DECEMBER 2016

DRAFT

Environmental Assessment (EA) & Environmental Impact Evaluation (EIE) for Obstruction Removal

Hartford-Brainard Airport (HFD)

Prepared for:

CAA™
CONNECTICUT AIRPORT AUTHORITY

Prepared by:

CHA
design/construction solutions

DRAFT

ENVIRONMENTAL ASSESSMENT (EA) & ENVIRONMENTAL IMPACT EVALUATION (EIE) FOR OBSTRUCTION REMOVAL HARTFORD-BRAINARD AIRPORT (HFD)

FAA AIP NO. 3-09-0900-010-2014
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Prepared for:
Connecticut Airport Authority (CAA)

Prepared for:
CHA Consulting, Inc.

In Association with:
DY Consultants, Inc.
Fitzgerald & Halliday, Inc.

Approved By:

_____ _____

Responsible CAA Official | Date

This Environmental Assessment becomes a federal document when evaluated, signed, and dated by the responsible Federal Aviation Administration Official.

_____ _____

Responsible FAA Official | Date

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LIST OF ACRONYMS

ACRONYMS	
ABBREVIATION	MEANING
AAC	Aircraft Approach Category
AC	Advisory Circular
ADG	Airplane Design Group
ARC	Airport Reference Code
CAA	Connecticut Airport Authority
CEPA	Connecticut Environmental Policy Act
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
DEEP	Connecticut Department of Energy and Environmental Protection
DOT	US Department of Transportation
EA	Environmental Assessment (Federal)
EPA	US Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEMA	Federal Emergency Management Agency
HFD	Hartford-Brainard Airport
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
PIAS	National Plan of Integrated Airport Systems
O3	Ozone
OCS	Obstacle Clearance Zone
OFZ	Obstacle Free Zone
RDC	Runway Design Code
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
TERPS	Terminal Instrument Procedures
VFR	Visual Flight Rules

1.0 INTRODUCTION

This Environmental Assessment (EA) documents the evaluation of potential impacts associated with tree removal at Hartford-Brainard Airport which is operated by the Connecticut Airport Authority (CAA). The evaluation addresses obstruction removal associated with Federal Aviation Regulations (FAR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace and published Terminal Instrument Procedures (TERPS), which define the airspace surrounding runways. Objects that penetrate the airspace are classified as airspace obstructions, and should be removed to safely accommodate approaching and departing aircraft. As the airspace surfaces extend well beyond the airport's property boundary, this EA includes an off-airport obstruction removal and mitigation review. It is noted that tree removal activities may require environmental permits based on site conditions, as well as the purchase of a permanent easements for removals located on private property.

This EA was prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969 and the Connecticut Environmental Policy Act (CEPA) to address potential impacts associated with the tree obstruction removal while providing the opportunity for public involvement and comments. The study was conducted in accordance with Federal Aviation Administration (FAA) guidelines including the "Environmental Desk Reference for Airport Actions", FAA Order 5050.4B "National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions" and FAA Order 1050.1E "Environmental Impacts: Policies and Procedures." Since the project would potentially be federally-funded, the EA must comply with federal requirements (i.e., NEPA, FAA).

As part of a previous study, the CAA and Federal Aviation Administration (FAA) have identified that trees penetrate the airspace of Hartford-Brainard Airport, including locations beyond airport property.

This EA includes the following sections:

- Introduction
- Purpose and Need
- Alternatives Analysis and Proposed Action
- Affected Environment
- Environmental Consequences
- List of Preparers
- Correspondence and Public Comments

1.1 PROJECT LOCATION AND EXISITING FACILITIES

The Hartford-Brainard Airport is located approximately two miles southeast of downtown Hartford just east of Interstate and I-91 and approximately 12 miles south of Bradley International Airport. The Airport encompasses approximately 201 acres, and is owned by the CAA. HFD is located in Hartford County, City of Hartford. The Airport is 64 miles west of Providence, Rhode Island; 92 miles southwest of Boston, Massachusetts; and 101 miles northeast of New York, New York. The Airport is accessible via Interstate 91, which is a major route between the cities of Hartford and New Haven, CT.

Runway 2-20

Runway 2-20 serves as the primary runway and is 4,417 feet long and 150 feet wide. The Runway 2 approach end has a 411 foot displaced threshold due to obstructions (i.e., trees) located within the Federal Aviation Regulation (FAR) Part 77 approach surface. Refer to Table 1 for a side by side comparison of the airport runways. The Runway

20 approach end for this runway has a threshold displacement of 560 feet due to obstructions (i.e., trees and flood control levee).

Runway 11-29

Runway 11-29 serves as the crosswind runway and is 2,314 feet long and 71 feet wide. The Runway 29 approach end has a 265 foot displaced threshold due to obstructions (i.e., trees) located within the FAR Part 77 approach surface. Refer to Table 1 for a side by side comparison of the intersecting Runway 2-20.

TABLE 1- EXISTING AIRPORT FACILITIES			
RUNWAY 2-20		RUNWAY 11-29	
Runway Length (Feet)	4,417'	Runway Length (Feet)	2,314'
Width (Feet)	150'	Width (Feet)	71'
Surface Type	Asphalt (Grooved)	Surface Type	Asphalt
Parallel Taxiway	TWY A	Parallel Taxiway	TWY B
Threshold Displacement (Feet)	RWY 2: 411'	Threshold Displacement (Feet)	RWY 11: None
	RWY 20: 560'		RWY 29: 265'

Source: Data Compiled by CHA Consulting, Inc. (2015).

1.2 BASED AIRCRAFT AND AVIATION ACTIVITY

Hartford-Brainard Airport is a general aviation facility that serves private, corporate, and charter aircraft operating for recreational/personal, training, and business purposes. The Airport does not offer scheduled airline service. There are a total of 125 based aircraft at the Airport.

Table 2 lists the existing based aircraft and Table 3 depicts annual operations at HFD. Note that an aircraft operation is defined as either one landing or one takeoff, therefore each flight includes at least two operations which consists of one takeoff and one landing.

TABLE 2- BASED AIRCRAFT							
	SINGLE ENGINE	MULTI ENGINE	JET	ROTOR	GLIDERS	MILITARY	TOTAL
Based Aircraft	110	7	3	4	1	0	125

Source: FAA 5010 Data Dated (2011).

TABLE 3- ANNUAL OPERATIONS						
	AIR CARRIER	AIR TAXI	GA LOCAL	GA ITINERANT	MILITARY	TOTAL
Operations	0	5,522	38,500	36,927	525	81,474

Source: FAA 5010 Data Dated (2011).

Appendix A contains a map that represents the Project Study Area and depicts the location of the airport and the general approaches to each runway end. Chapter 3 identifies the specific recommended tree removal locations.

1.3 FAA DESIGN STANDARDS

The design, or critical, aircraft is defined as the most demanding aircraft operating or projected to operate on the airport's runway, taxiway, or apron. According to the FAA, the design aircraft can be either a specific aircraft model or a composite of several aircraft, and must account for a minimum of 500 annual itinerant operations.

The FAA uses the approach speed and wingspan of the design aircraft to classify the airport. The FAA term for this classification is the airport reference code (ARC). Table 4 provides the FAA specifications associated with the ARC classification system.

TABLE 4 - AIRPORT REFERENCE CODES				
AIRCRAFT APPROACH CATEGORY (AAC)[1]		AIRPLANE DESIGN GROUP (ADG)[2]		
CATEGORY	APPROACH SPEED	GROUP	TAIL HEIGHT	WINGSPAN
A	Approach speed less than 91 knots	I	< 20'	<49'
B	Approach speed 91 knots or more but less than 121 knots	II	20' - < 30'	49' - < 79'
C	Approach speed 121 knots or more but less than 141 knots	III	30' - < 45'	79' - < 118'
D	Approach speed 141 knots or more but less than 166 knots	IV	45' - < 60'	118' - < 171'
E	Approach speed 166 knots or more	V	60' - < 66'	171' - < 214'
		VI	66' - < 80'	214' - < 262'

Source: FAA AC 150-5300-13A, Airport Design[1].

As previously identified, Hartford-Brainard Airport is served by two runways (Runway 2-20 and Runway 11-29). The design aircraft for Runway 2-20 is the Cessna Citation CJ4 which has an aircraft approach category (AAC) of B and an airplane design group (ADG) of II. Therefore, based on these design aircraft characteristics for Runway 2-2, the airport reference code is B-II. The Cessna 182 Skylane has been identified as the design aircraft for Runway 11-22. The Runway is classified with an AAC of B and an ADG of I. Therefore, based on these design aircraft characteristics Runway 11-22 has an ARC of B-I. Table 5 provides a summary of the runway design codes (RDC) classifications for both runways at Hartford.

TABLE 5 - RUNWAY DESIGN CODE SUMMARY			
Runway	Design Aircraft	AAC	ADG
2-20	Cessna Citation CJ4	B	II
11-29	Cessna 182 Skylane	B	I

Source: Hartford-Brainard Airport Master Plan Update (2013).

After determining the airport runway design code, the airport itself is classified with the appropriate ARC. The ARC is used for airport planning and design purposes and is determined by the highest RDC at the airport. The ARC uses the same classification system as the RDC. Runway 2-20 is classified with the highest RDC at the Airport. Therefore, the ARC for HFD is classified as B-II.

Airspace Obstructions

Overall airspace obstructions include penetrations to any number of defined airspace surfaces, but predominantly include FAR Part 77 imaginary surfaces and Terminal Instrument Procedures (TERPS) surfaces, which define the airspace surrounding runways. The most restrictive surfaces are usually the Part 77 surfaces, which are discussed below.

The FAA's Federal Aviation Regulation Part 77, titled *Obstructions Affecting Navigable Airspace* are used to determine obstructions to air navigation that may affect the safe and efficient use of navigable airspace and the operation of air navigation and communication facilities. These are commonly referred to as "imaginary surfaces" and are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach procedure existing or planned for that runway end. The definitions of the Part 77 imaginary surfaces are listed below.

Horizontal Surface

The horizontal surface is established 150 feet above the airport elevation. The perimeter of the horizontal surface created by swinging arcs of a specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs.

Conical Surface

A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

Primary Surface

A surface longitudinally centered on a runway that extends 200 feet beyond each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

Approach Surface

A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

Transitional Surface

The transitional surface extends outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces.

Table 6 summarizes the FAR Part 77 surface dimensions at Hartford-Brainard.

TABLE 6- FAR PART 77 SURFACE DIMENSIONS (FEET)

SURFACE	RUNWAY 2	RUNWAY 20	RUNWAY 11	RUNWAY 29
Primary Surface Width	500	500	250	250
Horizontal Surface Radius	10,000	10,000	5,000	5,000
Approach Surface Width at End	3,500	1,500	1,250	1,250
Approach Surface Length	10,000	5,000	5,000	5,000
Approach Procedure	Non-Precision	Visual	Visual	Visual
Approach Slope	34:1	20:1	20:1	20:1

Source: CHA Consulting, Inc. (2015).

In addition to Part 77, the US Standards for Terminal Instrument Procedures (TERPS) are used by FAA to develop all instrument approaches and other procedures to airports. These procedures are used by aircraft when visibility and cloud ceilings are low. TERPS are defined in FAA Order 8260.3B, and include numerous approach and departure surfaces surrounding runways. As the TERPS surfaces can be complex and differ from Part 77 surfaces, the FAA has provided overall airport design standards for obstruction clearing beyond any runway.

These obstruction clearing standards are defined in FAA Advisory Circular 150/5300-13A, Airport Design, and determined the minimum obstruction removal required for any runway end. In locations off-airport property, where the CAA does not own rights to clear all airspace penetrations, clearing the minimum design standards defined in the Advisory Circular may be the most feasible alternative.

2.0 PURPOSE AND NEED

Purpose: The purpose of the proposed obstruction removal project evaluated in this Environmental Assessment (EA) is to promote safety by bringing the airport into compliance with Federal Aviation Administration (FAA) design standards and regulations regarding clear airspace.

Need: The FAA has established airspace and design criteria to provide for safe aircraft operations. In 2012 the State conducted an obstruction study to evaluate the airspace at the Airport. Based on the FAA design criteria, the results of this analysis identified existing safety deficiencies at HFD which include multiple obstructions to the Federal Aviation Regulation (FAR) Part 77 surfaces, Terminal Instrument Procedures (TERPS), and Airport Design Standards. The results of this study identified that the Airport does not provide adequate airspace surfaces to its runways.

3.0 ALTERNATIVES ANALYSIS AND PREFERRED ACTION

This chapter of the Environmental Assessment (EA) addresses the potential alternatives for airport obstruction removal at Hartford-Brainard Airport. The recent airport obstruction study identified substatial areas of tree obstructions in all areas surrounding the airport. The ideal alternative from an aeronautical standpoint would be to remove all tree penetrations to the Federal Aviation Regulation (FAR) Part 77 "Objects Affecting Navigable Airspace" and Terminal Procedures (TERPS) surfaces. However, as part of the scoping process for this study, it was determined that this approach would be impractical, and other other alternatives would need to be developed.

The National Environmental Policy Act (NEPA) and FAA Order 5050.4B require the consideration of alternatives commensurate with the purpose and need statement. The intent is to evaluate various options that address the recognized need so that potential environmental impacts can be compared and minimized. This chapter presents the various options considered, as well as those deemed infeasible. Where appropriate, temporary access routes, removal methods, and site specific procedures are also discussed.

3.1 ALTERNATIVES UNDER CONSIDERATION

As part of the effort to identify project alternatives, the recommendations from the 2015 Airport Master Plan were considered, as well as agency comments and the concerns of affected parties and property owners. This coordination effort took into consideration both the environmental and socioeconomic impacts as well as project costs which were evaluated as part of the process to refine and develop the alternatives. The results of this refinement resulted in two alternatives plus the No Action option. All three are presented herein for consideration.

Existing Conditions (Runway 2):
Tree Obstructions would remain under the No Action Alternative

3.1.1 No Action Alternative

The No Action Alternative retains all obstructions as is, with CAA taking no action to address airspace hazards. The existing trees and other obstructions would continue remain as penetrations to the local airspace. As this option results in potential dangers to users of the airport it is not desirable from the perspective of the flying public. Mitigating potential airspace hazards is an important mission of the CAA and FAA. In fact, addressing airspace hazards is required by the FAA s. Although, this alternative fails to improve safety for passengers and crews operating at the airport, it serves as the baseline for comparison to the build alternatives.

The No Action Alternative has the least potential impact to the environment and effect on property owners, as there are no actions involved. This option also has no implementation costs. The No Action alternative cannot be selected as the preferred action as it would violate the airports federal obligations for hazard removal and mitigation. Airports developed or improved with federal funds are obligated to prevent the growth or establishment of obstructions in the approaches to the airport and to take reasonable actions to remove existing

obstructions. This requirement is discussed in the FAA Airport Compliance Manual (FAA Order 5190.6B), which sets forth policies and procedures to be followed by public airports. This requirement is also listed in federal grant assurance No. 20, Hazard Removal and Mitigation of the Airport Improvement Program (AIP), per Federal Statute 49 U.S.C., Section 47101.

It is also noted that the No Action Alternative does not eliminate potential environmental and social impacts as the increased risk of airport operations poses an impact to airport users. Potential aircraft incidents could create environmental damage to wetlands, habitat, and endanger emergency responders and even persons and property on the ground.

The following summary box highlights potential advantages and disadvantages of the No Action Alternative.

No Action Alternative	
Goal(s): This option reduces impacts as it takes no action to remove, lower, mark, or mitigate existing or potential future airspace obstructions.	
Description: Tree obstructions have been identified at all four runway ends, Transitional Surface areas, and the outer airspace of the Horizontal and Conical Surfaces. These presumed hazards would remain in place, and potentially increase in size and penetration with additional tree growth.	
Advantages	Disadvantages
• No wetland impacts (temporary or permanent) • No impacts to biological resources, habitats, or species of concern • No impacts to parks or recreation • No impacts or disturbance to property owners • No project costs	• Retains potential hazards to airport users • Retains a potential hazard to people and property on the ground surrounding the airport • Does not comply with FAA design standards or grant assurances • Risks future FAA funding for improvements to the airport

3.1.2 Full Obstruction Removal Alternative

The Full Obstruction Removal Alternative would clear all tree obstructions to the FAR Part 77 Approach and Transitional Surfaces. These surfaces are generally the most encompassing for approach protection, whereas if cleared, it would generally assure clearance of other airspace surfaces (e.g., TERPS, threshold surface, PAPI Obstacle Clearance Surface, etc.). Within the outer Part 77 surfaces (i.e., Horizontal and Conical), this alternative includes obstruction lighting for the various manmade poles and towers, high terrain, and tree obstructions surrounding the airport.

The Part 77 Approach Surface is trapezoidal in shape, and extends away from the runway along the centerline at a specific slope, as discussed in Section 1. The figures included in Appendix A for each runway end illustrate Approach Surfaces. The specific size and slope depends upon the aircraft served and visibility minimums of the runway end. In the figures, the blue dots depict tree penetrations to the Approach Surface and orange dots are

obstructions to the Transitional Surface. These dots represent the most critical obstructions only, there are likely many more trees penetrations than shown by the dots. As such, in order to remove all obstructions per this alternative, comprehensive tree clearing would be necessary in all locations where these dots are present. It is noted that a flood control levee is located immediately beyond three of the four runway ends. The levee is 20 to 35 feet above the runway ends, and is currently equipped with obstruction lighting. Although the levee is an Approach Surface penetration, this alternative does not include any actions to move or lower that obstruction.

The approach surface to the primary runway includes a relatively flat 34:1 slope on the Runway 2 end, which results in penetrations over a large area, including residential, industrial, and commercial parcels. The Runway 20 end, and both ends of secondary Runway 11-29, includes a steeper 20:1 slope. The tree obstruction in these locations are limited to industrial and commercial parcels.

For the airport as a whole, this alternative would result in approximately 74 acres of tree removal. For tree removals on residential and other private parcels, permanent 'avigation' easements are typically required. Avigation easements refer a permanent conveyance of airspace, from a property owner to the airport, granting the airport the right to overfly the property and remove obstructions to a defined airspace surface. These easements involve appraisals, negotiation, and acquisition of the perpetual rights to remove existing tree obstructions and prevent future obstructions.

This comprehensive alternative would satisfy FAA requirements and improve safety of all operations at the airport, as well as on surrounding properties. However, as highlighted in the summary box, this alternative would include potentially significant impacts based on the large area involved, including wetland and sensitive habitat, as well as the number of residents and properties affected. The affected residential area south of the Airport is a history district of "Old Wethersfield". The cost and time involved to complete this alternative would be substantial, to the point that the successful completion is questionable due to the number of agreements needed with private parties.

To reduce potential environmental impacts of this Alternative, the tree clearing parameters would primarily include removal of all sizable trees, but retaining small trees and underbrush. Tree stumps would be left in place to minimize ground disturbance and potential erosion. This practice r reduces impacts to wetlands, floodplains, and archeological resources. However, it is not a permanent solution as trees will eventually regrow. Nevertheless, this alternative may be considered to have a 20-year design life.

On residential properties, the removal parameters would be limited to selective removal of tall trees only, with stump grinding, top soil placement and seeding. Removal of branches, wood chips, and repair of damage to lawn areas would also be included. Small trees that are 20 feet or more below the surface would be left in place.

Overall, the tree removal approach and methods would vary based on site conditions, environmental sensitivity, and land use, with the detailed methodology determined during the design and permitting process. Removals are typically conducted during dryer periods of the years (i.e., autumn) or winter, when partly frozen ground reduces temporary construction impacts. Winter removals may also be used to reduce impacts to bat, bird, and plant species.

Sample: Selective tree removal underway in a residential area, with shorter trees left in place.

The following summary box highlights potential advantages and disadvantages of the Full Obstruction Removal Alternative.

Full Obstruction Removal Alternative	
Goal(s): This option removes all penetrations to the FAR Part 77 Approach and Transitional Surfaces, with obstruction lighting for the Horizontal and Conical Surfaces.	
Description: A comprehensive removal of obstructions to the inner airspace surfaces, including substantial areas off-airport. This alternative provides maximum benefit to airport users and safety enhancement. Outer surfaces are protected with lighting during nighttime operations.	
Advantages	Disadvantages
• Clears or lights virtually all defined aeronautical surfaces • Satisfies federal design standards and assurances • Comprehensive removal of potential hazards to airport users • Improves safety for people and property on the ground surrounding the airport	• Potential for impacts to wetlands (temporary or permanent) • Potential impacts to biological resources, habitats, or species of concern • Potential impacts to historic district • Substantial coordination and negotiation needed with property owners • The need for numerous avigation easements may prevent successful completion of project and significantly extend the required schedule • High project costs • Successful completion is questionable

3.1.3 Modified Obstruction Removal Alternative

The Modified Obstruction Removal Alternative is intended to eliminate the most critical obstructions while substantially reducing the number of affected properties, and therefore potential environmental impacts. To accomplish this, the planned tree removals would focus on the penetrations to a less extensive airspace surface.

The FAA has recognized that full off-airport clearing of the Part 77 surfaces can be a considerable endeavor and is often impractical due to environmental impacts, costs, and property considerations. As such, the FAA Airport Design manual (Advisory Circular 150/5300-13A) has defined a different approach surface that may be used by airport sponsors to address the most critical obstructions and maintain an acceptable margin of safety.

For distinguishing purposes, this surface is often referred to as the Threshold Surface, as not to be confused with the Part 77 Approach Surface. The Threshold Surface is designed to protect use of the runway in both visual and instrument meteorological conditions. Like the Part 77 Approach Surface, it is trapezoidal in shape and extends outward and upward from the runway along the centerline at a specific slope. However, the Threshold Surface is generally smaller in size or steeper in slope than the Part 77 Approach Surface, which reduces the size of the clearing area. The specific size and slope depends upon the aircraft served and visibility minimums of the runway end. For Hartford-Brainard Airport, the Threshold Surface to the main runway includes a steeper 20:1 slope, which reduces the penetrations to a much smaller area compared to the Full Obstruction Removal Alternative. In total, this alternative would result in approximately 40 acres of tree removal and selective tree removal on 8 individual parcels, compared to 74 acres for the Full Obstruction Removal Alternative. This alternative also avoids tree clearing in residential areas, including Old Wethersfield.

Penetrations to the Threshold Surface are illustrated with a magenta (or pink) dots on the figures in Appendix A. As most Threshold Surface penetrations are also Approach Surface Penetrations, these obstructions include blue dots with a magenta outline.

The figures illustrate the Modified Obstruction Removal Alternative using shading. Yellow shading includes general tree clearing areas; green shading illustrates reduced or selective tree removal of individual tree obstructions to be identified during the design process. This selective thinning is use in locations were fewer obstructions or less critical Transitional Surface obstructions are present.

Note that Runway ends 2, 20, and 29 all have ‘displaced thresholds’, meaning the landing point is displaced from the physical end of the runway. For these runways, the figures depict the Approach Surface based on the runway end, and the separate Threshold Surface based on the displaced threshold location. Runway 11 is the only runway end that does do not have a displaced threshold, and the approach surface and threshold surface start at the same location (overlay each other). For that runway the figure only illustrated one surface.

The shaded clearing areas (yellow and green) on the figures is the proposed tree removal under this alternative. Beyond the ends of Runways 2, 20, and 29, the proposed tree removal includes essentially all tall trees between the flood control levee and the Connecticut River. On the south end of the airport, the recommended tree removals terminate at Folly Brook, with no clearing recommended south or east of Interstate 91 in the Town of

Wethersfield, or in the Wethersfield Cove area. Beyond the end of Runway 11, tree removals under this alternative is limited to landscaped trees on commercial property.

As with the Full Obstruction Removal Alternative, the Modified Removal Alternative would employ the same removal methods and techniques to minimums impacts, including:

- Removal of all sizable trees, but retaining small trees and underbrush.
- Tree stumps would be left in place to minimize ground disturbance and potential erosion.
- Removals will be conducted during dryer periods of the years (i.e., autumn).
- Winter removals may be employed to reduce impacts to several bat and bird species, and reduce ground disturbance.

The following summary box highlights potential advantages and disadvantages of the Modified Obstruction Removal Alternative.

Modified Obstruction Removal Alternative	
Goal(s): This option removes tree penetrations to the FAA Threshold Surface.	
Description: A reduced removal alternative intended to clear the critical penetrations to the runway approaches to maintain operational safety, while minimizing the impact to off-airport properties and the natural environment.	
Advantages	Disadvantages
• Clears the critical obstructions • Satisfies federal design standards and assurances • Improves safety for people and property on the ground surrounding the airport • Reduces impacts to environmental resources • Reduces the number of affected property owners • No tree removals in residential areas • No tree removals in the Old Wethersfield historic district • Streamlines the project schedule and reduces costs	• Potential impacts to wetland, biological, habitat, or species of concern remain present • Easements are required with property owners • Less critical obstructions will remain • Outer Part 77 surface was not protected with obstruction lighting

The CAA and FAA have identified this alternative as the most practical solution. This solution balances airport needs and safety while taking into account environmental considerations and minimizing both cost and private property disturbance. The review considered land use, access, ownership, mapped wetlands, and general environmental conditions. Detailed illustrations of the removal areas for this alternative have been prepared for each runway end. Each of these drawings are provided in Appendix A, and are referenced as necessary throughout the remainder of this document.

3.2 ALTERNATIVES CONSIDERED AND DISMISSED

This section includes a brief description of alternatives considered but dismissed because they were deemed infeasible.

- Removal of All Obstructions – Ideally all Part 77 obstructions would be removed, including those to the Horizontal and Conical Surfaces for the maximum safety benefit. However, due to the development surrounding the airport, private property involved, and potential environmental impacts, this alternative is not a realistic goal.

- Clear Cutting and Providing a Maintainable Surface – The two 'build' alternatives above remove tree obstructions; however, trees will eventually grow back. As an alternative, once trees are cut, the root balls could be pulled and the area graded and seeded. Thereafter the CAA would maintain the area as an open field with regular mowing or annual brush cutting. This option was eliminated from consideration as grading the tree clearing areas would have a permanent impact to any wetlands, sensitive biological habitat, and recreational areas, and archeological resources. This alternative is also extremely costly.

- Closure of Runway 11-29 – On occasions, an airport with three or more runways, may consider closure or elimination of a runway that is considered surplus or unnecessary. However, for two runway airports such as Hartford-Brainard, the closure of a runway results in the lack of a crosswind runway, or backup runway availability while the primary runway is under repair or closed for snow removal or other required maintenance activities. In 2012, the Airport evaluated the possible closure of Runway 11-29, as part of the Airport Master Plan Update. That study recommended the retention of secondary runway of safety benefits. Thus, this alternative was eliminated from further consideration.

- Relocation of Runways – During the recent airport master plan (2014), the potential to relocate one or both runways to reduce penetrations and other considerations was evaluated. However, there does not appear to be a shifted or reoriented runway alignment that is feasible at the airport site. In addition, the cost for a runway relocation would likely far exceeded the cost for tree clearing.

3.3 PROPOSED ACTION

Based on the evaluation identified in this section, and the review by CAA and FAA, the Modified Obstruction Removal Alternative has been chosen as the "Proposed Action" and "Preferred Alternative" for Hartford-Brainard Airport. This determination is primarily related to the Full Removal Alternative being considered not practical or feasible from an environmental and cost standpoint. The No Action Alternative is also not considered appropriate as it does not address the safety of airport users and does not satisfy FAA requirements or obligations.

The remainder of this Environmental Assessment document focuses on the evaluation of potential impacts of the Proposed Action. The goal of the evaluation is to enable the FAA to determine if the impacts of the Proposed Action are substantial, or could be implemented without significant impact.

4.0 AFFECTED ENVIRONMENT

This chapter describes the environment that may be affected by the Obstruction Removal alternatives under consideration. The information provided in this chapter serves as the basis for the assessment of potential environmental, social, and economic impacts in Chapter 5.

Throughout Chapters 4 and 5, the discussion of potential impacts is in reference to the Preferred Alternative (i.e., the Proposed Action). It is assumed that the No Action alternatives, while undesirable, does not result in significant environmental impacts. It is also assumed that the Full Obstruction Removal Alternative will have greater impacts than the Preferred Alternative due to the more extensive area of tree removal and number of affected properties. As such, the remainder of this EA is focused on the potential impacts of the Proposed Action.

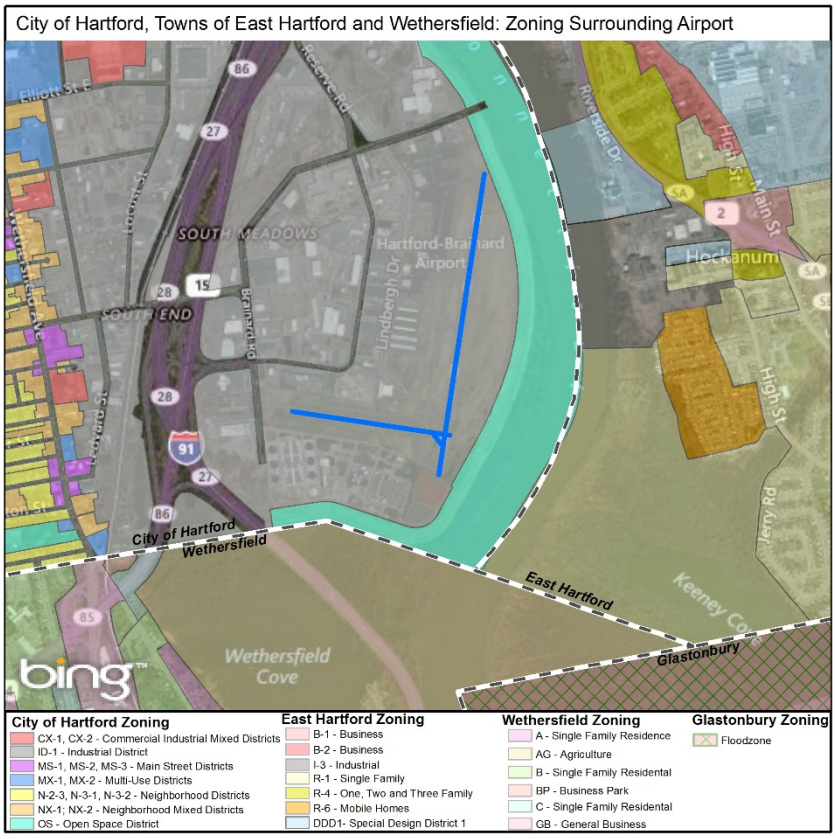
The sections below include the following:

- Land Use and Zoning
- Section 4(f) Lands
- Threatened and Endangered Species
- Wetlands

HARTFORD-BRAINARD AIRPORT OVERVIEW

4.1 LAND USE AND ZONING

Hartford-Brainard Airport is located approximately southeast of downtown Hartford near the intersections of I-84 and I-91 within the city of Hartford. The Town of Wethersfield lies immediately to the south. Land use in the vicinity of the Airport includes commercial and industrial uses. These uses are located north and west of the Airport, along Murphy Road, Maxim Road, and Brainard Road. An open space area is located east and south of HFD, along the flood levee. Land use to the south generally includes open space. The area consists of wetland and



floodplain areas associated with the Connecticut River and Wethersfield Cove. More distant are residential areas located south and west of Wethersfield Cove.

Hartford

According to the Hartford Zoning Map, dated February 11, 2008 is zoned as an Industrial District (I-2). Properties located north and west of the Airport are also zoned as an Industrial District (I-2). TheI-2 industrial district allows medium to heavy industry. This zoning district is designed to encourage the maintenance and expansion of industry and to develop a more compatible relationship with surrounding residential areas. A Commercial District (C-1) is located southwest of HFD, between Brainard Road and Interstate 91. C-1 zones allow wholesale or other large scale commercial land uses, such as storage warehouses, laboratories, computer centers, and offices of equipment manufacturers. East of HFD, along the Connecticut River, there is a Public Property and Cemetery District (P). The area between Interstate 91 and the Wilbur Cross Highway is also zoned P. No residentially-zoned districts are located within the City of Hartford in the immediate vicinity of HFD. The nearest residentially zoned district within the City of Hartford is located approximately 1.5 miles northwest of the Airport, between Interstate 91 and Colt Park. This area, zoned R-1, high density residential district, allows 150 persons per acre in multiple family residential structures.

Town of East Hartford

Lands east of the airport and the Connecticut River are delineated as Residential (R-1) on the Town of East Hartford Zoning Map dated March 26, 2013. Allowable uses in the (R-1) zone consist of single family homes and public parks and open space.

Wethersfield

The Wethersfield Zoning Map, dated June 2006, delineates the area south of Airport, near Wethersfield Cove and the Connecticut River as Agricultural (AG). This includes the Folly Brook Natural Area located north of Wethersfield Cove. The residential areas located south and west of Wethersfield Cove are zoned Single Family Residence (A, B, and C). Allowable uses in the AG zone are generally limited agricultural uses and structures. Allowable uses include single family residential, and open space uses in all three residential districts. A limited number of additional uses may locate within each district but require Site Plan Approval, or both a Conditional Use Permit and Special Permit. The nearest residential areas within the Town of Wethersfield are located approximately 0.7 miles south of the southern airport boundary.

4.2 SECTION 4(F) LANDS

Section 4(f) of the Department of Transportation (DOT) Act requires the approval of the Secretary of Transportation for any project that impacts publicly owned land such as a public park, recreation area, or wildlife refuge of national, state, or local significance or a historic site of national, state or local significance.

Folly Brook Natural Area is located south of the Airport property in the Town of Wethersfield and includes a tree removal area (Parcel 2, south of Runway 2). This area will require review by the Connecticut Department of Energy and Environmental Protection (CTDEEP). Other 4(f) resources are have been identified in the vicinity of the Airport however no project activities are planned in these areas.

4.3 THREATENED AND ENDANGERED SPECIES

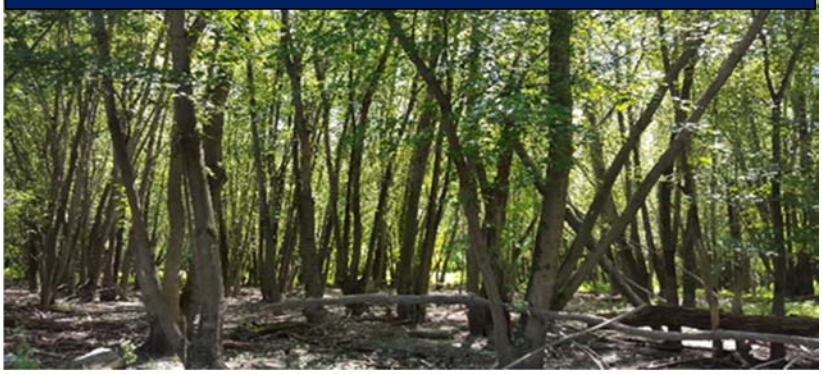
The habitat assessment for the Windham Airport involved agency coordination with the CTDEEP's Natural Diversity Database (NDDB), screening through the United States Fish and Wildlife Service's (USFWS) Information Planning and Conservation System (IPaC), GIS screenings, and field investigations. Relevant agency coordination/correspondence is attached in Appendix C. Field investigations were carried out during the summer and fall of 2015 and winter of early 2016.

Fish: The major waterbody within the project area is the Connecticut River which lies adjacent to the site to the east. Wethersfield Cove, a historic river oxbow, lies adjacent to the south and is directly connected to the Connecticut River by Folly Brook. These waterbodies support both a warmwater and coldwater fishery that supports recreationally, economically, and ecologically important fish species of conservation concern. Examples include but are not limited to the Large-mouth Bass (*Micropterus salmoides*) – a species important to recreational anglers, and a number of diadromous species ranging from the fairly abundant Alewife (*Alosa pseudoharengus*) and American Shad (*Alosa sapidissima*) to the rarer Blueback Herring (*Alosa aestivalis*) and Rainbow Smelt (*Osmerus mordax*). Some of the diadromous species such as the American Eel (*Anguilla rostrata*), Atlantic Salmon (*Salmo salar*), and Short-nosed Sturgeon (*Acipenser brevirostrum*) are subjected to a regional or federal conservation and management plans.

Wildlife: Wildlife within the project area is expected to be diverse, representative of multiple taxa, and include a number of species identified as species of "Greatest Conservation Need" by the CTDEEP in the Comprehensive Connecticut Wildlife Conservation Strategy (CTDEEP, 2015). Various herpetofauna (reptiles and amphibians) are known or expected to occur within the project area, especially frogs and toads, and certain snakes such as Common Garter Snake (*Thamnophis sirtalis*), Northern Water Snake (*Nerodia sipedon*), and Dekay's Brown Snake (*Storeria dekayi*).

A cumulative tally of bird species sightings reported to eBird by dozens of birder's over the years for Wethersfield Cove consists of 114 species. http://ebird.org/ebird/hotspot/L109163. This list includes species distributed among many taxonomic orders and families and is indicative of the species that would be expected to be found in similar habitats within the project area. It includes a variety of species considered to be of Greatest Conservation Need by the CTDEEP (2015), and a variety of migratory species whose distributional ranges overlap the project area, the protection of which falls under the jurisdiction of the USFWS. Species commonly seen on the Connecticut River include fish-eating species such as cormorants, kingfisher, and mergansers, as well as gulls, and dabbling ducks.

Typical Silver Maple-dominated regularly flooded floodplain forest along Connecticut River at Airport. Note the lack of a well-developed shrub layer



Songbirds are numerous along the forest/field margins, and woodpeckers frequent the tall, large-diameter floodplain trees. Shorebirds such as (Killdeer *Charadrius vociferous*) and Spotted Sandpipers (*Actitis macularius*) can be found foraging along the mudflats of the river floodplain, and more human-adapted species such as European Starling (*Sturnus vulgaris*), Chimney Swift (*Chaetura pelagica*), House Sparrow (*Passer domesticus*), American Robin (*Turdus migratorius*) and Rock Pigeon (*Columba livia*) are often found in the more developed commercial areas to the west of and adjacent to the airport.

The most abundant mammals observed within the project area are Gray Squirrel (*Sciurus carolinensis*), and Eastern Chipmunk (*Tamias striatus*). Signs of White-tailed Deer (*Odocoileus virginianus*), including scat, tracks, and browsed plant life, were also frequently noted in the floodplain forest found within the project area. Signs of Beaver (*Castor canadensis*) are evident along the Connecticut River which also likely hosts River Otter (*Lontra canadensis*), Mink (*Mustella vison*), and other mustelids. Burrows of Woodchuck (*Marmota monax*) were also encountered on or adjacent to the Airport. Other abundant mammals include Raccoon (*Procyon lotor*), Opossum (*Didelphis virginiana*), Eastern Cottontail (*Sylvilagus floridanus*), a variety of rodents and likely arboreal-roosting bats.

Plants: The dominant plant community in the project area is the seasonally saturated floodplain deciduous forest dominated by tall growing broadleaf trees. These trees often grow to form dense continuous-canopy stands or forests. Lower layers of smaller trees and shrubs are weakly developed in most interior areas of the floodplain forest yet are grow more densely along the forest-field ecotone.

The deciduous floodplain forests in the study area are composed predominantly of Silver Maples (*Acer saccharinum*) and Eastern Cottonwoods (*Populus deltoides*) Silver Maple is by far the dominant species in the tree layer, with stands of Eastern Cottonwoods having significant local coverages. Two major community types were noted. One is the Silver Maple / Smallspike False Nettle (*Boehmeria cylindrica*) community, and the other is the Silver Maple / Sensitive Fern (*Onoclea sensibilis*) community. Both are similar to the descriptions provided by Metzler and Barrett (2006). The Silver Maple / Smallspike False Nettle community occurs primarily in regularly flooded areas of the floodplain on poorly drained and very poorly drained alluvial soils. The Silver Maple / Sensitive Fern community occurs on inner floodplain areas that are above the river level and freely drain once floodwaters recede.

Non-forested habitats include marshland, grasslands, old field / early successional habitats, mowed lawn areas, and various miscellaneous ruderal habitats. These habitats, their characteristic vegetation, location in the project area, and characteristic wildlife species of conservation concern are provided in Table 7 below. Species of conservation concern are further discussed below.

Rare Species: A review of Connecticut Department of Energy and Environmental Protection (CTDEEP) Natural Diversity Database (NDDB) Geographic Information System (GIS) mapping revealed a number of mapped locations of known rare species occurrence along the Connecticut River. The CTDEEP NDDB reported that the American

Kestrel (*Falco sparverius*) and the Bald Eagle (*Haliaeetus leucocephalus*) are known listed species to occur on the site. Both of these species are listed as Threatened in Connecticut by the CTDEEP (CTDEEP, 2015a).

The American Kestrel is a rare to uncommon breeder in Southern New England that continues to decline. It inhabits a wide range of habitats, but in New England prefers forested edges, grasslands, pastures, utility rights-of way, marshes, and beaver flowages. It is a rare winter resident, uncommon to fairly common spring and fall migrant, and a rare breeder (Haniseck, 2005). Its natural nest cavities are typically in trees with a diameter at breast height of >12 inches, and they require elevated perches from which to sight prey (DeGraaf and Yamasaki, 2001). This species typically passes through Connecticut on spring migration from March through late April. Some individuals remain as localized breeders in the state in areas of more open and extensive habitat. Where suitable habitat occurs (i.e., open areas where prey is in abundant supply and where appropriate nesting cavities are available) American Kestrels begin nesting in early May, with the breeding period lasting until approximately early to mid-June (Haniseck, 2005). Reported egg dates for the American Kestrel in the northeast are from April 27 to May 26.

The Bald Eagle (see photograph below) is a rare, but increasing breeder in Connecticut. In the Connecticut River Valley, it regularly occurs as a winter resident and spring migrant, and is an uncommon to fairly common fall migrant (Haniseck, 2005). Within recent years, it has become a rare but regular breeding resident in the Connecticut River Valley. Its preferred habitats include large lakes, rivers, and estuaries in open areas, forests and mountains (DeGraaf and Yamasaki, 2001). Bald Eagles and a Bald Eagle nest (See photograph below) were observed within the project area on Parcel 2, approximately 150 feet south of the Metropolitan District Commission (MDC) outfall within an area proposed for "selective tree removal". The nest was active during the 2016 breeding season. This general location has been used by nesting eagles in recent previous years (Brian Hess CTDEEP Wildlife Division, personal communication).

Bald Eagle perched in floodplain forest south of Brainard Road (Parcel 2) & ACOE Flood control dike

Bald Eagle nest located on Parcel 2

The USFWS Information for Planning and Conservation (IPaC) Online Screening Tool was referenced to obtain information on species listed on the federal Endangered Species Act. An IPaC report generated for this project (USFWS IPaC, 2015) identified one rare mammal species - the Northern Long-eared Bat (*Myotis septentrionalis*) - and 16 migratory bird species with distributional ranges that included the project area. A copy of the IPaC report is provided in Appendix C.

Table 7. Existing Habitats, Associated Species of Conservation Concern and State and Federal Status

Habitat	Characteristic Vegetation	Location in the Project Area	Species of Conservation Concern	CT Status (CTDEEP 2015a, 2015b)	Federal Status
Deciduous Hardwood Upland Forest / Woodland	Red Maple, Black Birch, Quaking Aspen, Northern Red Oak	East of Runway 20, South and east of Runway 2; east of Runway 29	Wood Thrush	GCN – Most Important	Conservation Concern
			Worm-eating Warbler	GCN – Very Important	Conservation Concern
Palustrine Emergent	Skunk Cabbage, Jewelweed, Tussock Sedge, False Nettle, Royal Fern, Cinnamon Fern, Cocklebur	Occurs as an inclusion in Parcel 2, and within drainage ditches elsewhere.	American Bittern	GCN – Very Important	Conservation Concern
			Least Bittern	Threatened GCN – Very Important	Conservation Concern
			Rusty Blackbird (fall and winter)	N/A	Conservation Concern
River Floodplain Forest	Silver Maple, Eastern Cottonwood, American Elm, Sycamore, Red Maple. Jewelweed, Stinging Nettle, Poison Ivy, Sensitive Fern	Parcels 1, 2	Bald Eagle	Threatened GCN – Important	Conservation Concern
			Rusty Blackbird (fall and winter)	N/A	Conservation Concern
Shrubby margin / ecotone	Staghorn Sumac, Multiflora Rose, Wild Indigobush, various brambles often interspersed with non-native invasive shrubs.	North of Runway 2; East of Runways 2 and 20 along the field/forest ecotone of Parcels 1 and 2	Black-billed Cuckoo	GCN – Very Important	Conservation Concern
			Prairie Warbler	GCN – Most Important	Conservation Concern
			Blue-winged Warbler	GCN – Most Important	Conservation Concern
			Fox Sparrow (Winter)	N/A	Conservation Concern
Grasslands	Little Bluestem and other warm-season grasses, interspersed with various forbs such as goldenrods, asters, Common Mullein, Evening Primrose, Bedstraw, English Plantain, Round-headed Bush-clover, Queen Anne's Lace, etc.	Airport Property fields between runways and taxiways	Upland Sandpiper (historical records)	Endangered GCN – Most Important	Conservation Concern
			American Kestrel	GCN – Most Important	NR
			Peregrine Falcon	GCN – Important	Conservation Concern
			Short-eared Owl	Threatened (wintering) GCN – Important	Conservation Concern
Miscellaneous (Ruderal) Habitats (Open lots, waste places, and other unmaintained non-forest habitats)	Lawn (turf) grasses, Sheep sorrel, cinquefoil, English Plantain, White Clover, Dandelion, various landscape plantings, naturalized & non-native, invasive weeds	Transitional surface areas south of and west of Runway 11	American Kestrel – Connecticut Threatened	GCN – Most Important	NR
Connecticut River (open Water)		River reach to the east of the Airport	Pied-billed Grebe	Endangered Most Important	Conservation Concern

Table 7. Existing Habitats, Associated Species of Conservation Concern and State and Federal Status					
Habitat	Characteristic Vegetation	Location in the Project Area	Species of Conservation Concern	CT Status (CTDEEP 2015a, 2015b)	Federal Status
	Various potential submerged aquatic vegetation spp.	(Open water portions associated with Parcels 1 & 2	Bald Eagle	Threatened GCN – Important	Conservation Concern
			American Shad	GCN – Very Important	NR
			Alewife	GCN – Most Important	NR
			Blueback Herring	GCN – Most Important	NR
			American Eel	GCN – Most Important	NR
			Rainbow Smelt	GCN – Most Important	NR
			Atlantic Salmon	GCN – Very Important	NR

GCN = Greatest Conservation Need as identified in the draft State Wildlife Action Plan (CTDEEP, 2015b)
N/A = Not Applicable
NR = None Reported in the IPaC screening assessment

The species that have been identified by CTDEEP as being documented within the project area and any required mitigation is presented and discussed in Section 5.7 Fish, Wildlife and Plants.

4.4 WETLANDS

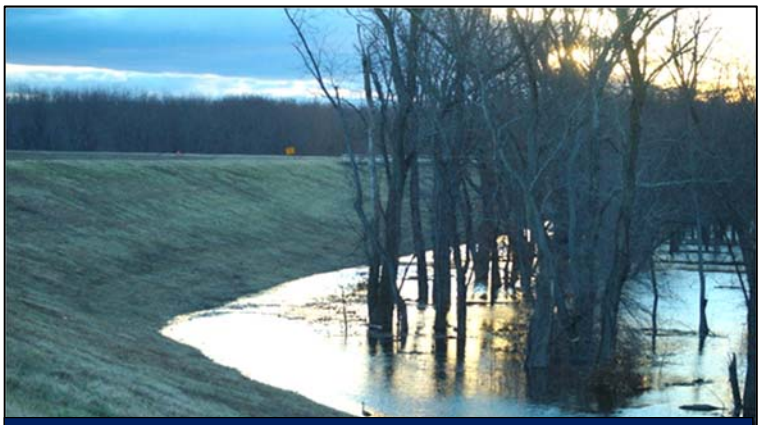
To understand the extent of wetland resources within potential obstruction removal impact areas, a review of National Wetland Inventory (NWI) maps and a field investigation was conducted. The objective of the field investigation was to determine the approximate locations, extent, and connectivity of the wetlands and associated watercourses on those parcels identified for obstruction removal (tree cutting). A basic understanding of the wetlands and their position within the greater landscape helps to give a better insight into the potential habitat impacts that may occur as a result of the obstruction removal project.

While the wetlands within the project area were not formally delineated, observations made in the field by a team of wetland scientists essentially encompassed the investigation of the criteria typically required for a formal delineation. These criteria for state and federal wetlands include hydric soil conditions, hydrophytic vegetation, and evidence of hydrology. Connecticut inland wetland boundaries are determined by the limit of any of the soil types designated as poorly drained, very poorly drained, alluvial, and flood plain by the National Cooperative Soils Survey.

The Airport is situated on an expansive plain (former floodplain) in the Connecticut River Valley. The airport runways, taxiways and adjacent open fields are surrounded by a U.S. Army Corps of Engineers (ACOE) flood control dike that was built following the severe flooding in 1936 and 1938. The soils to the east of Runway 2/20 are mapped as a unit of the Winooski series, which are moderately well-drained soils of alluvial origin and thus considered state jurisdictional wetlands. Riverward of the dike, riparian forest occurs to the east and south, along the Connecticut River, and contains remnant floodplain areas. These areas are underlain predominantly by Winooksi, Limerick, and Lim soils – all soils of alluvial origin and thus regulated as state jurisdictional wetlands, but only the areas underlain by Limerick and Lim soils are poorly drained and thus considered hydric. Therefore, areas underlain by Limerick and Lim soils likely contain wetlands subject to both state AND federal jurisdictions.

Further to the south lies Folly Brook – a watercourse that connects the Connecticut River to Wethersfield Cove. Wethersfield Cove is a large open water resource that has formed in the oxbow of an historical Connecticut River channel. The forested area along the north side of Folly Brook and Wethersfield Cove is a city-owned natural area.

In general, the forested wetlands east and south of the dike and to the east across the Connecticut River are dominated by Silver Maples in the tree layer, with Eastern Cottonwood, Sycamore (*Platanus occidentalis*), and Basswood (*Tilia americana*) having significant coverages locally. The shrub layer below the closed canopy of the riparian forest is sparse to non-existent in most areas except at the forest edges where Multiflora rose (*Rosa multiflora*) and False Indigo (*Amorpha fruiticosa*) are common in the uplands and willow and elderberry occur in the wetland areas. Large stands of Stinging Nettle (*Urtica dioica*), False Nettle, and Jewelweed (*Impatiens capensis*) were noted as having significant coverages in the herbaceous layer with Sensitive Fern (*Onoclea sensibilis*), Cocklebur (Xanthium strumarium), and White Grass (*Leersia virginica*) also present. Poison Ivy (*Toxicodendron radicans*) is dominant in the liana layer.



Floodplain forest of Folly Brook Natural Area south of Airport and ACOE Flood Control Dike

Just south of Runway 2 are two open detention basins that appear to be used for stormwater management. Other small vegetated wetland/watercourse resource areas exist to the west of the commercial properties along Brainard Road. Many of these resource areas serve as stormwater drainage channels. The majority of these resources areas are dominated by *Phragmites* with some areas shaded by mature trees such as willow, Basswood, and Silver Maple.

Table 8 National Wetlands Inventory Wetland Cover Types on and adjacent to Hartford -Brainard Airport

Wetlands Cover Types and NWI Classification	Location	Major Wetland Plant Associations / Types
Palustrine Emergent Marsh (PEM)	South of Runway 2 (occurs as an inclusion within Parcel 2)	Herbaceous emergent non-persistent hydrophytes
Palustrine Forested Wetlands (PFO) – Silver Maple Floodplain Forest	Parcels 1, 2	Silver Maple, Eastern Cottonwood, Pin Oak, Smallspike, Sensitive Fern, Stinging Nettle, Cinnamon Fern
Connecticut River (R2UBHh)	East of Runways 2, 20, 29	Riparian zone trees such as American Sycamore, Eastern Cottonwood

Within the designated obstruction removal limits, additional private parcels have been identified as having potential for wetland impacts associated with this project. Much of the approach surface areas immediately east of Runways 20 and 29 (Parcel 1) and south of Runway 2 (Parcel 2) exist as forested river floodplain where selective tree removal of approach surface obstructions is proposed.

5.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental, social, and economic impacts associated with the Recommended Alternative (i.e. Build Alternative). The analysis in this chapter was conducted in accordance with FAA Order 5050.4B "*National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions,*" FAA Order 1050.1E "*Environmental Impacts: Policies and Procedures*," and applicable federal and state environmental regulations. Based on the information in this chapter, coordination with federal and state agencies, and review of public comments, the FAA will determine if the Build Alternative would involve significant impacts. The FAA will also ensure that the document presents a full, accurate, and fair assessment of the environmental consequences of the proposed action.

Consistent with the FAA Orders 5050.4B and 1050.1E the following impact categories are addressed:

- Air Quality
- Coastal Resources
- Compatible Land Use
- Construction Impacts
- Department of Transportation Act: Section 4(f)
- Farmland
- Fish, Wildlife, and Plants
- Floodplains
- Hazardous Materials, Pollution Prevention, and Solid Waste
- Historical, Architectural, Archeological, and Cultural Resources
- Light Emissions and Visual
- Natural Resources and Energy Supply
- Noise
- Secondary (Induced)
- Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks
- Water Quality
- Wetlands
- Wild and Scenic Rivers

Anticipated permit requirements and an impact summary are provided at the end of the chapter.

5.1 AIR QUALITY

The Clean Air Act (CAA) Amendments of 1990 authorized the U.S. Environmental Protection Agency (EPA) to establish standards, known as the National Ambient Air Quality Standards (NAAQS), which are considered harmful to the public and the environment.

The CAA established two national air quality standards, including Primary and Secondary Standards. Primary Standards were established to set limits on harmful pollutants to protect the public and sensitive receptors (asthmatics, children and the elderly). Secondary Standards were set to protect the public welfare by accounting for the effects of air pollution on the public welfare, which includes protection against impaired visibility, damage to animals, soil, vegetation, crops, buildings, and other aspects of the general welfare.

The EPA has established NAAQS for the following six "criteria air pollutants" in order to protect the health and welfare of the general public. These pollutants are listed below.

- Ozone (O_3)
- Carbon monoxide (CO)
- Particulates (PM-10)
- Sulfur dioxide (SO_2)
- Nitrogen dioxide (NO_2)
- Lead (Pb)

According to the Connecticut Department of Energy & Environmental Protection (CTDEEP), Hartford County is currently in attainment for all criteria air pollutants with the exception of 8-hour Ozone. Hartford County is part of the 5-county Greater Connecticut Area and is classified as a marginal Nonattainment Area and subject to planning and emission reduction requirements as specified in the Clean Air Act.

Section 176(c) of the CAA as amended in 1990, requires that Federal actions conform to the appropriate Federal or State air quality plans in order to attain the CAA's air quality goals.
Conformity is defined as conformity to the implementation plan's purpose of eliminate of recusing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards, and that such Federal activities will not:

(1) Cause of contribute to any new violation of any standard in any area
(2) Increase the frequency or severity of any existing violation of any standard in any area
(3) Delay timely attainment of any standard of any required interim emission reductions or other milestones in any area.[1]

The obstruction removal will improve safety, but will not change the operating characteristics of the airport. There will be no changes in activity levels, aircraft types or other facilities and as such there will be no changes in air quality as a result of this work. No impacts are anticipated and therefor no further evaluation is be needed.

5.2 COASTAL RESOURCES

The CTDEEP administers the Connecticut Coastal Management Program, enacted in 1980 to protect coastal resources, including restoration of coastal habitat, improve public access, promote harbor management, and regulate work within tidal, coastal and navigable waters.

The Airport is not situated within a designated Coastal Zone, and therefore there will be no impact to designated coastal areas as a result of the Preferred Alternative. As a result, no additional evaluation is necessary.

5.3 COMPATIBLE LAND USE

Hartford-Brainard Airport is zoned Industrial I-2. Lands to the west of Airport and I-91 are also zoned I-2. A small land area west of the Airport situated between I-91 and Brainard Road is zoned Commercial C-1. To the east, north and south generally on the banks of the Connecticut River the zoning designation in Public Property and Cemetery District (P). North of the airport are pockets of I-2, P and High Density Residential (R-1). South of the Airport and Runway 2 in the Town of Wethersfield lands are zoned Agriculture (AG).

[1] U.S. Department of Transportation, FAA Order 1050.1E, Appendix A, Section 2.1f

Runway 2 Approach
General land use consists within the approach includes forested undeveloped area of Folly Brook Natural Area. East of the Airport and the Connecticut River in the Town of East Hartford lands are also undeveloped and forested. Parcel 1 is an undeveloped, forested parcel located on the banks of the Connecticut River. Parcel 2 is also undeveloped and forested and is part of the Folly Brook Natural Area. The removal of trees on this undeveloped, forested parcel will not impact land use or zoning in the area.

Runway 11 Approach
Lands at the end of Runway 11 are generally developed for commercial and business uses and also include I-91, and Routes 5 and 15. Parcels 7 and 8 are identified for the selective removal of trees and are in commercial use. Therefore the selective removal of potential obstructions will not impact land use or zoning in this area.

Runway 20 Approach
Lands within the Runway 20 approach include cleared and forested areas on the south bank of the Connecticut River. Affected Parcel number 1 includes the both the removal and selective removal of trees in an undeveloped area on the banks of the Connecticut River. The removal of trees will not impact land use or zoning in this area.

Runway 29 Approach
Land use within the Runway 29 approach consists of undeveloped forested areas on the west banks of the Connecticut River at the end of Runway 29. This area of Parcel 1 has been identified for the removal of trees. The removal of these obstructions will have no impact on zoning or land use in the area.

Overall the project does not alter airport operations or flight patterns and therefor will not have any impacts on adjacent land use or zoning.

5.4 CONSTRUCTION IMPACTS

Potential impacts from the removal of trees are not expected to be significant. Tree removal or installation activities may produce temporary environmental disturbances, such as noise from equipment, air quality impacts from dust, minor soil erosion and sedimentation, and minor disruption of local traffic patterns. These impacts can be mitigated through careful planning and consideration, as well as quality construction supervision.

Obstruction removal for Runways will occur in both undeveloped and developed areas. The areas identified for removal and selective removal associated with Runways 2, 20 and 29 (Parcels 1 and 2) approaches are forested. The selective removal area associated with the Runway 11 approach includes commercial development (Parcels 7 and 8).

5.4.1 Construction Noise

As with any construction project, the use of construction equipment and construction traffic will temporarily generates noise. All construction equipment and vehicles will be properly maintained and tuned to minimize the potential for noise. Upon project completion, ambient noise levels will return to pre-existing conditions.

5.4.2 Air Quality

Air quality impacts during construction would be limited to short-term increases in fugitive dust, particulates, and localized pollutant emissions from construction vehicles and equipment during tree removal. As stated above, all

construction equipment should be properly maintained and outfitted with emission reducing exhaust equipment. The work involves the selective removing of trees that have been identified as obstructions; other vegetation and ground covers will not be removed, protecting the soil from erosion and thereby limiting the potential for increases in fugitive dust. Adherence to the soil and erosion control plan as required in the Stormwater Pollution Protection Plan (SWPPP) will further mitigate any potential impacts.

Temporary Construction Impacts

5.4.3 Sedimentation & Erosion

The potential for erosion during the selective removal of obstructions is minimal as all remaining vegetation and ground covers will remain and no new impervious surfaces will be created as part of construction operations. Adherence to the soil and erosion control plan as required in the SWPPP will further mitigate any potential impacts.

5.4.4 Traffic

Construction vehicles will enter and exit local roads throughout the duration of construction. Impacts to traffic patterns will be limited as all construction activities will be performed beyond the limits of the public roadways. In order to limit impacts related to construction impacts the community will be notified of the start date of this project and alert them to potential construction traffic.

5.5 DEPARTMENT OF TRANSPORTATION ACT: SECTION 4(f) LANDS CONSTRUCTION IMPACTS

Section 4(f) of the Department of Transportation (DOT) Act of 1966 states that the Federal Highway Administration and other DOT agencies cannot approve any program or project that requires the use of land from publicly owned recreation areas, parks, wildlife and waterfowl refuges, or public and private historical sites unless there is a determination that there is no feasible and prudent alternative, or the action includes all possible planning to minimize harm to the property resulting from use.

One such Section 4(f) property, the Folly Brook Natural Area, is located within the tree removal area of the proposed action (also referred to as the Folly Brook Nature Conservancy in the legal description of the subject easement). The Folly Brook Natural Area is located south of Runway 2, in the location between the Connecticut River and Bakers Cove, and was designated to protect the ecological, scientific, educational, and aesthetic value of the area in its present state, and to protect against development and exploitation.

The proposed tree removal includes a portion of this area (Parcel 2, south of Runway 2), which is necessary to protect the Threshold Surface of the runway. Tree removal has occurred within Folly Brook Natural Area in the past by the Connecticut Department of Transportation, but tree regrowth in the past 15-20 years now once again requires removals to protect airport operational safety. This subject parcel is located within the Town of Wethersfield, but is owned by the City of Hartford.

The Folly Brook Natural Area was formally established in 1989, through a conservation easement:

The **Conservation Easement** (1989 to 2039):
A 50-year easement granted by the City of Hartford, the property owner, to The Nature Conservancy of Connecticut, Inc., and filed in the Wethersfield land records. The easements is for the preservation and protection of this natural area, but includes the requirement to establish a tree clearing plan to protect the airspace of the Hartford-Brainard Airport. The required maintenance plan was executed the following year – 1990.

In addition to the easement, this City property also contains an Airport Approach Plan Deed Restriction, which prevents the City from allowing trees to grow above the elevations of the FAA designated approach surface. The tree maintenance plan is consistent with the deed restriction.

Tree Maintenance Plan (1990):
A legal agreement between City of Hartford and The Nature Conservancy of Connecticut, Inc. is in effect until the Conservation Easement expires in 2039 (or is extended by both parties). The tree maintenance plan is intended to restrict tree heights to federal airspace limits. The plan includes the location of the Runway Protection Zone (RPZ) (formally the Clear Zone) and the transitional area west of the RPZ. Four areas are listed in the tree maintenance plan:

- Area A: No restriction of tree clearing
- Area B: Tree clearing as needed on a rotational basis (not all at once)
- Area C & D: Tree clearing limited to identified obstructions or hazards

For consistency with the Conservation Easement, the proposed action would follow the requirements of the Tree Maintenance Plan, which are generally consistent with the proposed tree removal. As the Connecticut Airport Authority (CAA) is not party to the tree maintenance plan, coordination will be required with the City of Hartford. With approval, the CAA could function as a proxy for the City, and coordinate tree removal with The Conservancy, as well as obtain any required state and federal permits.

It is anticipating that the CAA can develop a compatible tree removal approach acceptable to the City and The Conservancy, and enable completion of the tree removal and thinning in the Folly Brook Natural Area. The removals will not change the purpose, use, or access to the natural area and does not include development activities. As small trees and undergrowth would be retained, tree cover will be reduced, but no 4(f) activity will be prevented from the designated area.

A second Section 4(f) property is located on the east side of the Connecticut River and includes a small area of proposed tree removal. This area is named the Keeney Cove Marsh Wildlife Management Area (WMA), which is part of the overall Connecticut River Wildlife Management Area. The property is located across the river from the Folly Brook Natural Area and is owned by Great Meadows Conservation Trust. The proposed tree removal includes small portions of the properties labelled as Parcels 4, 5 and 6, in the Town of Glastonbury. The selective tree removal is recommended to protect instrument flight operations to Runway 2, which includes an offset Localizer-type Directional Aid (LDA) procedure where landing aircraft overfly the river and undeveloped locations to the east.

There is no existing tree management plan covering this area. As such, like other off airport properties, the CAA would work with the property owner, Great Meadows Conservation Trust and the CT Department of Energy and Conservation to create a removal plan that minimizes ecological impacts. As the proposed action does not prevent the conservation of the area or impact the use of the property, Section 4(f) impacts are not anticipated.

The remaining recommended tree removal areas at Hartford-Brainard Airport are not located within parks, wildlife and waterfowl refuges. Therefore this project should have no significant effect on 4(f) lands.

5.6 FARMLAND

The Natural Resource Conservation Service (NRCS), within the United States Department of Agriculture (USDA) has established guidelines under the Farmland Protection Policy Act (FPPA) for federal activities that involve directly undertaking, financing, or approving a project that would impact farmland soils. The guidelines recognize that the quality of farmland varies based on soil conditions, and places higher value on soils with high productivity potential. To preserve these highly productive soils, the NRCS classifies soil types as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. The NRCS requires that soils in these categories be given proper consideration before they are converted to non-farming uses by federal programs. The NRCS policy and procedures on prime and unique farmland are published in the Federal Register (Volume 43, No. 21, January 31, 1978).

According to Web Soil Survey from the NRCS, the following soil types identified as prime farmland or farmland of statewide importance are mapped in the vicinity of the affected parcels.
Prime Farmland:

- Winooski Silt Loam, 0-3% slopes (106)

Farmland of Statewide Importance:

- Limerick and Lim Soils, 0-3% slopes (107)

These soils are located in forested or commercially developed areas and are not in agricultural use.

The implementation of the appropriate soil erosion controls mitigates the potential for impacts to farmland soils from tree removal activities. The tree removal locations do not do not contain any active farmland areas and therefore no adverse effects or significant impacts are expected to occur. Furthermore, the project does not include any development activities, new impervious areas, or acquisition of property.

5.7 FISH, WILDLIFE, and PLANTS

Floodplain forested habitat would be directly impacted by the proposed tree clearing activity (See discussion of Forest Wetland habitat in Section 5.17 below). Forest or woodland areas of various size could be impacted by individual tree cutting, stand cutting, or clear cutting on a portion of the existing forest block. Un-fragmented forest cover typically provides habitat for successful breeding populations of "area-sensitive" species. Generally speaking, clear-cutting and other timber treatments that would result in the disruption of contiguous canopy coverage in these habitats may render such habitat unsuitable for those species, many of which are species of state and federal conservation concern. Avifauna are the most prevalent group of vertebrate wildlife occurring in the obstruction removal areas, with some species requiring large tracks of undisturbed forest for successful breeding.

Un-fragmented forest blocks larger than 500 acres generally have higher success rates than do the smaller blocks for forest interior breeding species. These large forested habitat blocks tend to have higher successful breeding rates of forest interior avifaunal populations and are also important for other larger vertebrate organisms as well. Habitat blocks between 125 and 500 acres in size are considered to have less but still fair to important value for forest interior avifauna, especially if the surrounding landscape is not intensely developed. Forest blocks smaller than 125 acres can be considered to have poor to fair value for supporting populations of forest interior species. At a size of approximately 80 acres, much of which exists as a linear riparian fringe along the bank of the Connecticut River, the floodplain forest adjacent to Hartford-Brainard Airport (and east of Runways 2 and 20) is not likely to be high value to forest interior breeding bird species. The forested banks of the Connecticut River do, however, have significance as a major migratory habitat corridor for neotropical songbird and other forest birds during northbound (spring) and southbound (autumn) movements.

A preliminary estimate of impact to contiguous canopy coverage (either through potential clear cut or patch cut treatments) within existing forest habitat blocks at each runway end as a result of the proposed action is as follows:

- Runway 2 – Approximately 20 acres of tree removal from within the Threshold Surface and Approach Surface Areas and additional selective removal in the Transitional Surface Area. All from within the adjacent 80 acre floodplain forest.
- Runway 20 – Approximately 7 acres of tree removal from within the Threshold Surface and Approach Surface Areas and an additional selective removal in the Transitional Surface Area. All from within the adjacent 80 acre floodplain forest
- Runway 11 – A few scatted tree removals from adjacent commercial properties
- Runway 29 – Five acres of tree removal and selective tree removal from within the Threshold Surface Area, Approach Surface Areas, and the Transitional Surface Area within the adjacent 80 acre floodplain forest adjacent to the dike.

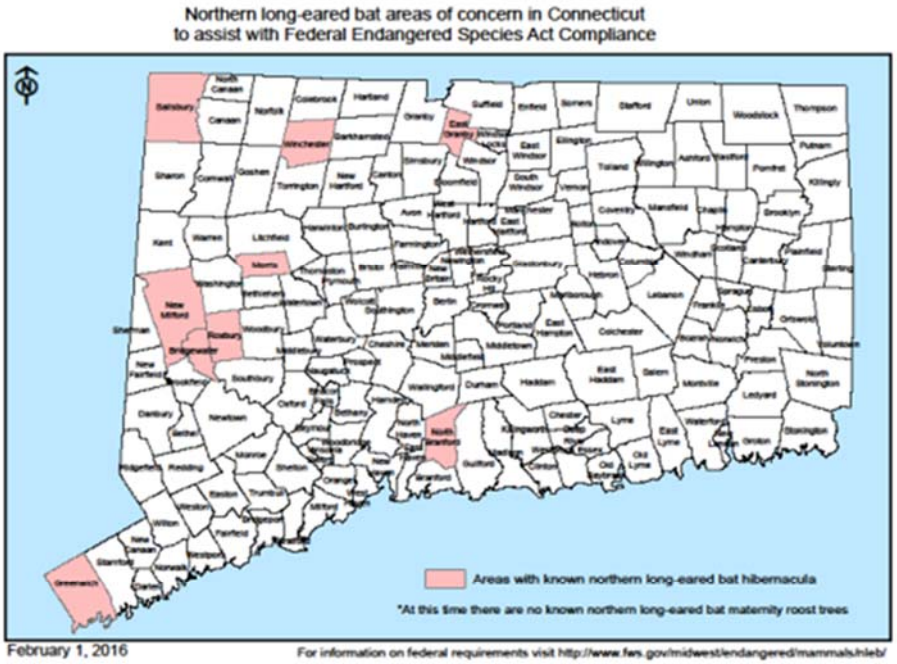
Regardless of the limited value of the forests to interior avifauna, the forested habitat blocks at Hartford-Brainard Airport that lie within the obstruction removal areas do provide wildlife habitat to edge species and species that do not require large contiguous tracts of forest interior (habitat "generalists"). These forest blocks also serve other ecological functions and values as well, which may include but may not necessarily be limited to the following:

- Soil generation
- Soil and bank stabilization
- Temperature moderation
- Wind reduction
- Water retention
- Nutrient and production export
- Noise mitigation
- Pollution retention
- Aesthetic value

The loss of a majority of these forest ecological functions and values would be avoided or minimized by employing best management practices (BMPs) for tree cutting, by adhering to seasonal restrictions, and by felling timber in place with no or minimal harvest. No large-scale clearing or grubbing across the entire obstruction removal area is included as part of the proposed action. Therefore, soil stabilization is not expected to be a major issue as large areas of bare soil will not be generated and exposed to the erosive forces of wind and water. Implementation of erosion and sedimentation control BMP's would further reduce the risk of soil loss from the occasional areas where limited amounts of soil disturbance might occur from equipment access.

Removal of the mature tree cover from within the obstruction removal areas at Hartford-Brainard Airport in the manner discussed above would actually serve to improve the habitat for certain species of conservation concern identified by the CTDEEP and USFWS as having potential to occur within the project area. They include species known to require shrubland or emergent marsh habitats (e.g., Least and American Bitterns, Pied-billed Grebe) and therefore, forest interiors do not meet their habitat requirements. Upland species that would benefit from mature tree canopy removal and the subsequent and expected development of a robust shrub layer include the American Kestrel, Black-billed Cuckoo, Prairie Warbler, Blue-winged Warbler, and Fox Sparrow. Wetland species that would utilize enhanced shrub cover within a palustrine system include the Rusty Blackbird and Canada Warbler.

The IPaC report also identified the Northern Long-eared Bat as having a distributional range that includes the project area. Tree clearing in general within the range of the Northern Long-eared Bat is a potential concern for the conservation of this species. However, pursuant to the Final 4(d) Special Rule under authority of the Endangered Species Act, the USFWS would not require surveys to determine the presence of Northern Long-eared Bat if the project site does not occur within a ¼ mile from a known hibernaculum or contain a maternity roost site. The USFWS defers to the state wildlife resource agencies for information on hibernacula and maternity site locations. The CTDEEP NDDB did not identify Northern Long-eared Bat as occurring within the project area. Based upon this information, it can be concluded that the proposed action would result in "not likely to effect" the Northern Long-eared Bat. The sponsoring federal agency must request USFWS concurrence with this conclusion via a hard copy letter for documentation to accompany subsequent project permit applications.



Known Locations of Northern Long-eared Bat Hibernacula in CT

(from CTDEEP accessed July 12, 2016 via www at:
http://www.ct.gov/deep/lib/deep/endangered_species/images/nleb_approved2_16.pdf)

Pursuant to the Migratory Bird Treaty Act and the Bald and Golden Eagles Protection Act, any activity which results in the "take" of migratory birds or eagles is prohibited unless authorized by the USFWS. According to the USFWS IPaC report generated for the project area, there are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Therefore, the federal agency responsible for the proposed action must analyze potential impacts to these bird species and implement appropriate conservation measures for all project activities. However the Proposed Action is not likely to have any negative effects on the relevant species identified by the USFWS if work is conducted outside the breeding season. Since the breeding season for the Bald Eagle is known to be as early in the calendar year as February, additional measures pursuant to federal guidelines for the protection of eagles would likely be warranted.

A typical requisite measure pursuant to these guidelines is to maintain a 660 foot no disturbance zone around active nesting eagles. With the above mitigation measures enacted, no takes of these species are anticipated.

Conclusion: Direct impacts to forest/woodland dependent species of conservation concern identified by state and federal personnel can likely be avoided through restriction of tree removal activities to seasonal periods when these species are not present. In order to remove trees during the breeding season, a biological survey would likely be needed to ascertain the forest/woodland dependent species (e.g., Wood Thrush and Worm-eating Warbler) that may occur within the forest blocks subject to tree cutting. The parcels of issue include Parcels 1 and 2. The goal of a biological survey would be to assess the potential presence of the forest conservation concern

and listed species on those parcels during the breeding season. If those species were found, then follow-on agency consultation may be required to address impact to the habitats of these species, and mitigation may be required.

As this process can be time consuming, CAA's preferred approach will include tree removal during early winter conditions, avoiding the plant growing and migratory bird breeding season. As discussed, under the wetland evaluation, winter cutting is often the preferred approach to minimize potential impacts, and will be employed by CAA. Based on other airport obstruction removal projects, direct impact to these species may be avoided via use of seasonal restrictions (e.g., no tree cutting from May through August when these species are known to breed in New England), or in the case of nesting Bald Eagles, no cutting within 660 feet of an active eagle nest. As such, significant impacts to critical species is not anticipated. This conclusion will be reviewed by USFWS and CT DEEP to determine if biological surveys and potential mitigation are necessary

5.8 FLOODPLAINS

The Federal Emergency Management Agency (FEMA) publishes Flood Insurance Rate Maps (FIRMs) that depict 100-year and 500-year floodplains in many areas throughout the country. A 100-year floodplain is an area that has a 1% chance of being flooded in any given year (Zone A). A 500-year floodplain is an area that has a 0.2% chance of being flooded in a given year (Zone B).

According to the applicable FIRM (Community Panel 09003C0507G) all of the Airport is located in Zone AE (100-year floodplain). Affected parcels associated with Runway 2 (Parcels 1 and 2) are mapped in the 100-year flood plain with the exception of a very small area that falls in the 500- year flood plain. Affected parcels associated with Runway 20 (Parcel 1) and Runway 29 (Parcel 1) are both mapped in the 100-year floodplain.

Tree removal does not impact flood levels however it has potential to increase runoff rates. In this instance the potential for erosion during the selective removal of these obstructions is minimal as all remaining vegetation and ground covers will remain and no new impervious surfaces will be created as part of construction operations. Adherence to the soil and erosion control plan as required in the SWPPP will further mitigate any potential impacts.

5.9 HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

The scope of this task consisted of a database review of the relevant State and Federal environmental regulatory agency records and a visual field inspection for potential hazardous materials located within the project areas. Tree clearing activities do not create hazardous materials concerns in and of themselves; however it is important to identify any potential hazardous materials in the clearing areas and access routes which may be encountered during clearing activities and require specialized management. A more detailed Environmental Site Assessment would be conducted should hazardous materials be observed and/or encountered.

5.9.1 Database Review

The database review consisted of a search for records in the applicable State and Federal environmental regulatory agency records for each property located in the tree clearing areas. Special attention was given to those databases for hazardous materials spills and dumping, as these are the most likely to impact tree clearing activities.

None of the identified properties where tree removal activities are to take place were listed by any of the regulatory agency databases reviewed for this task.

5.9.2 Field Inspection

The field inspection was conducted on July 30, 2015 and consisted of a detailed visual inspection of the areas of concern. During the field inspection, CHA personnel were met by Mr. Bob Nogas of the CAA. Information pertaining to the history and past uses of the areas of concern is incorporated in the summary below.

On-site Tree Clearing Areas
The only area on airport property slated for tree removal activities is a small area north of Runway 20. No hazardous materials were observed in this area.

Off-site Tree Clearing Areas
A small area west of Runway 11 is slated for selective tree removal activities. There were no hazardous materials observed in this area.

There is an extensive area between the flood dyke and the Connecticut River which is slated for tree removal activities. This area will have both selective and complete tree removal. It extends from north of Runway 20 along the east side of the airport to the areas south of Runway 2. Due to its proximity to the river, small amounts of debris were noted, likely washed up during flooding of the river. No hazardous materials were observed in this area.

There is a small area slated for selective tree removal located across the Connecticut River, south of the airport. Minor amounts of household debris were observed in this area. No hazardous materials were observed in this area.

Summary
No potential hazardous materials or concerns were identified by the regulatory database review. No hazardous materials were observed during the visual inspection. In summary, at this time, there are no known hazardous materials in the areas of concern at the Hartford-Brainard Airport.

It should be noted that the database searches can only reveal reported hazardous materials concerns. Unreported spills or dumping of hazardous materials will not appear in these database searches. The visual field inspection was somewhat limited due to the large areas involved and the dense undergrowth encountered in some locations. Additionally, only hazardous materials present at the areas of concern at the time of the site inspection (July 30, 2015) are discussed in this report. Future dumping of hazardous materials at these sites may occur and care should be exercised if unidentified potential hazardous materials are encountered during tree clearing operations.

5.10 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act requires Federal agencies to review the potential effects of a proposed project on cultural resources. Through consultation, agencies identify historic properties within or adjacent to the project area and find ways to avoid, minimize or mitigate the potential effects on the identified resource while accommodating the proposed project.

Tree removal will generally include clearing without grubbing. The Proposed Action does not include impacts or removal of any buildings or structures. Access would be provided by unimproved routes without grading or paving. It is anticipated that no significant soil disturbance will occur and as a result impacts to cultural resources will be avoided.

To confirm this, correspondence describing the project including mapping of potential affected parcels was submitted to the Connecticut State Historic Preservation Office (SHPO) for review. Their review indicated that although there are archeological sites or historic resources in close proximity of affected parcels, SHPO recognizes that tree removal can be accomplished with minimal ground disturbance without clearing and grubbing (Appendix B).

The tree removal areas of the proposed action remain northeast of Interstate 91 and Wethersfield Cove, and thus do not impact the Old Wethersfield Historic District or any historic structures.

5.11 LIGHT EMISSIONS AND VISUAL

5.11.1 Light Emissions

The removal of tree obstructions will not result in light emissions. All tree removal operations will take place during daylight hours therefore no impacts related to light emissions are anticipated.

5.11.2 Visual Impacts

Tree obstructions to be removed or selectively thinned have been identified in the following locations in the vicinity of residential properties:

Runway 2 Approach
There affected parcel associated with Runway 2 are undeveloped, wooded parcels. There are no nearby residential parcels or uses and as such no views from residences will be impacted.

Runway 11 Approach
This selective removal area is located immediately adjacent to Brainard Road on the Best Western Inn and Suites parcel. Surrounding uses are also commercial; no residential uses are in this area located between Routes 5 and 15 and Brainard Road and as a result no visual impacts to residences were identified.

Runway 20 Approach
No residential uses are located on or adjacent of the affected parcel at the end of Runway 20. The closest residential uses are on the opposite side of the Connecticut River and I-91. No visual impacts to residences were identified.

Runway 29 Approach
This tree removal area consists of an undeveloped, wooded parcel that borders the Connecticut River. The closest residential area is on the opposite side of the Connecticut River and is further screened by undeveloped wooded areas. No visual impacts to residences were identified.

5.12 NATURAL RESOURCES AND ENERGY SUPPLY

Energy demands associated with the proposed project is expected to be minimal as an increase in the demand for energy supplies will only occur during construction and will be limited to transportation and construction vehicles and equipment This will not impact local or regional supplies.

5.13 NOISE

The preferred alternative includes the selective removal of obstructions (trees) within the project area. During this removal it is possible that some nearby residents will experience short-term noise resulting from the removal activities. The preferred alternative will not affect airport activity levels. As such, the project has no influence on overall aircraft generated noise.

Selective removal of trees is planned northwest of Runway 15 on Parcel 22 which appears to include a residence as well as a greenhouse operation. Trees removal has no impact on noise from overflights and as a result the selective removal of trees will not result in an increase in noise emissions after the clearing is completed.

5.14 SOCIOECONOMIC ISSUES

5.14.1 Social

Social impacts can consist of a wide range of considerations as discussed below. The social and economic concerns are always specific to the proposed action, and may include impacts such as include displacement of residents, neighborhood disruption, tax base reduction, changes in school population, public services and other community concerns.

Socioeconomic impacts are typically defined as disruptions to surrounding communities, such as shifts in patterns of population movement and growth, changes in public service demands, loss of tax revenue, and changes in employment and economic activity stemming from airport development. These impacts may result from the closure of roads, increased traffic congestion, acquisition of business districts or neighborhoods, and/or by disproportionately affecting low income or minority populations.

There will be no acquisition of land, displacement of any populations or neighborhood disruption as a result of this project. Property values will not be significantly impacted by selective removal of obstructions; therefore there will be no impact on the tax base or tax revenue of any sector. With no displacement/impact to populations there will be no impact to school populations.

Obstruction removal in no way effects the delivery of existing or future public service. The only effect of the obstruction removal is to increase the safety of airport operations; decreasing the risk of aircraft incidents thereby decreasing the possibility of loss of property or human capital. This also applies to children's environmental health and safety risks which may be associated with the pollution of air, food, water, recreational waters, soil, or products that a child is likely to be exposed to. The proposed project does not have the potential for significant impacts to this or for any population category.

5.14.2 Environmental Justice

In regards to civil rights and environmental justice, the EPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Title VI was enacted as part of the Civil Rights Act of 1964 to protect against discrimination based on race, color, and national origin in programs and activities receiving federal financial assistance[2]. To prevent further such occurrences, Executive Order 12898 *"Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"* was authorized in 1994.

The city of Hartford is included on the 2015 CT Department of Economic and Community Development list of distressed communities. As the purposed of the project is to remove obstructions in order to improve safety for aircraft as well as the surrounding areas. Based on the type of project under consideration, this will not result in a disproportionate impact to this population; the only impact to the surrounding neighborhood will be reduced risk of aircraft incidents. As a result there are no impacts to low income or minority populations.

5.14.3 Children's Health and Safety Risks

The proposed project will not result in environmental health risks and safety risks. The proposed project will not create or make more readily available products or substances that contact or ingestions through air, food, drinking water, recreational waters, or soil could harm children and therefore will not result in any significant impacts to children's health or safety.

5.15 SOLID WASTE

Trees removal activities on affected parcels will be conducted by a licensed and insured tree removal contractor. With the exception of limited vegetative matter that may be spread on site for decomposition, all materials, such as salvageable timber (lumber), firewood, and woodchips for landscaping or pellets will be recycled. These materials will be removed from the site by the contractor. If prescribed by agreement with property owners, logs and other materials may be left on site for use by the owner, in an approved means described in writing. As such, no solid waste impacts are anticipated.

5.16 WATER QUALITY

5.16.1 Ground Water

The CTDEEP classifies types of groundwater along with their respective designated uses. Groundwater in the vicinity of the Hartford-Brainard airport is designated by the CTDEEP as Class GB. Class GB groundwater is found in areas with a long history of urban or industrial activity. These areas are served by public water supply systems. Groundwater with this designation is presumed not suitable for human consumption without treatment.

According to the Connecticut Environmental Conditions Online Mapping (CTECO), the project area is not located within an aquifer protection area. Tree removal projects do not produce wastewater or effluent, and thus do not generally impact ground water.

[2] Title VI, 42 U.S.C. § 2000d et seq, United States Department of Justice

5.16.2 Surface Water

The federal Clean Water Act (CWA) and the Connecticut General Statutes establish water quality standards for all surface waters of the state. Surface waters near the Airport include the Connecticut River, Wethersfield Cove, and Folly Brook which are designated Class SB (coastal or marine) surface waters. Class SB designated water uses Designated uses include marine fish, shellfish and wildlife habitat, shellfish harvesting for transfer to approved areas for purification prior to human consumption, recreation, industrial and other legitimate uses including navigation.

There will be no increase in total impervious surface resulting from the removal of trees and therefore no significant changes in drainage patterns or flow rates are expected and as a result no permanent stormwater management systems are will be constructed.

5.17 WETLANDS

Palustrine forested (PFO) wetlands are the dominant wetland cover type within the obstruction removal areas. In some areas, the canopy of these PFO wetlands is contiguous. In other areas, the PFO is interspersed with scrub/shrub dominated wetlands, emergent inclusions, or open water areas. Regardless, removal of the canopy layer would impact mainly PFO wetland cover types as tree removal work would not be required in palustrine emergent (PEM) palustrine scrub/shrub (PSS) or palustrine open water (POW) areas.

Thus, PFO wetlands within poorly-drained floodplain soils would become Palustrine Scrub/Shrub (PSS) wetlands as the understory layer that is currently being shaded would be released when exposed to more sunlight once the tall trees are removed. Existing sapling hydrophytes would eventually grow to form a woody overstory canopy over time (if periodic maintenance is not conducted). Since a tall overstory layer is produced by succession over time, the loss of the overstory tree layer cannot realistically be immediately replaced through wetland enhancement or mitigation measures.

However, there are a number of reasons why impact to palustrine wetlands are not expected to be significant. They include the following:

1) The primary wetland functions would not change. The Palustrine wetlands would still provide sediment retention, bank stabilization, nutrient retention/transformation, pollution retention/ transformation, production export, groundwater recharge/discharge, and wildlife habitat, as only the tree layer would be substantially reduced.
2) Wildlife habitat function for certain species of conservation concern reported to occur within or proximate to project area could potentially improve (e.g., Least and American Bitterns, Pied-billed Grebe).
3) An increase in the understory of water-loving shrubs would increase the diversity of nectar, pollen, and soft mast-producing plants as they responded to better sunlight conditions reaching the lower vegetation strata. Examples of native shrubs that may respond to increased light at this location include Highbush Blueberry (*Vaccinium corymbosum*), Northern Arrowwood (*Viburnum dentatum*), Elderberry (*Sambucus nigra*), and various dogwoods. This would increase the diversity of production export from the wetland and benefit many species of small mammals, migratory birds, and resident birds.
4) Nutrients tied up in tree biomass will return to the system via the natural decomposition process.
5) Loss of a mature tree layer is a natural ecological endpoint along a successional trajectory for many riparian wetlands as windstorms topple shallowly rooted trees (e.g., Red Maples), or banks become repeatedly undercut over time from ice scour or channel water flows.

Furthermore, impact to a number of ecological functions and values would be avoided or minimized by employing best management practices (BMPs) for tree cutting within wetlands. These BMPs include the installation and maintenance of erosion and sedimentation control measures, seasonal work restrictions (if applicable) to breeding wildlife resources of conservation concern, and by felling timber in place with no or minimal harvest.

Trees can also be cut in such a way as to fell them as "live cuts". These are trees that are felled in such a way that when they are cut they can be toppled despite the retention of a hinge of wood and bark on one side. This may allow the tree to survive once it is toppled. Thus the crown becomes immediate living cover in the shrub/sapling layer. Species that respond the best to live cuts are those that are not so brittle as to break off completely when they are felled. Cutting in winter is not ideal for increasing the chance of survival of live cuts, so tree mortality may be high. Regardless, cutting and felling in place using the live cut method could help anchor large woody debris in place so that they do not become a navigational hazard to boats and dock structures in the Connecticut River during spring floods. The specific methods will be finalized during the permitting process in coordination with CT DEEP.

No large-scale clearing, grubbing, excavation, dredging, or filling within wetland or watercourse resources is included as part of the Proposed Action. Vehicular access to many of the designated tree removal areas is possible using the existing network of roads used to maintain the ACOE flood control dike. The project specifications can avoid the use of timber mats by requiring non-mechanized removal techniques if desired. Alternatively, if frozen ground is present during tree removal, traditional clearing may be possible without temporary fills or soil disturbance. As frozen ground cannot be relied upon, hand cutting (i.e. using chainsaws) is anticipated within wetland areas thus avoiding vehicular traffic. The methods of access, tree cutting, work schedule, timing, and sequencing would be finalized during the permitting process in coordination with ACOE and CT DEEP. To avoid impacting native plants, chipping of felled trees could be avoided within sensitive natural areas.

Therefore, soil stabilization impact to hydric and wetland soils is not expected to be significant as large areas of bare soil will not be generated or exposed to the erosive forces of wind and water. Since tree root masses are not being removed from the system but will be left in place, bank stabilization is not expected to be compromised by tree cutting. Additionally, understory trees, shrubs and herbaceous ground cover along the banks of the Connecticut River and Folly Brook will proliferate since they will be released from the low light conditions in which they had formerly been growing. A concerted effort will be made to retain shrub vegetation along the bank of these resources to help maintain the stability of the riverine shoreline to the extent practicable. Implementation, inspection, and maintenance of erosion and sedimentation control BMPs would further reduce the risk of soil loss from the occasional areas where limited amounts of soil disturbance might occur in adjacent upland areas from construction vehicle movements.

The removal of tree cover from riverine systems also typically raises concerns regarding the potential for thermal pollution of surface waters, since the shade of overhanging trees helps to keep waters cooler. Warmer waters hold less dissolved oxygen than cooler waters making them unsuitable for sustaining cold water fisheries. Removal of riverbank trees may force cold water species to seek out cooler, deeper waters such as the lower depths of the river's navigation channel, or other shaded areas of the river reach.

Conclusion: During the permitting phase of the project, coordination with the United States Army Corps of Engineers (ACOE) and the CT DEEP will be conducted, to provide the plan details and process to avoid wetland impacts. Based on similar completed efforts in New England, it is anticipated that a Section 401 Water Quality Certification and Section 404 Permit will not be required, based on winter removal and the planned means and methods described above. Application to the local inland wetland and conservation commission is not required for the proposed activities.

Coordination with the CT DEEP Inland Water Resources Division (IWRD) will be completed to determine any requirements to satisfy the Connecticut Inland Wetland Protection Act. Although there will be no actual filling of wetlands the conversion of existing forested wetlands to scrub/shrub and emergent systems will alter the wetland systems and it is anticipated that state wetland permits will likely be needed. These changes will need to be documented and considered by CT DEEP, along with BMPs and mitigation measures. Presently the CAA is exempt from having to file Flood Management Certifications (FMC) with the CT DEEP Inland Water Resources Division (IWRD).

5.18 WILD AND SCENIC RIVERS

According to the National Park Service website, there are two rivers in Connecticut that are designated as Wild and Scenic Rivers: the Eight Mile River and Farmington River West Branch. These rivers are not in the vicinity of Waterbury-Oxford; therefore there will be no impact to any designated Wild and Scenic Rivers.

5.19 SUMMARY OF CONSEQUENCES

TABLE 9 – SUMMARY OF POTENTIAL IMPACTS AND KEY ISSUES

Impact Category	Potential Impact or Key Issue
Air Quality	The project is not anticipated to worsen the existing marginal non-attainment under NAAQS related to 8-hour ozone.
Compatible Land Use	The project will not cause a change in land use and is consistent with local zoning. No compatible land use impacts are anticipated.
Construction Impacts	Construction activity is restricted to a small project areas and will be completed in short timeframes. Tree removal will be conducted during daytime hours and employ proper erosion controls. As such, significant construction impacts (i.e., noise, air quality, erosion, traffic, etc.) are not anticipated.
Department of Transportation Act: Section 4(f)	The removal of trees within the Folly Brook Natural Area will not limit access or use of this area. As such, no impacts to 4(f) lands are expected.
Farmland	The farmland soils identified in the project area are either forested or in commercial use and have not been used as farmland in recent history. The project will not impact farming or soils classified as prime farmland.
Fish, Wildlife, and Plants	Conducting removals during winter conditions may prevent significant impacts to critical species. Detailed coordination with CTDEEP is anticipated during permitting.
Floodplains	Tree removal does not impact flood levels. The potential for erosion during the removal activity is minimal, as activities will adherence to a soil and erosion control plan.
Hazardous Materials	No potential hazardous materials or concerns were identified by the regulatory database review and no hazardous materials were observed during the visual site inspection. As of July 2015 there were no known hazardous materials in the areas of concern.
Historical, Architectural, Archeological, and Cultural Resources	SHPO has determined that the removal of trees will not have an impact on cultural or historic resources.
Light Emissions & Visual Effects	The proposed action will not create significant light emissions or long term visual impacts.
Natural Resources & Energy Supply	The proposed action will required only a limited amount of natural resources and energy during construction activities. No additional resources are needed following implementation.

Socioeconomic Impacts	The project will not result in any changes to land uses, the delivery of public services or the availability of jobs.
Water Quality	No water quality impacts are anticipated.
Wetlands	Based on the 'means and methods' of removal, the ACOE has routinely determined that no wetland impacts are created by this type of project, and federal permits are not needed. Coordination with the CT DEEP Inland Wetlands Resources Division (IWRD) will occur during the permitting process to satisfy the Connecticut Inland Wetland Protection Act and if any permits are necessary. It is anticipated that no mitigation will be necessary or if required will be minor.
Other Categories	The analysis identified that no coastal resources, solid waste sites, or wild or scenic rivers are located within the tree removal areas.

6.0 LIST OF PREPARERS

The following individuals prepared this EA on behalf of the CAA.

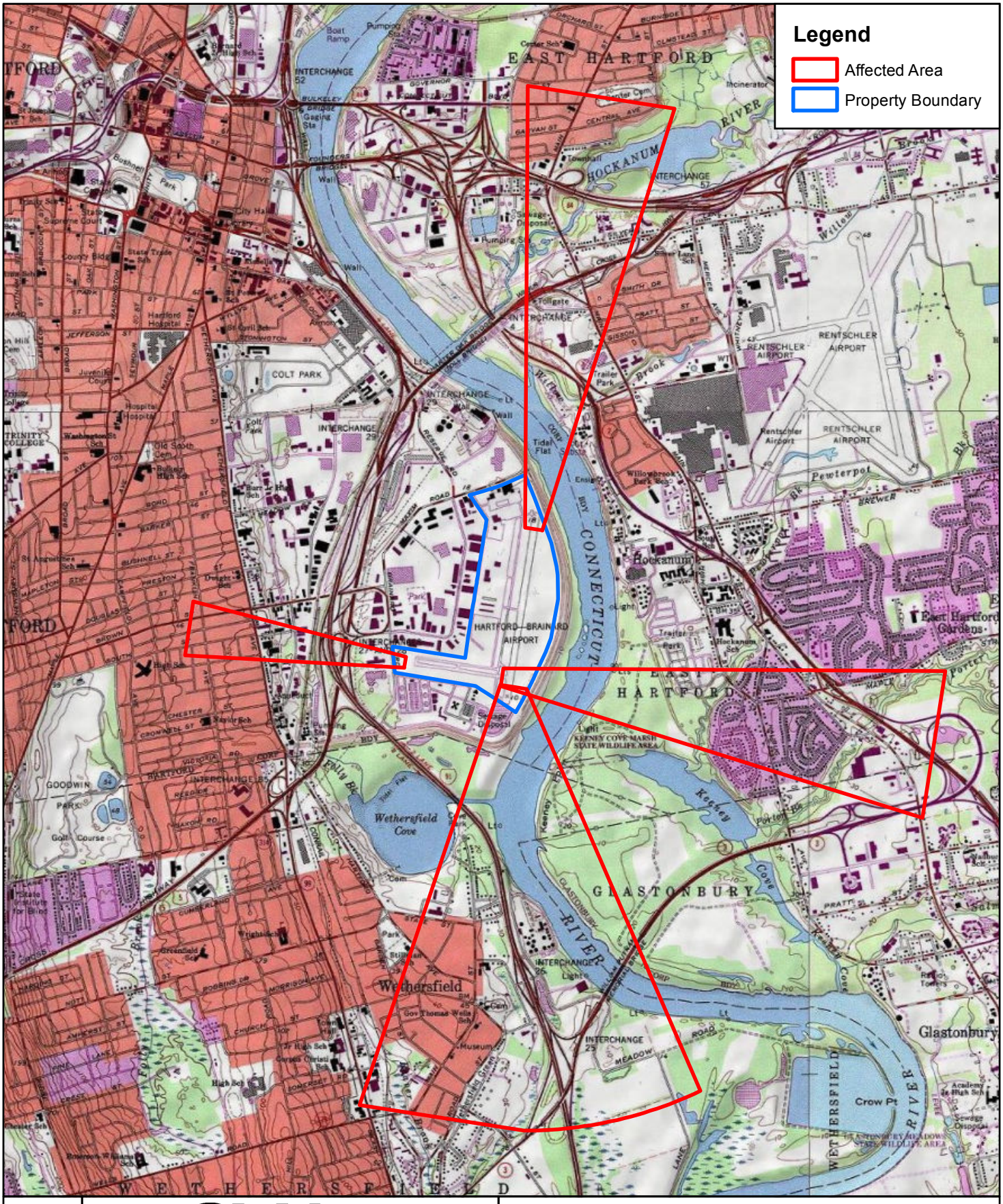
Federal Aviation Administration
Richard Doucette, Environmental Protection Specialist

Connecticut Airport Authority
Molly Parsons, Airport Planner
Colin Goegel, Supervising Engineer

Clough Harbor & Associates LLP (CHA)
Jeremy Martelle, Project Manager
Paul McDonnell, AICP, Principal Planner
Jean Loewenstein, AICP, Principal Planner
Scott Rosecrans, Senior Scientist

Fitzgerald and Halliday, Inc.
Paul Stanton, Senior Project Manager
Anthony Zumba, Environmental Specialist
David Laiuppa, Wetland Scientist

APPENDIX A



N

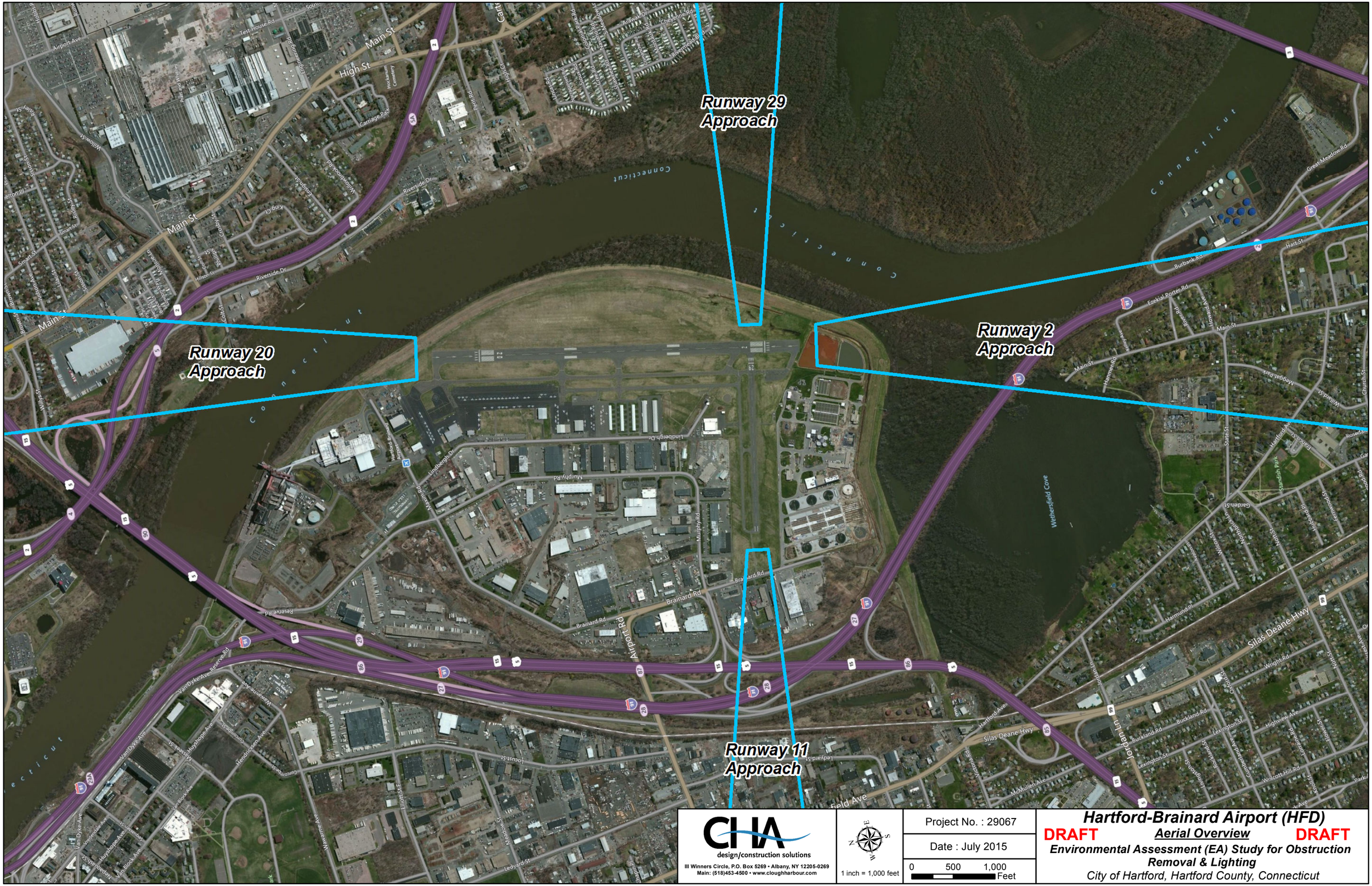
CHA
design/construction solutions

CAA Environmental Assessment (EA) for Obstruction Removal Project Study Area

Scale 1" = 3000'

Project No. 29067

Hartford - Brainard Airport
Hartford, Hartford County, Connecticut
North Hartford & South Hartford USGS Quadrangles



CHA
design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 1,000 feet

Project No. : 29067

Date : July 2015

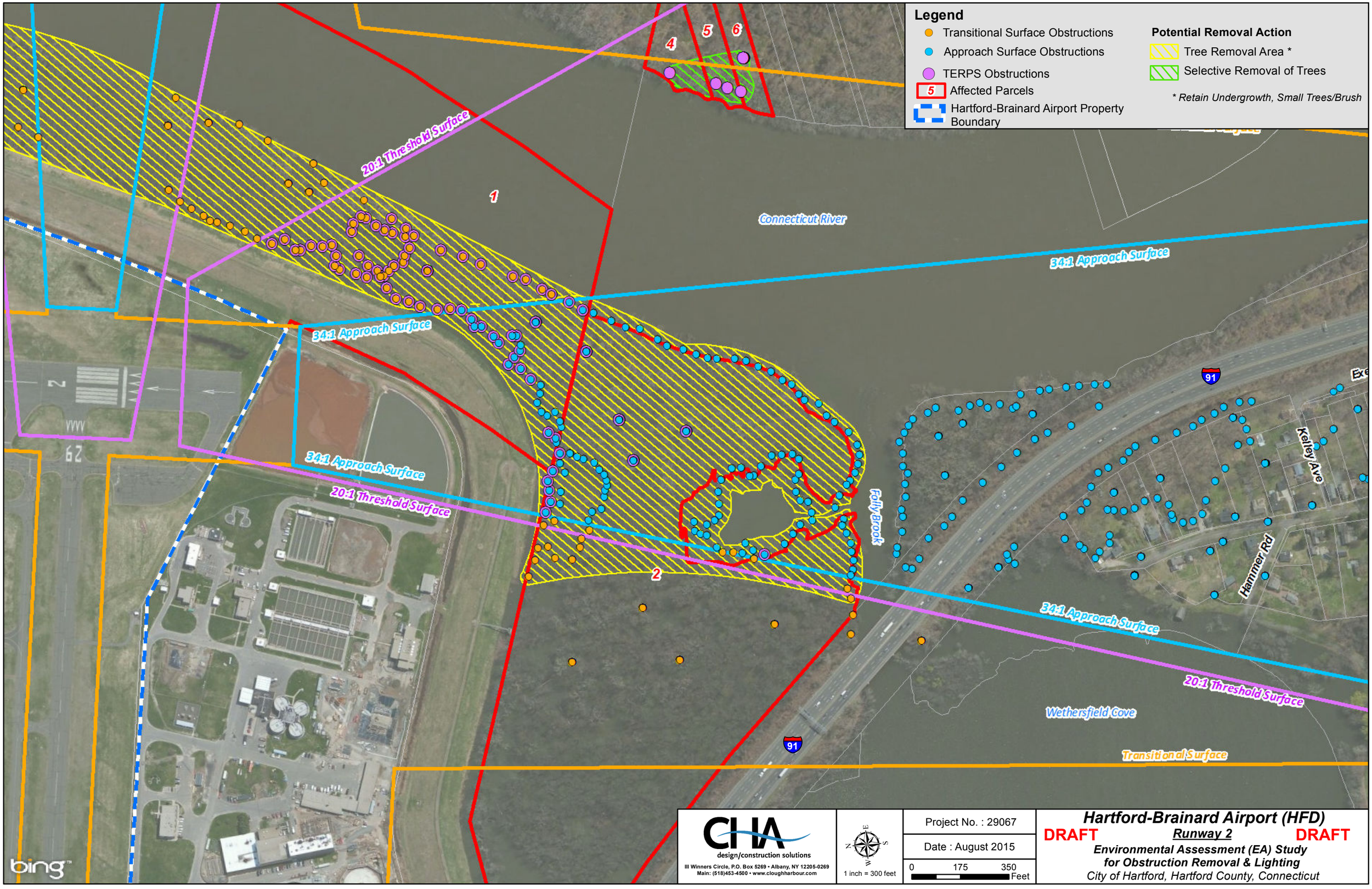
0 500 1,000 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Aerial Overview** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal & Lighting

City of Hartford, Hartford County, Connecticut



CHA
design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : August 2015

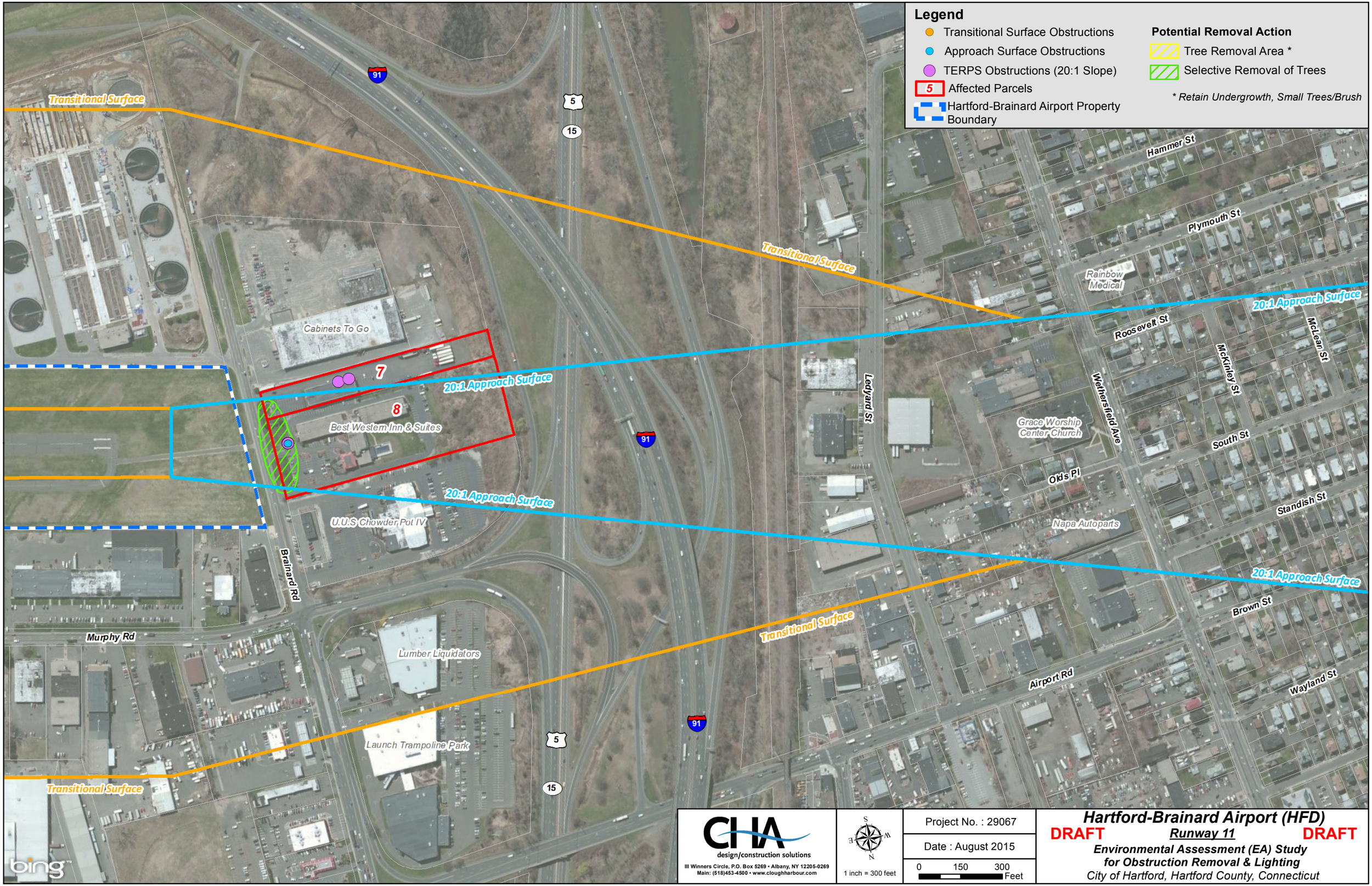
0 175 350 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 2** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal & Lighting

City of Hartford, Hartford County, Connecticut



CHA design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : August 2015

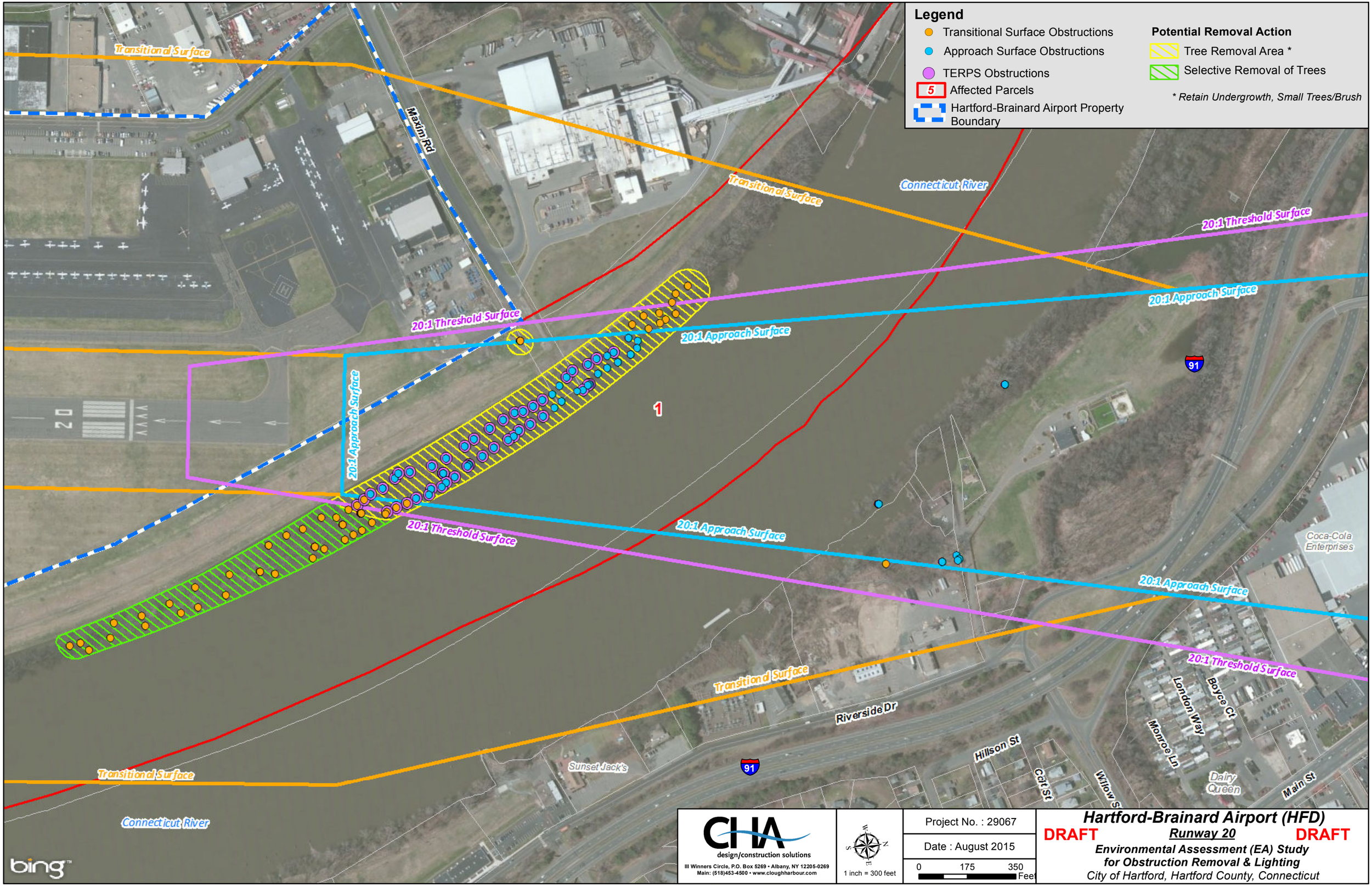
0 150 300 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 11** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal & Lighting

City of Hartford, Hartford County, Connecticut



CHA
design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : August 2015

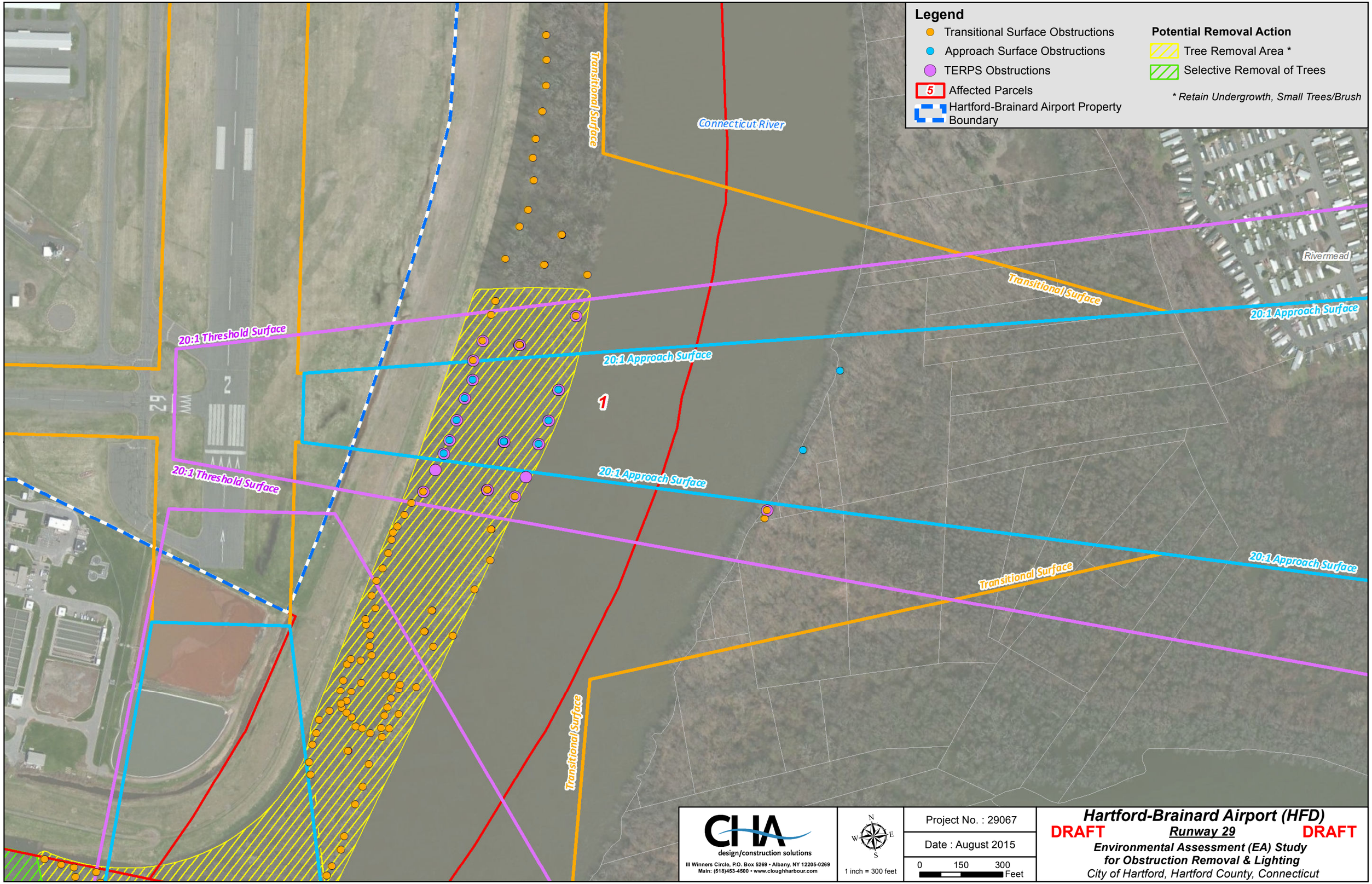
0 175 350 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 20** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal & Lighting

City of Hartford, Hartford County, Connecticut



CHA
design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : August 2015

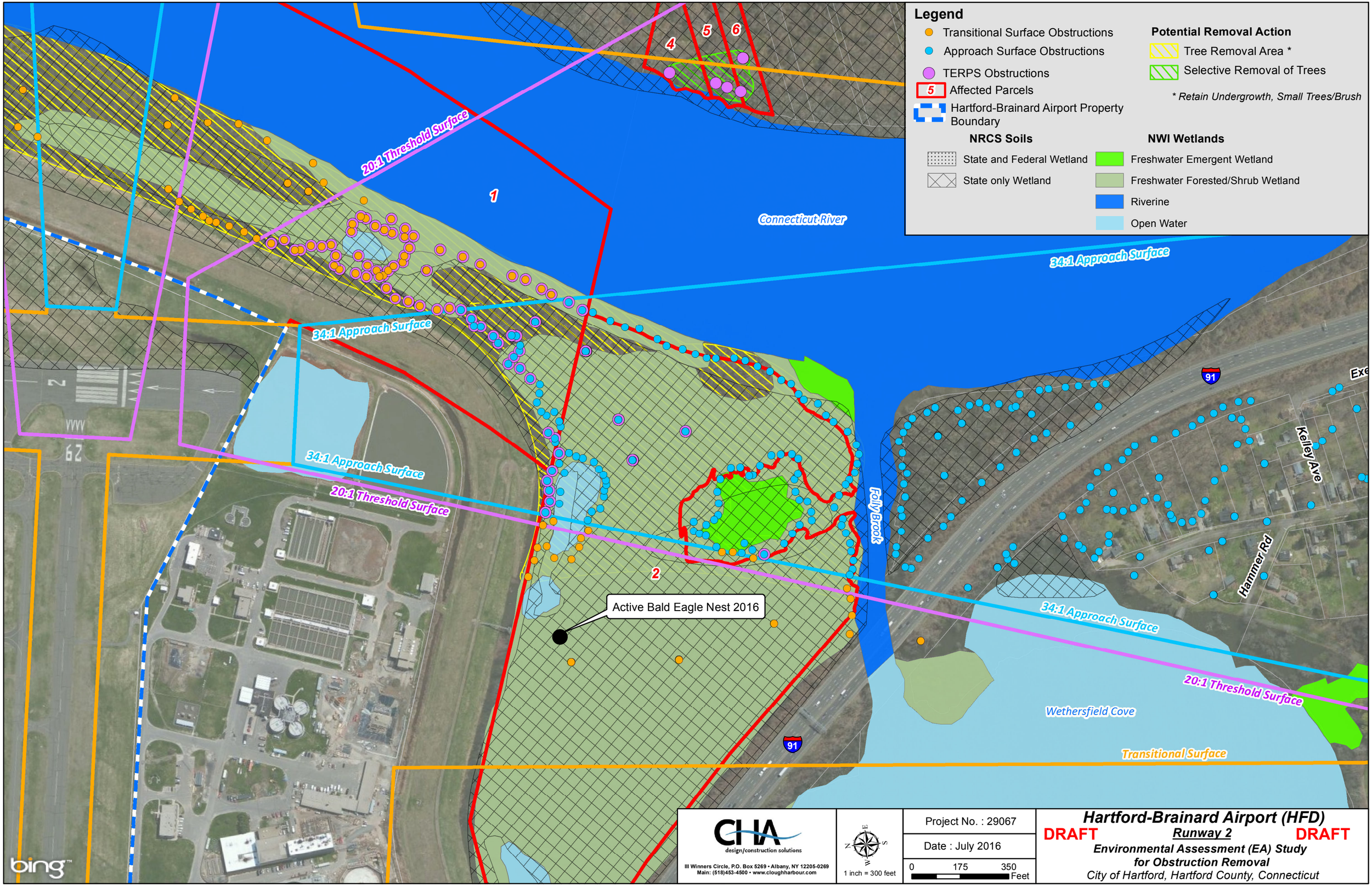
0 150 300 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 29** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal & Lighting

City of Hartford, Hartford County, Connecticut



CHA design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : July 2016

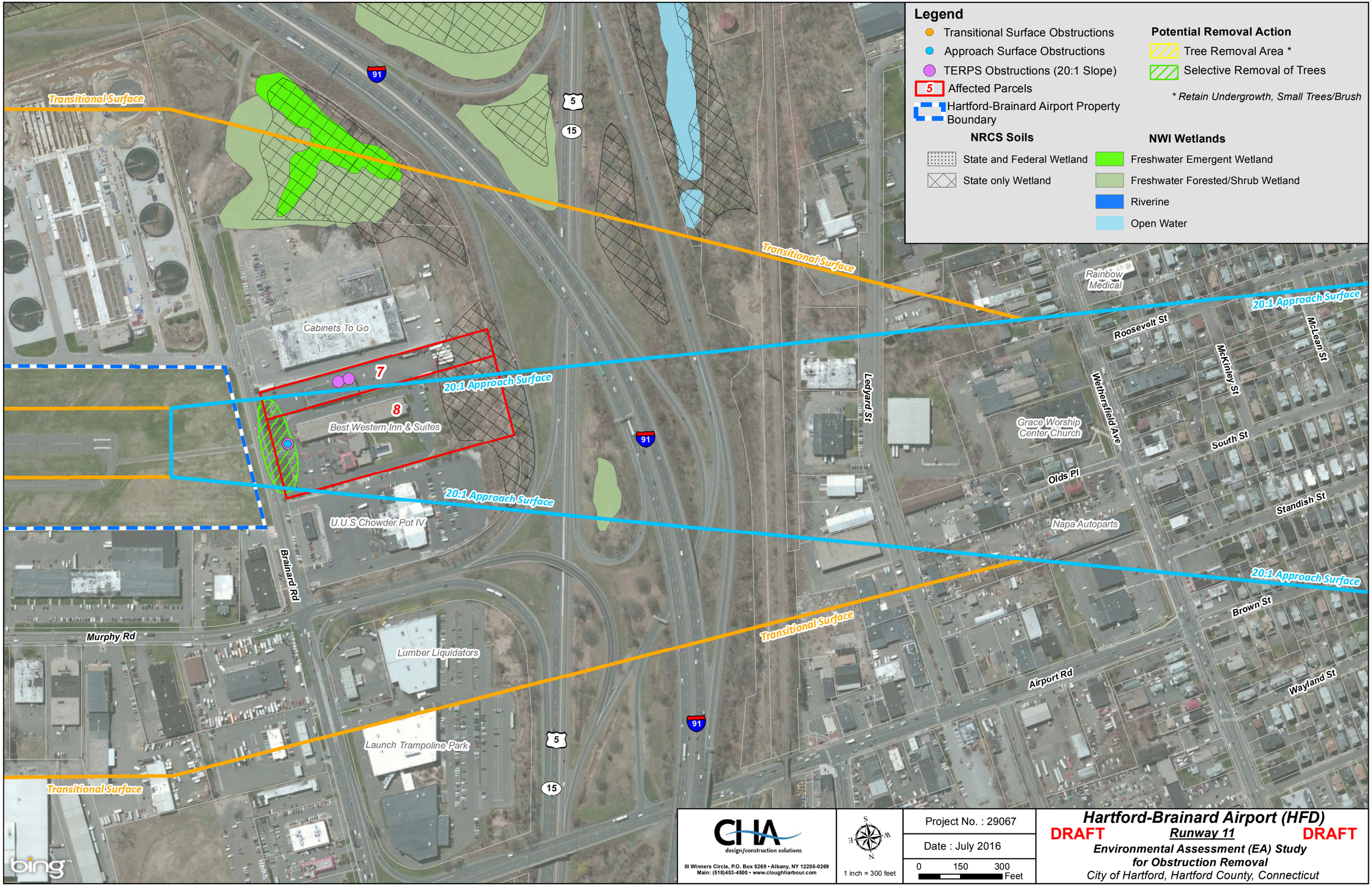
0 175 350 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 2** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal

City of Hartford, Hartford County, Connecticut



CHA design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : July 2016

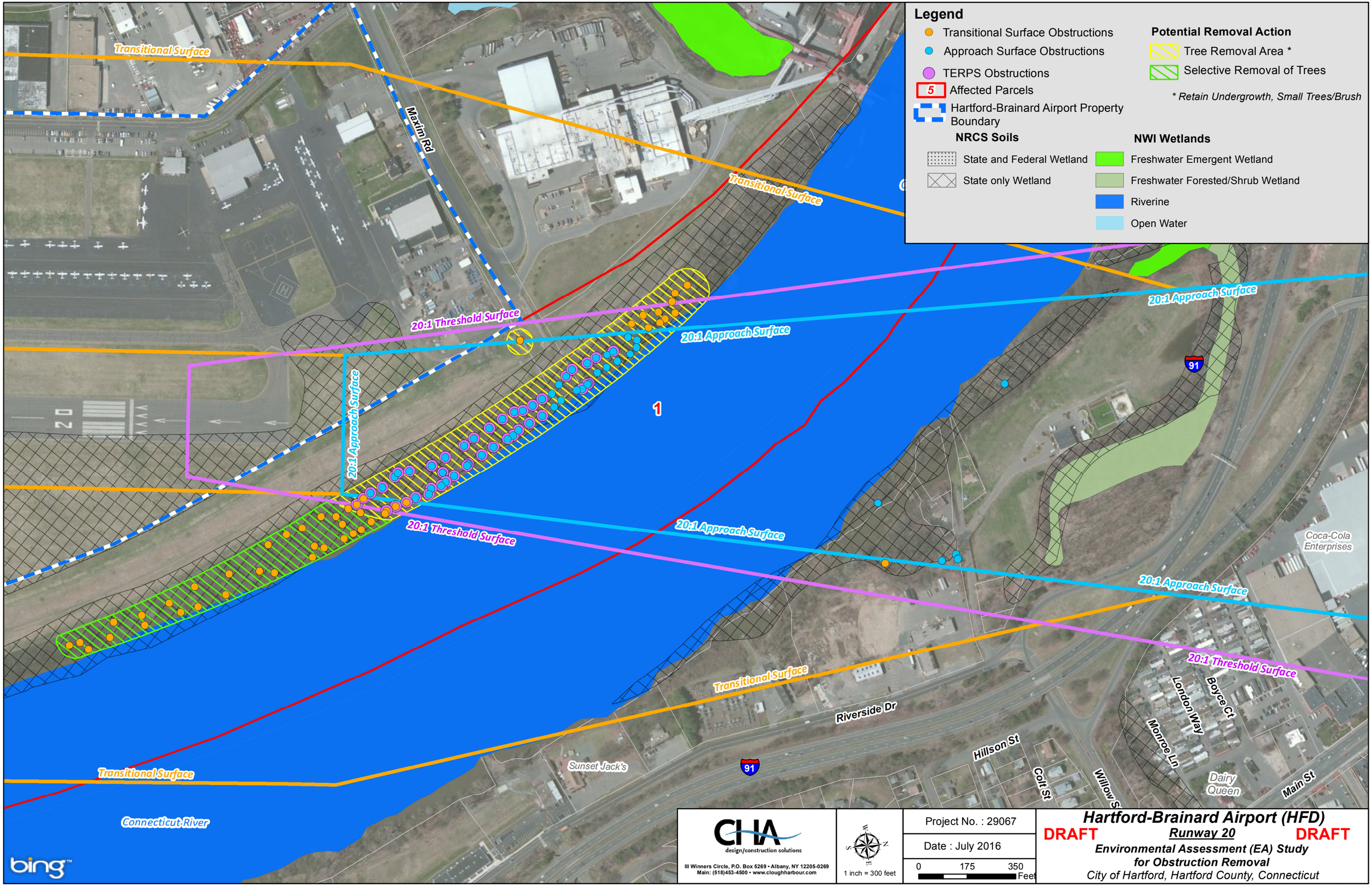
0 150 300 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 11** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal

City of Hartford, Hartford County, Connecticut



CHA design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.cloughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : July 2016

0 175 350 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 20** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal

City of Hartford, Hartford County, Connecticut

Legend

- Transitional Surface Obstructions
- Approach Surface Obstructions
- TERPS Obstructions
- 5 Affected Parcels
- Hartford-Brainard Airport Property Boundary

Potential Removal Action

- Tree Removal Area *
- Selective Removal of Trees

** Retain Undergrowth, Small Trees/Brush*

NRCS Soils

- State and Federal Wetland
- State only Wetland

NWI Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Riverine
- Open Water

Connecticut River

Transitional Surface

20:1 Threshold Surface

20:1 Approach Surface

Rivermead

1

29

CHA design/construction solutions
III Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
Main: (518)453-4500 • www.coughharbour.com

1 inch = 300 feet

Project No. : 29067

Date : July 2016

0 150 300 Feet

Hartford-Brainard Airport (HFD)

DRAFT **Runway 29** DRAFT

Environmental Assessment (EA) Study for Obstruction Removal

City of Hartford, Hartford County, Connecticut

APPENDIX B

CONNECTICUT AIRPORT AUTHORITY

June 5, 2015

Pedro E. Segarra, Mayor
City of Hartford
550 Main Street, Room 200
Hartford, CT 06103

RE: Hartford-Brainard Airport
Environmental Assessment for Obstruction Removal and Lighting
Connecticut Airport Authority

Dear Mayor Segarra:

The Connecticut Airport Authority (CAA) has conducted a detailed study to evaluate existing obstructions that penetrate Hartford-Brainard Airport's (Airport) federally protected airspace. These obstructions are primarily trees located near runway ends or located on small hills surrounding the Airport. As a follow-up study, the CAA is reviewing the potential impacts of removing trees and/or installing a pole-mounted red obstruction light in areas that contain airspace obstructions.

To accomplish this, the CAA is conducting an Environmental Assessment (EA) under federal and state regulations to identify affected properties and any potential environmental issues of removing trees and/or installing pole-mounted red obstruction lights. No actual tree removal or construction activities are pending at this time; just the required evaluation. As more information becomes available it will be posted on the following website: http://hartfordairport.caa-analysis.com.

Several properties in the City of Hartford have been identified as potentially having an obstruction that penetrates the federally protected airspace. A map identifying the existing tree obstruction areas and a list of affected parcel is enclosed.

The CAA has contracted with the consulting firm of Clough Harbour Associates (CHA) to prepare the required environmental assessment. CHA will be conducting visual reviews of the subject areas. In many instances the field personnel will complete their review from the public right-of-way; however in certain instances personnel may find it necessary to briefly enter private property to observe trees and site conditions with permission from homeowners. These inspections will occur in the spring and summer of 2015. These personnel will all carry proper identification (sample attached).

Should you have any questions or concerns regarding this project, please contact Jean Loewenstein with CHA. She can be reached (518) 453-8771 or via email at jloewenstein@chacompanies.com.

Sincerely,

Kevin A. Dillon, A.A.E.
Executive Director

Enclosure

CONNECTICUT AIRPORT AUTHORITY

June 5, 2015

Paul F. Montinieri, Mayor
505 Silas Deane Highway
Wethersfield, CT 06109

RE: Hartford-Brainard Airport
Environmental Assessment for Obstruction Removal and Lighting
Connecticut Airport Authority

Dear Mayor Montinieri:

The Connecticut Airport Authority (CAA) has conducted a detailed study to evaluate existing obstructions that penetrate Hartford-Brainard Airport's (Airport) federally protected airspace. These obstructions are primarily trees located near runway ends or located on small hills surrounding the Airport. As a follow-up study, the CAA is reviewing the potential impacts of removing trees and/or installing a pole-mounted red obstruction light in areas that contain airspace obstructions.

To accomplish this, the CAA is conducting an Environmental Assessment (EA) under federal and state regulations to identify affected properties and any potential environmental issues of removing trees and/or installing pole-mounted red obstruction lights. No actual tree removal or construction activities are pending at this time; just the required evaluation. As more information becomes available it will be posted on the following website: http://hartfordairport.caa-analysis.com.

Several properties in the Town of Wethersfield have been identified as potentially having an obstruction that penetrates the federally protected airspace. A map identifying the existing tree obstruction areas and a list of affected parcel is enclosed.

The CAA has contracted with the consulting firm of Clough Harbour Associates (CHA) to prepare the required environmental assessment. CHA will be conducting visual reviews of the subject areas. In many instances the field personnel will complete their review from the public right-of-way; however in certain instances personnel may find it necessary to briefly enter private property to observe trees and site conditions with permission from homeowners. These inspections will occur in the spring and summer of 2015. These personnel will all carry proper identification (sample attached).

Should you have any questions or concerns regarding this project, please contact Jean Loewenstein with CHA. She can be reached (518) 453-8771 or via email at jloewenstein@chacompanies.com.

Sincerely,

Kevin A. Dillon, A.A.E.
Executive Director

Enclosure

CONNECTICUT AIRPORT AUTHORITY

June 5, 2015

Marcia Leclerc, Mayor
Town of East Hartford
740 Main Street
East Hartford, CT 06108

RE: Hartford-Brainard Airport
Environmental Assessment for Obstruction Removal and Lighting
Connecticut Airport Authority

Dear Mayor Leclerc:

The Connecticut Airport Authority (CAA) has conducted a detailed study to evaluate existing obstructions that penetrate Hartford-Brainard Airport's (Airport) federally protected airspace. These obstructions are primarily trees located near runway ends or located on small hills surrounding the Airport. As a follow-up study, the CAA is reviewing the potential impacts of removing trees and/or installing a pole-mounted red obstruction light in areas that contain airspace obstructions.

To accomplish this, the CAA is conducting an Environmental Assessment (EA) under federal and state regulations to identify affected properties and any potential environmental issues of removing trees and/or installing pole-mounted red obstruction lights. No actual tree removal or construction activities are pending at this time; just the required evaluation. As more information becomes available it will be posted on the following website: http://hartfordairport.caa-analysis.com.

Several properties in the Town of East Hartford have been identified as potentially having an obstruction that penetrates the federally protected airspace. A map identifying the existing tree obstruction areas and a list of affected parcel is enclosed.

The CAA has contracted with the consulting firm of Clough Harbour Associates (CHA) to prepare the required environmental assessment. CHA will be conducting visual reviews of the subject areas. In many instances the field personnel will complete their review from the public right-of-way; however in certain instances personnel may find it necessary to briefly enter private property to observe trees and site conditions with permission from homeowners. These inspections will occur in the spring and summer of 2015. These personnel will all carry proper identification (sample attached).

Should you have any questions or concerns regarding this project, please contact Jean Loewenstein with CHA. She can be reached (518) 453-8771 or via email at jloewenstein@chacompanies.com.

Sincerely,

Kevin A. Dillon, A.A.E.
Executive Director

Enclosure

CONNECTICUT AIRPORT AUTHORITY

June 31, 2015

RE: Hartford-Brainard Airport
Environmental Assessment for Obstruction Removal and Lighting
Affected Property Address:

Dear Property Owner:

The Connecticut Airport Authority (CAA) has conducted a detailed study to evaluate existing obstructions that penetrate the federally protected airspace. These obstructions are primarily trees located near runway ends or located on small hills surrounding the Airport. As a follow-up study, the CAA is reviewing the potential environmental impacts of tree removal, and selective clearing and/or thinning in areas that contain airspace obstructions.

To accomplish this, the CAA is conducting an Environmental Assessment (EA) under federal and state procedures to identify affected properties and any potential environmental issues of removing trees and/or installing a pole-mounted red obstruction lights. No actual tree removal or construction activities are pending at this time; just the required evaluation. A map of the existing tree obstruction areas is included. As more information becomes available it will be posted on the following website: http://hartfordairport.caa-analysis.com/.

Your property has been identified as potentially having an obstruction that penetrates the federally protected airspace. As a result of the possible obstruction, the study requires a CAA contractor, Clough Harbour Associates (CHA) to conduct visual reviews of the subject areas. In many instances the field personnel will conduct their review from the public right-of-way; however in certain instances personnel may find it necessary to briefly enter private property to observe trees and site conditions in the summer and fall of 2015. These personnel will all carry proper identification.

Should you have any questions or concerns regarding the field observation, please contact Jean Loewenstein with CHA. She can be reached at (518) 453-8771 or via email at rloewenstein2@chacompanies.com.

Sincerely,

Robert J. Bruno
Director of Planning, Engineering and Environmental
Connecticut Airport Authority

U.S. Department
of Transportation
Federal Aviation Administration

Federal Aviation Administration
New England Region

12 New England Executive Park
Burlington, MA 01803

November 8, 2016

Ms. Catherine Labadia, Staff Archeologist
Connecticut Department of Economic & Community Development
Offices of Culture and Tourism, State Historic Preservation Office
One Constitution Plaza-2nd Floor
Hartford, CT. 06103

RE: Connecticut Airport Authority - Obstruction Removal at various Airports

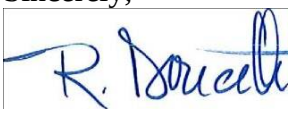
Dear Ms. Labadia:

This is in regards to past correspondence dated September 30, 2015 to your office as it relates to historic and archeological resources. In your November 17, 2015 response SHPO identified no issues with tree removal but did identify a potential concern as it relates to the installation of beacons. Past correspondence is attached for your convenience.

Since that time the installation of beacons has been eliminated from consideration at all the above referenced airports. After review of the relevant information, the FAA issues a Section 106 Finding of No Adverse Effects to Historic Properties.

If you have any questions, please feel free to contact me at 781-238-7613 or richard.doucette@faa.gov or the CAA Director of Engineering Robert Bruno at (860) 254-5516 or rbruno@ctairports.org

Sincerely,



Richard P. Doucette
Manager of Environmental Programs
FAA New England Region

Enclosures

Cc: Colin Goegel, Project Manager, CAA
Robert Bruno, Director of Planning Engineering and Environmental, CAA
Kurt Sendlein, Airport Manager

Department of Economic and Community Development

Connecticut
still revolutionary

November 17, 2015

Ms. Jean Lowenstein
CHA, Inc.
3 Winners Circle
Albany, NY 12205

Subject: Connecticut Airport Authority NEPA Environmental Assessment for Obstruction Removal and Lighting at
Hartford-Brainard Airport, Hartford (CHA 29067)
Danielson Airport, Killingly (CHA 29067)
Waterford-Oxford Airport, Oxford (CHA 29067)
Windham Airport, Windham (CHA 29067)
Bradley International Airport, Windsor Locks (CHA 29055)

Dear Ms. Lowenstein:

The State Historic Preservation Office (SHPO) has reviewed your request for our comments regarding potential effects to historic properties for the referenced project. The existing airports referenced above have been identified as needing tree removal and pole mounted obstruction beacons. The review request currently exceeds the staffing available at this office. A preliminary review completed by this office identified archeological sites and/or historic districts within or in close proximity to each of the identified facilities. SHPO understands that the tree removal will be done with as little ground disturbance as possible, without grubbing and grading. As a result, this office considers the potential impact to archeological sites from obstruction removal to be minimal, if any.

SHPO is concerned, however, with the effects of the proposed beacons on archeological sites and historic buildings. Several of the proposed beacons are located in areas where archeological sites have been reported, as well as historic buildings or districts. We are therefore requesting that a professional cultural resources assessment and reconnaissance survey be completed prior to construction of any beacons. The survey should take into consideration potential indirect impacts on structures older than fifty years that may be eligible for listing on the National Register of Historic Places. An archeological assessment should determine the appropriate level of investigation based on sufficient research and field visits. Subsurface testing for archeological resources, if warranted, should assess all areas of anticipated ground disturbance that are considered to have a moderate/high sensitivity for containing significant archeological deposits. All work should be in compliance with our *Environmental Review Primer for Connecticut's Archaeological Resources* and no construction or other project-related ground disturbance should be initiated until SHPO has had an opportunity to review and comment upon the requested survey.

The SHPO appreciates the opportunity to review and comment upon this project. These comments are provided in accordance with the Connecticut Environmental Policy Act and Section 106 of the National Historic Preservation Act, as amended. For additional information, please contact me at (860) 256-2764 or catherine.labadia@ct.gov.

Sincerely,

Catherine Labadia
Deputy State Historic Preservation Officer

September 30, 2015

Ms. Catherine Labadia, Staff Archeologist
Connecticut Department of Economic & Community Development
Offices of Culture and Tourism
State Historic Preservation Office
One Constitution Plaza-2nd Floor
Hartford, CT. 06103

RE: Connecticut Airport Authority- Hartford-Brainard Airport
NEPA Environmental Assessment (and CEPA EIE) for Obstruction Removal & Lighting
CHA Project No.: 29067

Dear Ms. Labadia:

Thank you for your recent assistance regarding submittal requirements to the Connecticut SHPO. On behalf of the Connecticut Airport Authority, CHA is submitting a request for review of the above referenced project located at Hartford-Brainard Airport and vicinity, in the City of Hartford, Hartford County Connecticut.

The Connecticut Airport Authority (CAA) previously conducted a detailed study to evaluate existing obstructions that penetrate the federally protected airspace. These obstructions are primarily trees located near runway ends or located on small hills surrounding the Airport. As a follow-up study, the CAA is reviewing the potential impacts of tree removal, and selective clearing or installation of pole-mounted red obstruction beacons in areas that contain airspace obstructions. Objects that penetrate these surfaces are classified as airspace obstructions, and should be removed to safely accommodate approaching and departing aircraft.

To accomplish this, the CAA is conducting an NEPA Environmental Assessment (EA) and CEPA Environmental Impact Evaluation (EIE) to identify affected properties and any potential environmental issues of removing trees and/or installing obstruction lights. No actual tree removal or construction activities are pending at this time; just the required evaluation. Tree removal or obstruction light installation will be accomplished under a future project. Maps outlining the potential location for tree removal and possible siting locations for the beacons are enclosed and can also be found at the project website. The web address is as follows: http://hartfordairport.caa-analysis.com.

As part of this evaluation of potential impacts we are requesting that SHPO review the draft mapping of potential tree removal areas and beacon installation locations as it relates to historic and archeological resources so that potential impacts may be considered in future actions. It should also be noted that when tree removal does occur it will generally include clearing, without grubbing or grading and will be implemented with minimal soil disturbance (e.g., removal to trees, with retention stumps and undergrowth).

Thank you for your prompt attention to this matter. If you have any questions, please feel free to contact me at 518-453-8771 or jloewenstein@chacompanies.com or the CAA Director of Engineering Robert Bruno at (860) 254-5516 or rbruno@ctairports.org.

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Sincerely,

Jean Loewenstein, AICP
Senior Planner

JL/sc

Enc.

Cc: Colin Goegel, Project Manager, CAA
Robert Bruno, Director of Planning Engineering and Environmental, CAA
Kurt Sendlein, Airport Manager

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CHA

September 30, 2015

Mr. Thomas Tyler, Director
Bureau of Outdoor Recreation
Connecticut Department of Energy & Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127

RE: Connecticut Airport Authority- Hartford-Brainard Airport
Environmental Assessment for Obstruction Removal and Lighting
CHA File: 29067

Dear Mr. Tyler:

On behalf of the Connecticut Airport Authority (CAA), CHA is submitting a request for review of the above referenced project located at Hartford-Brainard Airport and vicinity, in the City of Hartford, Hartford County, Connecticut as it relates to resources defined by Section 4(f) of the Department of Transportation Act of 1966.

The CAA has conducted a detailed study to evaluate existing obstructions that penetrate the federally protected airspace. These obstructions are primarily trees located near runway ends or located on small hills surrounding the Airport. As a follow-up study, the CAA and FAA are reviewing the potential impacts of tree removal, and selective clearing or installation of pole-mounted red obstruction beacons in areas that contain airspace obstructions. Objects that penetrate these surfaces are classified as airspace obstructions, and should be removed to safely accommodate approaching and departing aircraft.

To accomplish this, the CAA is conducting a NEPA Environmental Assessment (EA) and CEPA Environmental Impact Evaluation (EIE) to identify affected properties and any potential environmental issues of removing trees and/or installing a pole-mounted red obstruction lights. No actual tree removal or construction activities are pending at this time; just the required evaluation. Tree removal or obstruction light installation will be accomplished under a future project following appropriate approvals. Maps identifying the potential location for tree removal and possible siting locations for the beacons are enclosed and can also be found at the project website. The web address is as follows: http://hartfordairport.caa-analysis.com/.

A tree removal area has been identified within the Folly Brook Natural Area south of the airport and Runway 2. Recognizing that the Folly Brook Natural Area is an important statewide resource, we would like your office to review the locations of the potential tree removal area as it relates to this 4(f) resource. It should be noted that when tree removal does occur it will generally include clearing, without grubbing or grading and will be implemented with minimal soil disturbance (e.g., removal to trees, with retention stumps and undergrowth).

Thank you for your prompt attention to this matter. If you have any questions regarding this project, please feel free to contact me at 518-453-8771 or jloewenstein@chacompanies.com or the CAA Director of Engineering, Robert Bruno at (860) 254-5516 or rbruno@ctairports.org.

Sincerely,

Jean Loewenstein

Jean Loewenstein, AICP
Senior Planner

Enc.

cc: Colin Goegel, Project Manager, CAA
Robert Bruno, Director of Planning, Engineering and Environmental, CAA
Kurt Sendlein, Airport Manager

U.S. Department
of Transportation
**Federal Aviation
Administration**

New England Region
Office of the Regional Administrator

12 New England Executive Park
Burlington, MA 01803

OCT 20 2015

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Kathleen Knowles
Tribal Historic Preservation Officer
Mashantucket Pequot Tribal Nation
550 Trolley Line Blvd., P.O. Box 3202
Mashantucket, CT 06338

Dear Ms. Knowles:

Government-to-Government Consultation Invitation
Airport Projects at six Connecticut Airports

The Federal Aviation Administration (FAA), in cooperation with airport owners and operators, is proposing projects at six Connecticut Airports, as outlined herein.

Purpose of Government-to-Government Consultation

The purpose of Government-to-Government consultation as described in the National Historic Preservation Act, Section 106, Federal Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," and FAA's Order 1210.20, "American Indian and Alaska Native Tribal Consultation Policy and Procedures," is to ensure that Federally Recognized Tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA undertakings that uniquely or significantly affect Tribes.

Consultation Initiation

With this letter, the FAA is inviting the Mashantucket Pequot Tribal Nation to consult on concerns that may significantly affect your Tribe related to the proposed airport improvements. Early identification of Tribal concerns will allow the FAA and the airport owner and operator to consider ways to avoid, mitigate, or minimize potential impact to Tribal resources and practices as project alternatives are developed and refined.

Project Information

The Connecticut Airport Authority proposes to clear trees and install lights around Bradley International Airport, Waterbury-Oxford Airport, Danielson Airport, Hartford-Brainard Airport, Windham Airport and Groton-New London Airport. Enclosed are individual plans showing the location of the areas potentially affected by the proposed clearing and lighting. More detailed plans can be found at the Airport Websites. See the web links below. All the

maps are located under the *project documents* tab. Please let us know if you would like hardcopies of any individual plans.

- http://bradleyairport.caa-analysis.com
- http://waterburyairport.caa-analysis.com
- http://hartfordairport.caa-analysis.com
- http://danielsonairport.caa-analysis.com
- http://grotonairport.caa-analysis.com
- http://windhamairport.caa-analysis.com

Confidentiality

We understand that you may have concerns regarding the confidentiality of the information on areas or resources of religious, traditional, and cultural importance to the tribe. We would be happy to discuss these concerns and develop procedures to ensure the confidentiality of such information is maintained.

FAA Contact Information

Your timely response will assist us in incorporating your concerns into project planning. For that reason, we respectfully request that you contact FAA within thirty days of your receipt of this correspondence as to your interest in Government-to-Government Consultation regarding these projects.

You may contact FAA's Regional Tribal Consultation Official, Todd Friedenberg by telephone at 781-238-7022, or by email at Todd.D.Friedenberg@faa.gov. At that time, the consultation request will be provided to the FAA, Airports Division.

Sincerely,

Amy L. Corbett
Regional Administrator

Enclosures

U.S. Department
of Transportation
**Federal Aviation
Administration**

New England Region
Office of the Regional Administrator

12 New England Executive Park
Burlington, MA 01803

OCT 20 2015

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

James Quinn
Tribal Historic Preservation Officer
Mohegan Tribe
13 Crow Hill Rd.
Uncasville, CT 06382

Dear Mr. Quinn:

Government-to-Government Consultation Invitation
Airport Projects at six Connecticut Airports

The Federal Aviation Administration (FAA), in cooperation with airport owners and operators, is proposing projects at six Connecticut Airports, as outlined herein.

Purpose of Government-to-Government Consultation

The purpose of Government-to-Government consultation as described in the National Historic Preservation Act, Section 106, Federal Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," and FAA's Order 1210.20, "American Indian and Alaska Native Tribal Consultation Policy and Procedures," is to ensure that Federally Recognized Tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA undertakings that uniquely or significantly affect Tribes.

Consultation Initiation

With this letter, the FAA is inviting the Mohegan Tribe to consult on concerns that may significantly affect your Tribe related to the proposed airport improvements. Early identification of Tribal concerns will allow the FAA and the airport owner and operator to consider ways to avoid, mitigate, or minimize potential impact to Tribal resources and practices as project alternatives are developed and refined.

Project Information

The Connecticut Airport Authority proposes to clear trees and install lights around Bradley International Airport, Waterbury-Oxford Airport, Danielson Airport, Hartford-Brainard Airport, Windham Airport and Groton-New London Airport. Enclosed are individual plans showing the location of the areas potentially affected by the proposed clearing and lighting. More detailed plans can be found at the Airport Websites. See the web links below. All the

maps are located under the *project documents* tab. Please let us know if you would like hardcopies of any individual plans.

- http://bradleyairport.caa-analysis.com
- http://waterburyairport.caa-analysis.com
- http://hartfordairport.caa-analysis.com
- http://danielsonairport.caa-analysis.com
- http://grotonairport.caa-analysis.com
- http://windhamairport.caa-analysis.com

Confidentiality

We understand that you may have concerns regarding the confidentiality of the information on areas or resources of religious, traditional, and cultural importance to the tribe. We would be happy to discuss these concerns and develop procedures to ensure the confidentiality of such information is maintained.

FAA Contact Information

Your timely response will assist us in incorporating your concerns into project planning. For that reason, we respectfully request that you contact FAA within thirty days of your receipt of this correspondence as to your interest in Government-to-Government Consultation regarding these projects.

You may contact FAA's Regional Tribal Consultation Official, Todd Friedenberg by telephone at 781-238-7022, or by email at Todd.D.Friedenberg@faa.gov. At that time, the consultation request will be provided to the FAA, Airports Division.

Sincerely,

Amy L Corbett

Amy L. Corbett
Regional Administrator

Enclosure

APPENDIX C

Species List for NDDB Request: Brainard

Scientific Name	Common Name	State Status
Terrestrial Community - Other Classification		
Floodplain forest	<null>	<null>
Vertebrate Animal		
Falco sparverius	American kestrel	T
Haliaeetus leucocephalus	Bald eagle	T

E = Endangered, T = Threatened, SC = Special Concern, * Extirpated

U.S. Fish & Wildlife Service

Connecticut Airport Authority - Brainard Airport

IPaC Trust Resource Report

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US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Connecticut Airport Authority - Brainard Airport

PROJECT CODE

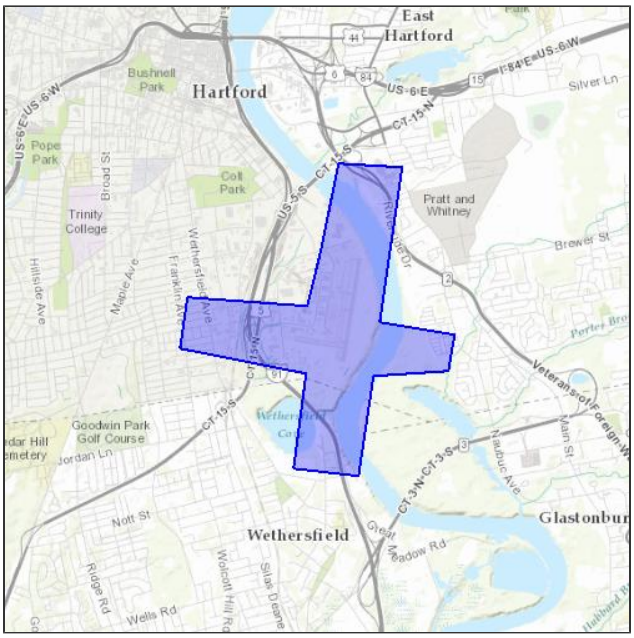
HU3EP-U6Q45-CRHFE-N2QXR-KUQIXA

LOCATION

Hartford County, Connecticut

DESCRIPTION

Environmental Assessment for Obstruction Removal and Lighting



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an Official Species List from the regulatory documents section.

Mammals

Northern Long-eared Bat Myotis septentrionalis **Threatened**

CRITICAL HABITAT

No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0JE

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

American Bittern Botaurus lentiginosus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F3

Bald Eagle Haliaeetus leucocephalus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Black-billed Cuckoo Coccyzus erythropthalmus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HI

Blue-winged Warbler Vermivora pinus — **Bird of conservation concern**
Season: Breeding

Canada Warbler Wilsonia canadensis — **Bird of conservation concern**
Season: Breeding

Fox Sparrow Passerella iliaca — **Bird of conservation concern**
Season: Wintering

Least Bittern Ixobrychus exilis — **Bird of conservation concern**
Season: Breeding

Peregrine Falcon Falco peregrinus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU

Pied-billed Grebe Podilymbus podiceps — **Bird of conservation concern**
Year-round

Prairie Warbler Dendroica discolor — **Bird of conservation concern**
Season: Breeding

Purple Sandpiper Calidris maritima — **Bird of conservation concern**
Season: Wintering

Rusty Blackbird Euphagus carolinus — **Bird of conservation concern**
Season: Wintering

Short-eared Owl Asio flammeus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Upland Sandpiper Bartramia longicauda **Bird of conservation concern**

Season: Breeding

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HC

Wood Thrush Hylocichla mustelina **Bird of conservation concern**

Season: Breeding

Worm Eating Warbler Helmitheros vermivorum **Bird of conservation concern**

Season: Breeding

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

Refuge data is unavailable at this time.

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

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 tuberficid 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.

Wetland data is unavailable at this time.