment Report (<https://www.maine.gov/dep/water/monitoring/305b/index.html>). Sandy Pond itself is considered eutrophic based on chlorophyll-a and phosphorus concentrations. It is a shallow pond and well mixed due to wind action. Dissolved oxygen levels do not change with depth. Water quality monitoring in August 2003 showed dissolved oxygen levels between 7.3 and 8.2 mg/l and temperature between 24.2 to 27.2 degrees Celsius (see FERC EA).

The run-of-river operations and minimum flow regime ensure that the project does not alter water quality in Sandy Stream. No resource agencies made recommendations about water quality, and there is no Water Quality Certificate since the project is FERC exempt.

C. Upstream Fish Passage

The impoundment Zone #1 qualifies for Standard C-1 since once above a dam there is no further facility-related barrier to upstream fish movement. The downstream Zone #2 qualifies for Standard C-2.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
C	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none">Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

There are no anadromous fish in the project vicinity. According to the FERC EA, American shad, alewife, blueback herring and Atlantic salmon were present but downstream dams on the Kennebec River blocked their passage. Applicant has been told there is no historical record of alewives or Atlantic salmon in Sandy Pond. Likely due to steep drop at the Freedom Falls dam site and the shallow, sandy marsh that probably existed before Dam #3 was built. Maine Department of Marine Resources has a fishery restoration program for the Kennebec River Basin (<https://www.maine.gov/dmr/science-research/searun/programs/kennebec.html>) and since removal of the head-of-tide Edwards dam in 1999 and subsequent upstream dam removals and upstream fish passage facilities have allowed migratory fish to begin to utilize the Sebasticook River again.

American eel are present in Sandy Stream and upstream in Sandy Pond having been able to ascend dams naturally or by upstream passage facilities at the downstream dams on the Sebasticook and Kennebec Rivers. Eels have been able to ascend the falls and bypassed reach at Freedom Falls. According to the FERC EA, Sandy Stream provides rearing habitat for juvenile and adult eels. The FERC exemption (Article 16 and Standard Article 2) and Department of Interior conditions required upstream eel passage facilities to be installed in consultation with agencies, and to operate from May 15 to August 31. In coordination with USF&W, installation of the upstream eel passage has been delayed pending operation of the new turbine and installation of the new trash rack with ¾' spacing. Now that both are complete and in effective operation, the upstream passage will be installed prior to May 1, 2021. The design will be plywood sheets covered with coconut fiber, kept moist by a small pump submersed in the impoundment pond.

D. Downstream Fish Passage and Protection

The downstream Zone #2 qualifies for Standard D-1 since once below a dam there is no further facility-related barrier to downstream fish movement. The impoundment Zone #1 qualifies for Standard D-2 and for the D-PLUS standard.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
D	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.
D	PLUS	<u>Bonus Activities:</u> <ul style="list-style-type: none"> If advanced technology has been or will be deployed, explain how it will increase fish passage success relative to other options. If a basin-scale redevelopment strategy is being pursued, explain how it will increase the abundance and sustainability of migratory fish species in the river system. If adaptive management is being applied, describe the management objectives, the monitoring program pursuant to evaluating performance against those objectives, and the management actions that will be taken in response to monitoring results.

Sandy Pond is a warmwater fishery with largemouth bass, white sucker, brown bullhead, chain pickerel, golden shiner, white perch and yellow perch in addition to American eel (FERC EA). Standard Article 2 of the exemption and Department of Interior's condition 3 required downstream eel passage to be provided, utilizing a bypass pipe adjacent to and near the bottom of the turbine intake. The gated pipe is 6 inches in diameter fitted with a bell mouth collar that carries 2 cfs through the pipe and into the bypassed reach below the dam.

The facility is operated from sunset to sunrise between August 1 and October 15, assuming sufficient flows to avoid draining the mill pond) and is inspected monthly in accordance with FERC approved Dam Safety Surveillance and Monitoring Plan (DSSMP).

Department of Interior condition 2 required installation of 1-inch clear spaced trashrack. The turbine intake approach velocity is estimated at 1.8 feet per second, less than the agency recommended 2 feet per second. The trashrack and low approach velocity limit impingement and entrainment since many larger fish that are present have burst swimming speeds greater than the approach velocity and can avoid the turbine intake (FERC EA). Fish can also pass downstream by using the dam and the minimum flow provided there.

For fish that could get through the trashrack and become entrained, the Natel Restoration Turbine serves to minimize injury and mortality through the unit's design features (see <https://www.natelenergy.com/2020/04/24/fish-safe-restoration-hydro-turbine-video/>). A video of the turbine installation at this project is available at <https://www.natelenergy.com/2020/04/24/fish-safe-restoration-hydro-turbine-video/>.

Freedom Falls is the site of the first commercially operational Restoration Hydro Turbine (RHT) in the USA, manufactured by Natel Energy, Inc. Following US FWS recommendations, the Freedom Falls plant is equipped with a fine screen that directs American Eel through a downstream passage pipe to prevent adult eels from becoming entrained in the turbine. Additionally, the RHT MS D55 at Freedom Falls is part of a product family whose turbines at full size (>1 meter diameter) are able to safely pass large fish (>200 mm) downstream, at hydropower projects between 2 meters to 10 meters of head.

E. Shoreland and Watershed Protection

Both Zones qualify for Standard E-1.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
E	1	<p><u>Not Applicable / De Minimis Effect :</u></p> <ul style="list-style-type: none"> • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the FERC project or facility boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Most of the watershed around Sandy Pond consists of large forested areas including wetlands, some agriculture, and a few single-lot residential development along some roads. The shoreland zone of some of Sandy Pond upstream of the project has been developed into camping lots, seasonal camps, and a few year-round homes.

The area around the project itself is in Freedom Village which includes some homes, municipal buildings and open space. An organic farm borders the impoundment to the west. Immediately downstream of the dam, Sandy Stream includes steep banks and granite outcroppings, and Freedom Falls (see Figure 4).

Approximately 75% of the shoreline around the pond is owned by Freedom Falls LLC, including about 2.5 acres abutting the pond, with the project site itself occupying about ¼ acre of additional land. There are no lands of ecological significance or critical habitats for sensitive species. The FERC exemption does not include, and the project does not have a shoreline management plan.

According to the town's Comprehensive Plan (https://www1.maine.gov/dacf/municipalplanning/comp_plans/Freedom_2011.pdf) there are no critical natural resources in the immediate project area. The area is however, subject to the town's shoreland zoning standards that require riparian buffers and development setbacks.

F. Threatened and Endangered Species Protection

Both Zones qualify for Standard F-1.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
F	1	<u>Not Applicable / De Minimis Effect :</u> <ul style="list-style-type: none">• Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.• If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.• If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

Based on an online USFWS IPaC search (see Appendix A) only the Northern long-eared bat (threatened) and the endangered Atlantic salmon could be present in the project vicinity. There are no critical habitats for either species in the project area. Given the project's small footprint and lack of a need to conduct tree cutting, there is no impact from the project on that species. In any event that a tree does need to be cut, the USFWS 4(d) rule would be observed. The IPaC report also lists several migratory bird species that could be present during some parts of the year including bald eagle.

None of those species are state-listed. Request was made of the Maine Natural Areas Program on September 28, 2020 for a listing of state level species of concern and it will be forwarded to be attached to this application once received.

G. Cultural and Historic Resources Protection

Both Zones qualify for Standard G-1 and the PLUS Standard.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
G	1	<u>Not Applicable / De Minimis Effect :</u> <ul style="list-style-type: none">• Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility.• Document that the facility construction and operation have not in the past, nor currently adversely affect any cultural or historic resources that are present on facility lands.
G	PLUS	<u>Bonus Activities:</u> <ul style="list-style-type: none">• Document any substantial commitment that the facility has made to restoring one or more significant cultural or historical resource in the vicinity, beyond what is required in existing plans such as a Historic Resources Management Plan. Document any significant new educational opportunity about cultural or historical resources in the area that the facility has created, including contractual obligations that guarantee that this opportunity will exist for the duration of the LIHI Certification.

The Mill at Freedom Falls was built by John True in 1834 as a gristmill using hydromechanical power from the stream to produce about 8,000 bushels of grain per year. In 1894, the building was converted to a wood turning mill making wood tool handles, dowels, etc., To accommodate this growing business, various additions for materials handling, shipping, etc. were added over the years. This business closed in 1967, and the mill was abandoned at that time. The mill building was determined to be eligible for listing on the National Register of Historic Places based on its status as an exemplary demonstration of early mill construction and for its role in the economic history of the Town of Freedom and western Waldo County in the 19th and early 20th centuries.

As part of the FERC exemption process, the Maine SHPO stated that the hydropower project would not have adverse effects on any historic properties. The Penobscot Indian Nation's Tribal Historic Preservation Officer also indicated that the project would not have any impact on traditional cultural properties or resources (see FERC EA).

No cultural resources or historic properties management plan was required. Article 28 of the exemption require consultation with the SHPO for any project operations outside of those authorized by the exemption including land-disturbing activities. Article 29 requires consultation in the event that previously unidentified resources are discovered.

The PLUS standard should be awarded for the following reasons. The Mill has been listed on the National Register of Hoistoric Places, and the extensive rehabilitation was done in consultation with the Maine State Historical Preservation Office and according to National Park Service Standards in order for it to qualify for State and Federal Histoirc Tax Credits.

The foundation of the original mill was collapsing under its north wall and the building was sagging badly and sliding off its foundation. All the additions were stick-built without proper foundations and in a state of collapse. Freedom Falls LLC obtained an option to purchase the mill in 2010 and over the ensuing 18 months, the construction team determined that the main building could be rehabilitated and hydropower restored. The rehabilitation included rebuilding two foundation walls, rebuilding the timber frame structure under the first floor, repairing the rest of the timber frame structure, replacement of all the windows and restoration of the exterior and reconstruction of the four additions, as well as providing modern amenities (e.g. running water) to make the building safe and effective for current use. The dam was repaired, and hydropower was installed in 2013. The Lost Kitchen operates on the main floor of the original building, in one of the reconstructed additions and in the portion of the new concrete basement under the additions. One of these is used as a museum and as a wine store for the restaurant. The Mill School operates in the second floor of the original structure and the other additions. The original foundation, now restored, serves as the powerhouse for the hydroelectric system.

During the rehabilitation process, Freedom Falls LLC reached out to the community to learn more about the mill's history and explore how the building could best contribute to the town. This monumental effort is carefully documented in the excellent David Conover film, "Reviving the Freedom Mill" (<https://vimeo.com/ondemand/revivingthefreedommill>).

The result is a fully restored, beautiful structure equipped with hydropower that provides energy to the facility that also houses a school and The Lost Kitchen restaurant.

Maine Preservation presented a 2013 Honor Award for adaptive use of the Mill at Freedom Falls for the work in realizing the potential of the town's hidden gem, funding and managing its restoration, and working with the community to share the triumph (<https://www.maine Preservation.org/2013-honor-awards/2018/8/1/mill-at-freedom-falls-freedom> see also <https://savingplaces.org/stories/back-to-the-grind-mill-freedom-falls>).

H. Recreational Resources

Zone 1 qualifies for Standard H-3 and Zone 2 qualifies for Standard H-1. The tailrace area in Zone 2 is inaccessible due to steep banks and fencing. No recreation is available there.

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
H	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.
H	3	<u>Assured Accessibility:</u> <ul style="list-style-type: none"> In lieu of existing recommendations and plans for recreational uses, document the facility's current and future commitment to accommodate reasonable requests from recreation interests for adequate public access for recreational use of lands and waters of the facility, including appropriate recreational water flows and levels, without fees or charges.

There are no formal recreational facilities associated with the project nor required under the exemption.

The area surrounding the pond is used by The Mill School as an educational resource for their curriculum, currently conducted entirely outdoors. Sandy Pond is used for boating, fishing, and snowmobiling on the ice in winter. A public boat launch located on the northeastern end of Sandy Pond is owned and maintained by the town. American whitewater reports the four-mile stretch from the dam downstream to Unity Pond is Class II or III water with three sets of rapids (<https://www.americanwhitewater.org/content/River/detail/id/4601/>).

Approximately 75% of the immediate shoreline of the project impoundment is owned by Freedom Falls LLC and is accessible to the public free of charge where direct access is available and does not cross other private lands.

4.0 FACILITY AND STAKEHOLDER CONTACTS FORMS

Project Owner:	
Name and Title	Anthony P. Grassi
Company	Freedom Falls, LLC
Phone	207-236-4663
Email Address	tgrassi363@gmail.com
Mailing Address	363 Belfast Road, Camden, ME 04843
Project Operator (if different from Owner):	
Name and Title	same
Company	
Phone	
Email Address	
Mailing Address	
Consulting Firm / Agent for LIHI Program (if applicable):	
Name and Title	n/a
Company	
Phone	
Email Address	
Mailing Address	
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	same
Company	
Phone	
Email Address	
Mailing Address	
Party responsible for accounts payable:	
Name and Title	same
Company	
Phone	
Email Address	
Mailing Address	

Agency Contact		Area of Responsibility
Agency Name	USFWS	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Anna Harris	
Phone	207-866-3344	
Email address	Anna_harris@fws.gov	
Mailing Address	306 Hatchery Rd East Orland, ME 04431	

Agency Contact		Area of Responsibility
Agency Name	Maine Dept. of Inland Fisheries	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	John Perry, Environmental Review Coordinator	
Phone	207-287-5254	
Email address	John.perry@maine.gov	
Mailing Address	627 Main St. Worcester, MA 01608	

Agency Contact		Area of Responsibility
Agency Name	Maine Dept. of Environmental Protection	<input type="checkbox"/> Flows <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Kathy Howatt, Hydropower Coordinator	
Phone	207-446-2642	
Email address	Kathy.Howatt@maine.gov	
Mailing Address	17 State House Station, Augusta, ME 04333	

Agency Contact		Area of Responsibility
Organization Name	Maine Historic Preservation Commission	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input checked="" type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Kirk Mohnney, Director	
Phone	207-287-3811	
Email address	kirk.mohnney@maine.gov	
Mailing Address	65 State House Station, Augusta, ME 04333	

5.0 SWORN STATEMENT

As an Authorized Representative of Freedom Falls, LLC, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's certification program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified®.

The Undersigned further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's certification program.

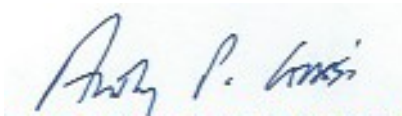
Company Name: Freedom Falls, LLC

Authorized Representative:

Name: Anthony P. Grassi

Title: Owner/Manager

Authorized Signature: _____

A handwritten signature in blue ink that reads "Anthony P. Grassi". The signature is written in a cursive style and is positioned over a light blue rectangular background.

APPENDIX A

FWS IPAC REPORT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Waldo County, Maine



Local office

Maine Ecological Services Field Office

☎ (207) 469-7300

📠 (207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS
306 Hatchery Road
East Orland, ME 04431

<http://www.fws.gov/mainefieldoffice/index.html>

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
 2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon <i>Salmo salar</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/>

[conservation-measures.php](#)

- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
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Bald Eagle *Haliaeetus leucocephalus***Breeds Dec 1 to Aug 31**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Black-billed Cuckoo *Coccyzus erythrophthalmus*

Breeds May 15 to Oct 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9399>

Bobolink *Dolichonyx oryzivorus*

Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Canada Warbler *Cardellina canadensis*

Breeds May 20 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cape May Warbler *Setophaga tigrina*

Breeds Jun 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak *Coccothraustes vespertinus*

Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

Prairie Warbler *Dendroica discolor*

Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird *Euphagus carolinus*

Breeds May 10 to Jul 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper *Calidris pusilla*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

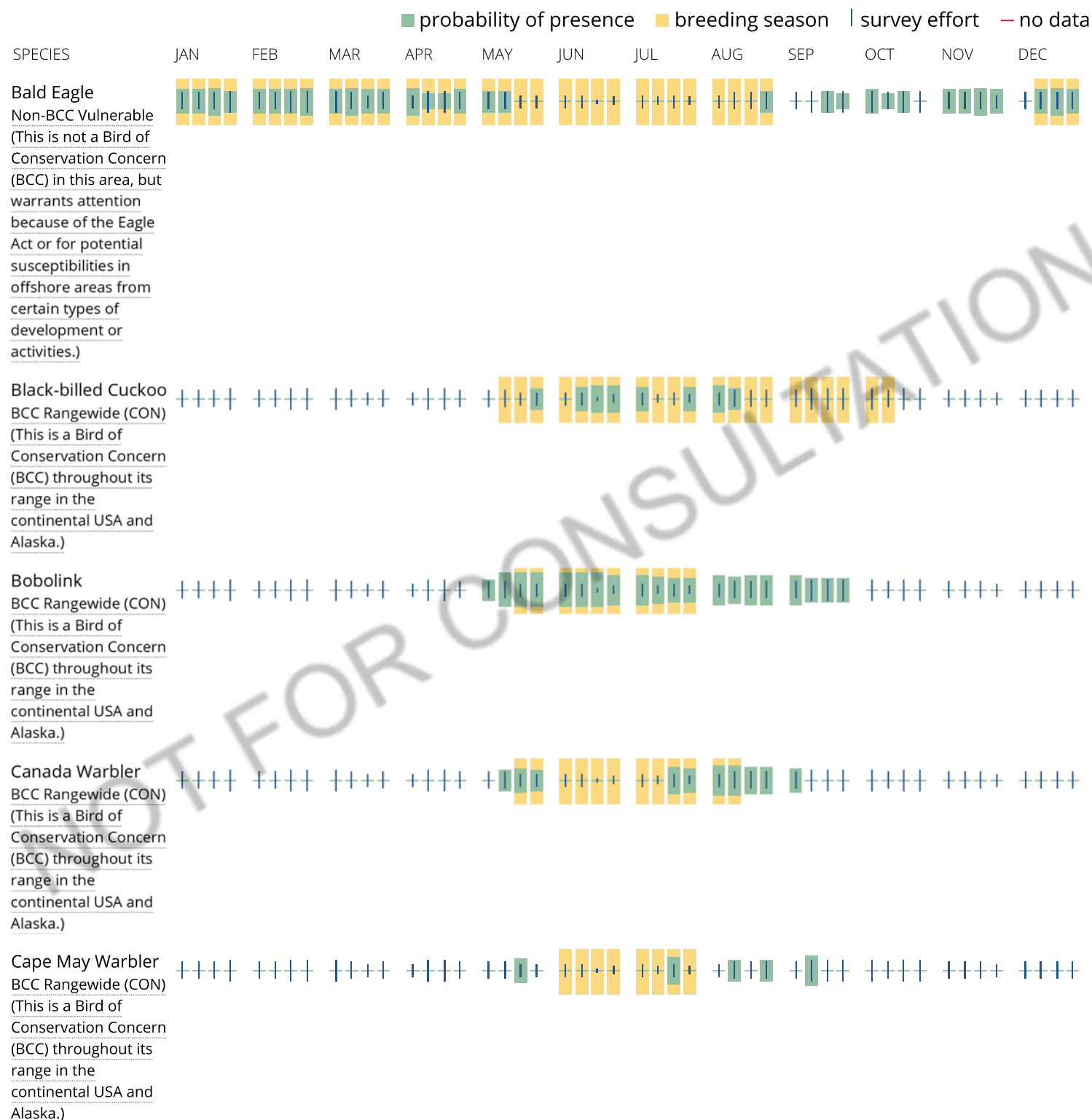
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

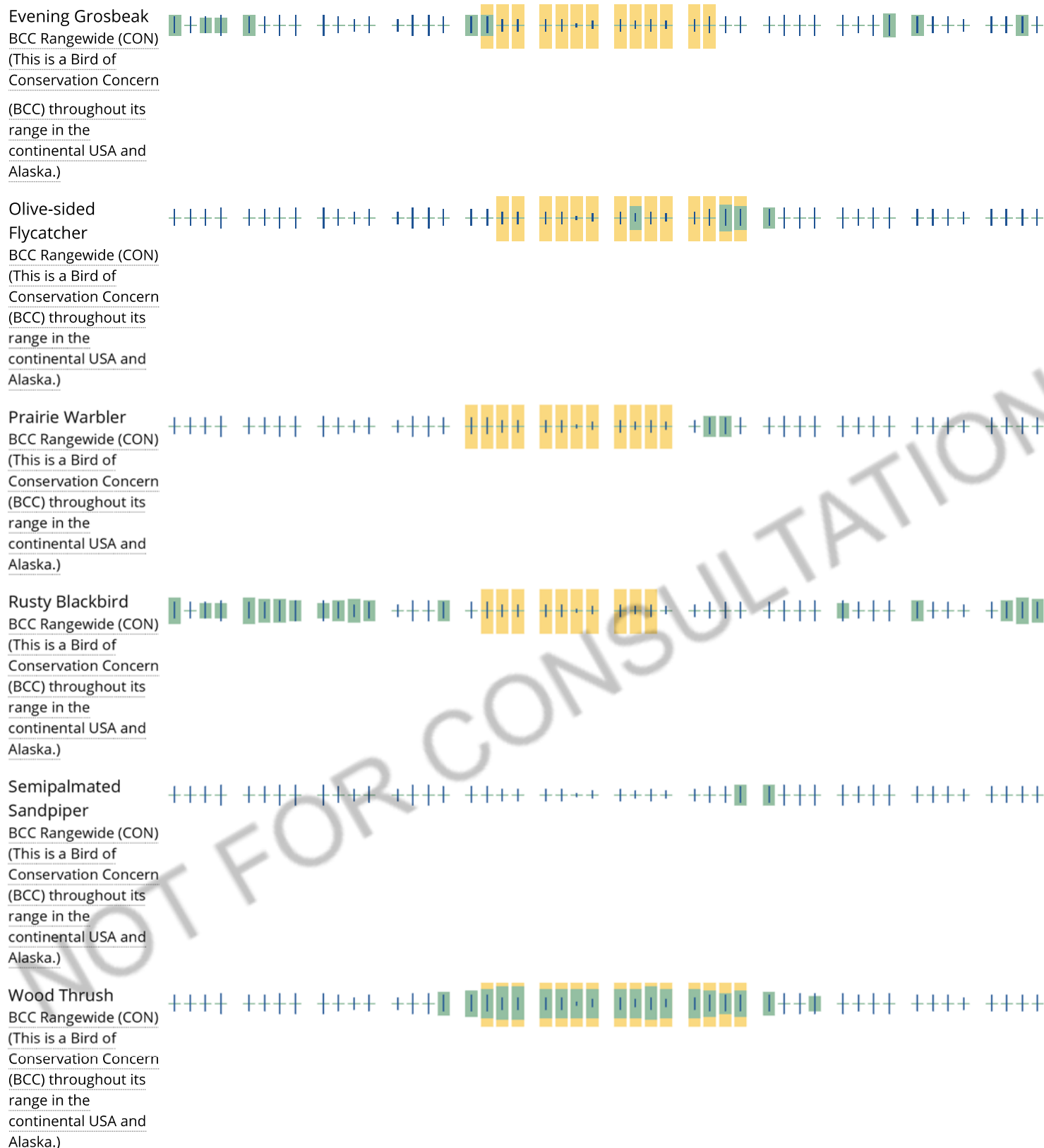
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur

and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from

certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

[PFO1Eh](#)

LAKE

[L1UBHh](#)

RIVERINE

[R2UBH](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery.

Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.