APPENDIX C. OBSTRUCTION ANALYSIS

D.1 INTRODUCTION

This Appendix provides the analysis of the obstruction evaluation completed as part of this update. In addition, this Appendix provides a description of the process and findings of obstructions noted in four imaginary surfaces to the Westfield-Barnes Regional Airport. The four surfaces analyzed, and the associated regulation and FAA policy include:

- Part 77: Federal Aviation Regulations Title 14 Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (FAR Part 77)
- TERPS: FAA Order 8260.3D, United States Standards for Terminal Instrument Procedures (TERPS)
- Obstacle Clearance Surfaces (OCS): Advisory Circular 150/5300-13A, Airport Design including FAA Engineering Brief 99A
- VGSI Obstacle Clearance: FAA Engineering Brief 95, Additional Siting and Survey Considerations for Precision Approach Path Indicator (PAPI) and Other Visual Glide Slope Indicators (VGSI)

D.2 DEFINITIONS

Definitions and abbreviations used in this Appendix are defined in Appendix A.

D.3 PROCESS

The mapping for the obstruction evaluation was prepared from a combination of ground survey-controlled aerial photography and stereo-compiled manuscripts layered with digital orthophotographs taken at Westfield-Barnes Regional Airport. Analytical aerial triangulation and the obstructions were determined by aerial photography obtained by Bluesky International in August 2018. Aerial photograph control was supplied by Stantec Consulting Services, also in August 2018. Property lines as shown have been referenced into the base mapping from scanned images of mapping obtained from the airport. The property lines in areas where obstructions have been identified were adjusted to more closely represent actual conditions. Property lines outside of evaluated areas have not been reviewed or adjusted. Wetland areas are approximate only, not the result of a wetlands delineation, and were placed on the drawings using available wetland mapping obtained from the airport.

D.4 APPLICABLE SURFACES

There are multiple surfaces an airport sponsor must assess to find the critical or most limiting surfaces for their airport. This is necessary to identify the appropriate areas to protect. While FAR Part 77 is the central regulation for airspace protection, its primary purpose is to notify the FAA of the proposed construction or alteration of structures. Therefore, as FAA design requirements have evolved, FAR Part 77 must be used in conjunction with the other requirements to protect all the required surfaces fully.

The types of surfaces applicable to an airport and the sizes and slopes of such surfaces are dependent on the type of approach procedure and its minimums, the sizes of aircraft served at the airport, and whether the airport supports commercial air services.

For airports without commercial service, there are three regulations applicable to the airport's airspace:

- FAR Part 77: Safe, Efficient Use and Preservation of the Navigable Airspace
- FAA AC 150/5300-13A: Airport Design, as amended by FAA Engineering Brief 99A
- FAA Order 8260.3D: United States Standard for Terminal Instrument Procedures (TERPS)

C.4.1 FAR Part 77 Surfaces

In addition to establishing the standards for providing notice to the FAA of a proposed development, FAR Part 77 identifies the baseline surfaces to protect airport obstruction management. However, FAR Part 77 alone will not identify all the critical surfaces for an airport. FAR Part 77 has five types of surfaces to be protected that must be considered. These surfaces are depicted on the airport airspace drawing in the ALP set for a federally obligated airport.

The surfaces outlined in §77.19, 77.21, or 77.23 include the following:

- **Primary surface:** A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but, when the runway has no specially prepared hard surface, the primary surface ends at 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. The surface width ranges from 250 feet to 1,000 feet, based on the runway category and approach type.
- **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 on the type of approach available or planned for that runway end.
- **Transitional surface:** These surfaces extend outward and upward at right angles to the runway centerline. The runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface that project through and beyond the limits of the conical surface extends a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.
- **Horizontal surface:** A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of 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. The radii of the arcs are 5,000 or 10,000 feet, depending on runway category or approach type.

- **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. The complex geometrical shape that combines the various FAR Part 77 imaginary surfaces is unique to each airport. It is recommended that an airport sponsor develop and keep current a graphic of airport-specific imaginary surfaces to communicate obstruction management concerns to elected officials, zoning and planning officials, and the public.

Figure C.1 is a plan view of the various Part 77 surfaces. A sample graphic and table that summarize the surface size by type of runway and approach visibility minimums is shown in Figure C.2.

Figure C-1. Part 77 Plan View

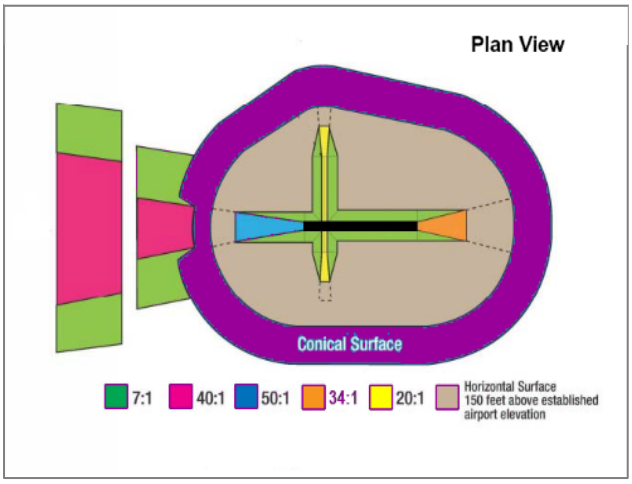
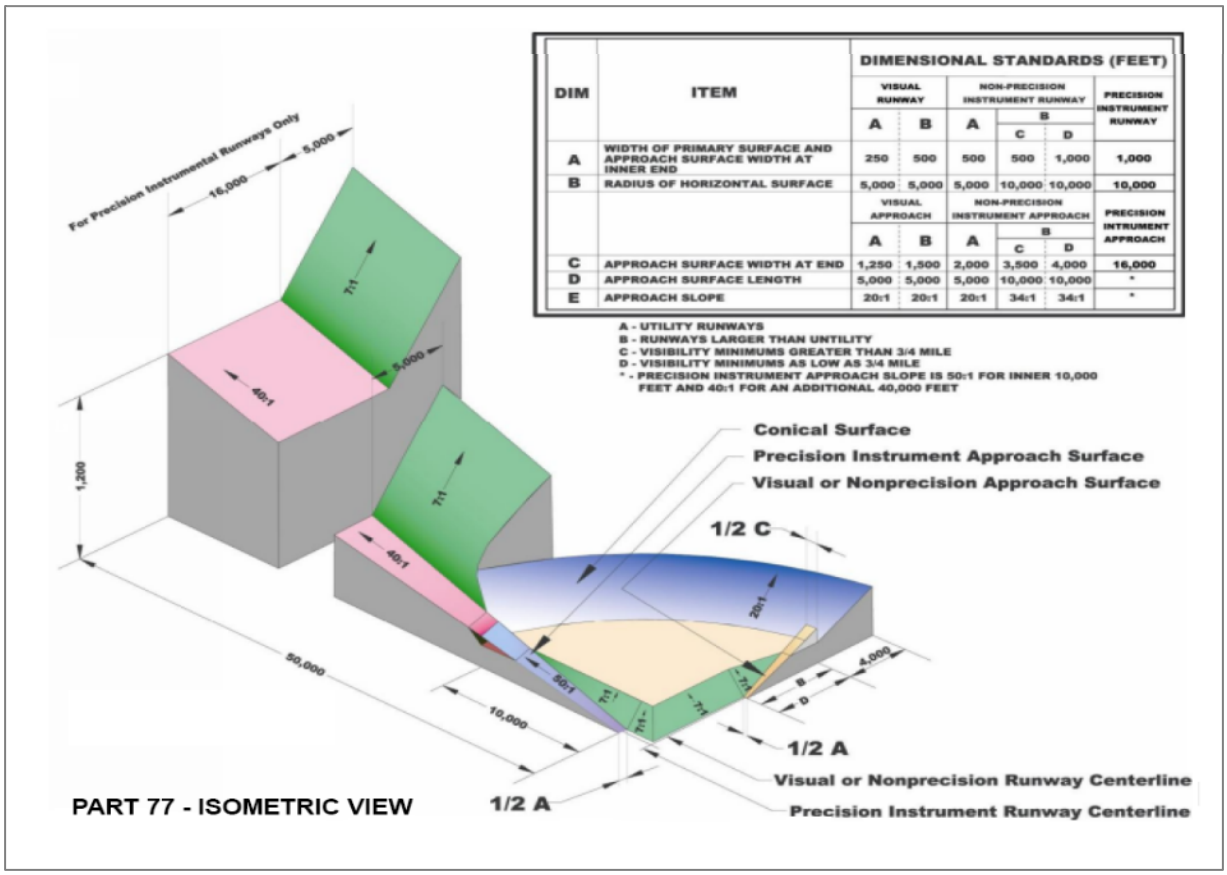


Figure C-2. Part 77 Surfaces (Exploded View)



C.4.2 FAA AC 150/5300-13A: Design Surfaces

In addition to considering FAR Part 77 surfaces—or in cases where there are impacts on FAR Part 77 surfaces—the design standards in FAA AC 150/5300-13A should be considered. The design standards in FAA AC 150/5300-13A generally align more closely with TERPS standards than FAR Part 77 to account for the new instrument approach capability using a global positioning system (GPS). Therefore, typically, when preparing an ALP, the TERPS surfaces are not depicted; only the FAR Part 77 and FAA AC 150/5300-13A surfaces are shown. This is partly because the requirements in TERPS design standards provide for adjustments that can be made to an approach or departure procedure to avoid an obstruction. In contrast, the standards in FAR Part 77 and AC 150/5300-13A identify the surfaces to be kept clear of obstructions.

The key surface in FAA AC 150/5300-13A for landing aircraft is the Obstacle Clearance Surface (OCS) as modified by FAA Engineering Brief 99.

Runway Obstacle Clearance criteria are based on runway approach type and airplane design group. FAA design standards require the runway threshold to be positioned so that there are no obstacle penetrations to the appropriate approach surface. Therefore, impacts on the OCS may result in threshold displacements or the implementation of declared distances on the runway (specified available runway length for a particular operation such as a takeoff or a landing), reducing runway utility.

C.4.3 FAA Order 8260.3D: United States Standard for Terminal Instrument Procedures (TERPS)

Instrument Approach Procedures (IAPs) are designed to provide aircraft access to an airport in all weather conditions. There are different types of IAPs using different types of navigational aids (NAVAIDs). These IAPs range from procedures that only provide horizontal guidance to the airport or to a specific runway end to procedures that provide vertical and horizontal guidance all the way to touch down. The more precise the guidance provided by the IAP, generally the lower the minimums, meaning the aircraft can use the airport in conditions with lower ceiling and visibility. Minimums are defined in terms of the following:

- **Visibility:** the average forward horizontal distance from the aircraft's cockpit in flight at which objects can be identified.
- **Ceiling**: the height of the base of the lowest clouds that cover more than half of the sky.

The lower the minimums are for an IAP, the larger the area must be protected because aircraft will fly lower to the ground and slower in landing configuration before the pilot is required to establish visual contact with the runway environment.

FAA Order 8260.3D (TERPS) defines critical surfaces and criteria used to design instrument procedures at an airport. Because the specifics of the approach procedure design are based on facility conditions and critical aircraft, the precise dimensions of individual surfaces are unique to the facility and particular approach. While TERPS is used to design IFPs, it is helpful to understand what surfaces need to be protected to support the IAP design. It is essential to consider the criteria for existing and planned airport

flight procedures to protect those procedures and airport operations from potential impact. The following TERPS surfaces are closest to the airport and can have a direct impact on IAP availability and minimums for an airport:

- Approach segments: The approach comprises the initial, intermediate, final approach, and missed approach segments.
    - **Initial approach segment:** The aircraft has departed the en-route phase and is maneuvering to enter an intermediate phase. There may be more than one initial approach procedure. These are typically located some distance from the airport.
    - **Intermediate approach segment:** Connects the initial and final approach segments. In this segment, the aircraft speed and position are configured to enter the final approach segment.
    - **Final approach segment:** This is the segment of an approach procedure in which alignment and descent for landing are accomplished. The segment begins at the precise precision final approach fix and ends at the missed approach point (MAP), which coincides with the DA or DH. The dimensional criteria or slope varies based on airport conditions and approach type. Objects that penetrate this segment must be lowered or removed, or the approach must be modified through higher minimums to maintain adequate clearance. If adequate clearance cannot be provided, the approach would need to be deactivated.
    - **Missed approach segment:** If an aircraft cannot complete a full-stop landing, it executes a missed approach. This segment of the approach procedure protects the safety of aircraft when executing a missed approach procedure and climbing away from the runway. Like the final approach segment, the dimensional criteria for this surface vary from procedure to procedure. However, the area considered for obstacles generally will have a width equal to that of the final approach segment at the missed approach (or DA point). Therefore, it uniformly expands to the width of the initial approach segment at a point 15 nautical miles from the MAP.

C.4.4 Visual Area OIS

OIS underlies the visual portion of the final approach segment from the DA or visual descent point (VDP) to 200 feet before the runway end on a straight-in approach and from 10,000 feet to 200 feet before the runway end for circling approaches. The visual area OIS aims to protect the aircraft on approach as the pilot transitions from flight by reference to instruments to using visual cues to land. The sides of the visual area trapezoid splay outward from the extended runway.

For runways with straight-in approach procedures, the visual area OIS is aligned with the extended runway centerline. The surface beginning width is 400 feet (200 feet on each side of the runway centerline), while the width of the area at a specific distance from the area origin is calculated as shown in Figure 3.5. The length of the area varies as the area extends to the calculated DA/DH point or VDP for the approach. At this point, the pilot needs a visual identification of the runway environment to continue the approach to land. Again, as those points vary based on the approach specifics, the length of the surface vary accordingly, not to exceed 10,000 feet.

The height of the OIS for the visual area is determined by a slope from the visual area's origin. The vertical component (ratio) of the surface is 34:1 (34 feet horizontally for each 1 foot vertically) for all runways with visibility lower than 3/4 statute miles or 4,000 feet RVR, a distance over which a pilot can see the runway surface markings delineating the runway, as measured in horizontal feet, and 20:1 for all other category types. The height of the visual area surface at a specific point can be calculated using the formula in Figure 3.5.

Protecting this visual area OIS is vital to establishing and keeping approach minimums. When using TERPS to design the approach, if there are penetrations to the OIS 34:1, the IAP visibility is limited to no lower than ¾ statute miles or 4,000 feet RVR. If the 20:1 OIS is penetrated, the IAP visibility is limited to no lower than 1 statute mile or 5,000 feet RVR. Additionally, if the obstruction is not lighted, night IAPs to that runway end (straight-in and circling) may be denied. Under certain circumstances, and in coordination with the FAA, a visual glide slope indicator (VGSI) [e.g., VASI or precision approach path indicator (PAPI)] may be used in place of obstruction lighting.

If new obstacles are developed or grow into the OIS surface, the minimums may need to be raised to align with standards or restrictions on instituted nighttime instrument procedures.

C.4.5 PAPI Obstacle Identification Surface (OIS): FAA Engineering Brief No. 95

FAA Engineering Brief No. 95: Additional Siting and Survey considerations for Precision Approach Path Indicator (PAPI) and Other Visual Glide Slope Indicators (VGSI) provides clarification and guidance about updated PAPI and VGSI flight check inspection criteria defined in the FAA Order 8200.1D, United States Standard Flight Inspection Manual. The Brief also guides obstruction evaluation, which was used in this report.

VGSI are ground devices that use lights to define a vertical approach path during the final approach to a runway. The visual signal must consist of not less than two and not more than four colors. Allowable colors are red, amber, green, or white. Color sectors must be distinct and identifiable throughout the horizontal beamwidth at all intensity settings. Only red is used to indicate the lowest below-path sector of the system.

VGSI(s) are aligned to provide a glide path not less than 1.0° above obstacles. VGSI(s) provide visual coverage 10° on either side of the runway centerline extended to a distance specified for the system, usually 4 statute miles (sm) in daylight conditions. Lateral guidance is obtained by reference to either visual cues or electronic aids.

There are several different types of VGSI(s). The primary systems covered in this chapter are visual approach slope indicators (VASI), precision approach path indicators (PAPI), pulsating visual approach slope indicators (PVASI), T-VASI, three-color VASI, and helicopter approach path indicator (HAPI). Only the PAPI is in use at the Westfield Barnes Regional Airport.

The PAPI uses a two-color light projector system that produces a visual glide path. Each lightbox consists of at least two optical projectors that produce a single beam of light. The upper part of the beam is WHITE, and the lower part RED. When passing through the beams, the transition from one color to the

other is almost instantaneous. There are two basic configurations of PAPI(s): A Four-Box (L-880) and a Two-Box System (L-881).

The Four-Box L-880 PAPI system consists of four light units located at the side of the runway adjacent to the origin of the glide path. The nominal glide slope angle is midway between the angular settings of the central pair of the four units. If an aircraft is on the correct approach path, the pilot sees two red and two white light indicators. If the aircraft approach is too high, an increased number of white light indicators are seen. If the approach is too low, the pilot sees an increased number of red-light indicators. The L-881 PAPI system is identical to the L-880, except only two light units (instead of four) are used. The L-880 (4-light) system provides descent information under daytime conditions to a distance of 4 sm, and the L-881 (2-light) provides descent information under daytime conditions to a distance of 2 sm.

All four runways at BAF are equipped with an L-880 Four-Box PAPI System.

D.5 SURFACE DIMENSIONS

The dimensions of each of the four surfaces analyzed are based on several elements' dependent on the surface and regulation (see §D.1, Introduction). Table C.1 - Protected Surface Dimensions lists the surfaces analyzed and the parameters of each surface.

D.6 FINDINGS

Obstructions were found in all four surfaces (Part 77, TERPS, PAPI OIS, and the OCS) to all four runways, both on and off the airport. While most obstructions are small quantities, two areas are noted because of their impact on airport operations and mitigation.

The Runway 20 Part 77 approach surface has a significant amount of obstructions (above 106 acres). The amount is possibly higher because the data collected was limited to 10,000 feet from the end of the runway.[1] The analysis suggests that obstructions extend further but cannot be sure without another survey.

The Runway 15 OCS has several trees in a single parcel between the runway end near the corner of Airport Road and Route 10 (Southampton Road). This issue is addressed in Chapter 2 of the report (see §2.5.1.).

Table C.2 - Obstruction Quantities by Runway and Surface (page C.9) lists the number of obstructions, in acres, for each runway and the four surfaces analyzed. Figures for each of the analyses follow the table.

[1] Data collection extended 10,000 feet from the ends of Runway 2 and 20 and 5,000 feet from the ends of Runway 15 and 33.

Table C.1 - Protected Surface Dimensions

PART 77	APPROACH TYPE	INNER WIDTH (FEET)	OUTER WIDTH (FEET)	LENGTH (FEET)	SLOPE
Runway 2	Non-precision	1,000	3,500	10,000	34:1
Runway 20	Precision	1,000	16,000	50,000	10,000 50:1 40,000 40:1
Runway 15	Visual	500	1,500	5,000	20:1
Runway 33	Visual	500	1,500	5,000	20:1
TERPS OIS	**APPROACH TYPE**	**INNER WIDTH (FEET)**	**OUTER WIDTH (FEET)**	**LENGTH (FEET)**	**SLOPE**
Runway 2	Non-precision	400	3,400	10,000	20:1
Runway 20	Precision	400	3,400	10,000	34:1
Runway 15	Visual	400	3,400	10,000	20:1
Runway 33	Visual	400	3,400	10,000	20:1
OBSTACLE CLEARANCE	**RUNWAY TYPE[2]**	**INNER WIDTH (FEET)**	**OUTER WIDTH (FEET)**	**LENGTH (FEET)**	**SLOPE**
Runway 2	Table 3-2, RWY Type 4	400	3,400	10,000	20:1
Runway 20	Table 3-2, RWY Type 4	400	3,400	10,000	20:1
Runway 15[3]	Table 3-2, RWY Type 2 Table 3-2, RWY Type 3	250 400	700 1,000	5,000 10,000	20:1 20:1
Runway 33	Table 3-2, RWY Type 3	400	1,000	10,000	20:1
MALSR	**ORIGIN**	**INNER WIDTH (FEET)**	**OUTER WIDTH (FEET)**	**LENGTH (FEET)**	**SLOPE**
Runway 20	Runway Threshold	400	400	2,600	N/A
PAPI (OCS)	**ORIGIN**	**INNER WIDTH (FEET)**	**OUTER WIDTH (FEET)**	**LENGTH (FEET)**	**SLOPE**
Runway 2	300 feet prior to PAPI	0	8,571	24,304	3° GS, 1.45° OCS
Runway 20	300 feet prior to PAPI	0	8,571	24,304	3°, 1.45° OCS
Runway 15	300 feet prior to PAPI	0	8,571	24,304	3.50°, 2.20° OCS
Runway 33	300 feet prior to PAPI	0	8,571	24,304	3.50°, 2.20° OCS
Source: See §D.1					

[2] Runway Type refers to FAA Advisory Circular 150/5300-13, *Airport Design* and Engineering Brief 99, *Changes to Tables 3-2 and 3-4 of Advisory Circular 150/5300-13A, Airport Design*

[3] Runway 15 dimensions based on two separate categories of aircraft operations. See footnote 1.

Table C.2 - Obstruction Quantities by Runway and Surface				
SURFACE	**RUNWAY**	**ON-AIRPORT (ACRES)**	**OFF-AIRPORT (ACRES)**	**TOTAL (ACRES)**
PART 77	Primary	0	0	0
	Runway 2 Approach	0.21	3.77	3.98
	Runway 20 Approach	0.64	+106.17	+106.81
	Runway 15 Approach	0.12	2.54	2.66
	Runway 33 Approach	0	0	0
	Transitional (sum of all)	3.11	9.29	12.4
TERPS (VAS)	Runway 2	0	0	0
	Runway 20	0	1.85	1.85
	Runway 15	0	0.05	0.05
	Runway 33	0	1.9	1.9
OBSTACLE CLEARANCE	Runway 2	0	0	0
	Runway 20	0	3.52	3.52
	Runway 15	0	0.46	0.46
	Runway 33	0	0	0
PAPI (OCS)	Runway 2	0	0	0
	Runway 20	0	0	0
	Runway 15	0	0	0
	Runway 33	0	0	0
Source: Stantec Analysis with data provided by Blueskies International.				

D.7 OBSTRUCTION ANALYSIS DRAWINGS

Table C.3 - List of Obstruction Analysis Drawings is a list of the obstruction analysis drawings, which start on page D.11.

Table C.3 - List of Obstruction Analysis Drawings

SHEET	RUNWAY	SURFACE	ANALYSIS
1	20	Title Sheet	
2	20	FAR Part 77	34:1 Approach
3	2-20	FAR Part 77	1,000’ Primary Surface with 7:1 Transitional (Sheet 1 of 2)
3	2-20	FAR Part 77	1,000' Primary Surface with 7:1 Transitional (Sheet 2 of 2)
4	2-20	FAR Part 77	1,000’ Primary Surface
5	20	FAR Part 77	50:1 Approach (Sheet 1 of 2)
6	20	FAR Part 77	50:1 Approach (Sheet 2 of 2)
7	2	OCS/TERPS	20:1 Obstacle Clearance Surface & 20:1 VAS
8	2	PAPI	Obstacle Clearance Surface
9	20	TERPS	Obstacle Clearance Surface (VA-OIS) (Sheet 1 of 3)
10	20	TERPS	Obstacle Clearance Surface (VA-OIS) (Sheet 2 of 3)
11	20	TERPS	Obstacle Clearance Surface (VA-OIS) (Sheet 3 of 3)
12	20	OCS	34:1 Obstacle Clearance Surface (Sheet 1 of 3)
13	20	OCS	34:1 Obstacle Clearance Surface (Sheet 2 of 3)
14	20	OCS	34:1 Obstacle Clearance Surface (Sheet 3 of 3)
15	20	TERPS	3° Vertical Guidance Surface
16	20	TERPS	W, X, Y 34:1 Precision Obstacle Clearance Surface (Sheet 1 of 3)
17	20	TERPS	W, X, Y 34:1 Precision Obstacle Clearance Surface (Sheet 2 of 3)
18	20	TERPS	W, X, Y 34:1 Precision Obstacle Clearance Surface (Sheet 3 of 3)
19	20	PAPI	Visual Glide Patch Obstacle Clearance Surface (Sheet 1 of 2)
20	20	PAPI	Visual Glide Patch Obstacle Clearance Surface (Sheet 2 of 2)
21	15	PART 77	20:1 Approach Surface (Sheet 1 of 2)
22	15	PART 77	20:1 Approach Surface (Sheet 2 of 2)
23	15-33	PART 77	500’ Primary Surface (Sheet 1 of 2)
24	15-33	PART 77	500’ Primary Surface (Sheet 2 of 2)
25	33	PART 77	20:1 Approach Surface
26	15	TERPS	20:1 Visual Area Obstacle Identification Surface (Sheet 1 of 2)
27	15	TERPS	20:1 Visual Area Obstacle Identification Surface (Sheet 2 of 2)
28	15	OCS	20:1 Obstacle Clearance Surface
29	15	PAPI	3.5° Obstacle Clearance Surface (Sheet 1 of 2)
30	15	PAPI	3.5° Obstacle Clearance Surface (Sheet 2 of 2)
31	33	TERPS	20:1 Visual Area Obstacle Identification Surface
32	33	OCS	20:1 Obstacle Clearance Surface
33	33	PAPI	3.5° Obstacle Clearance Surface

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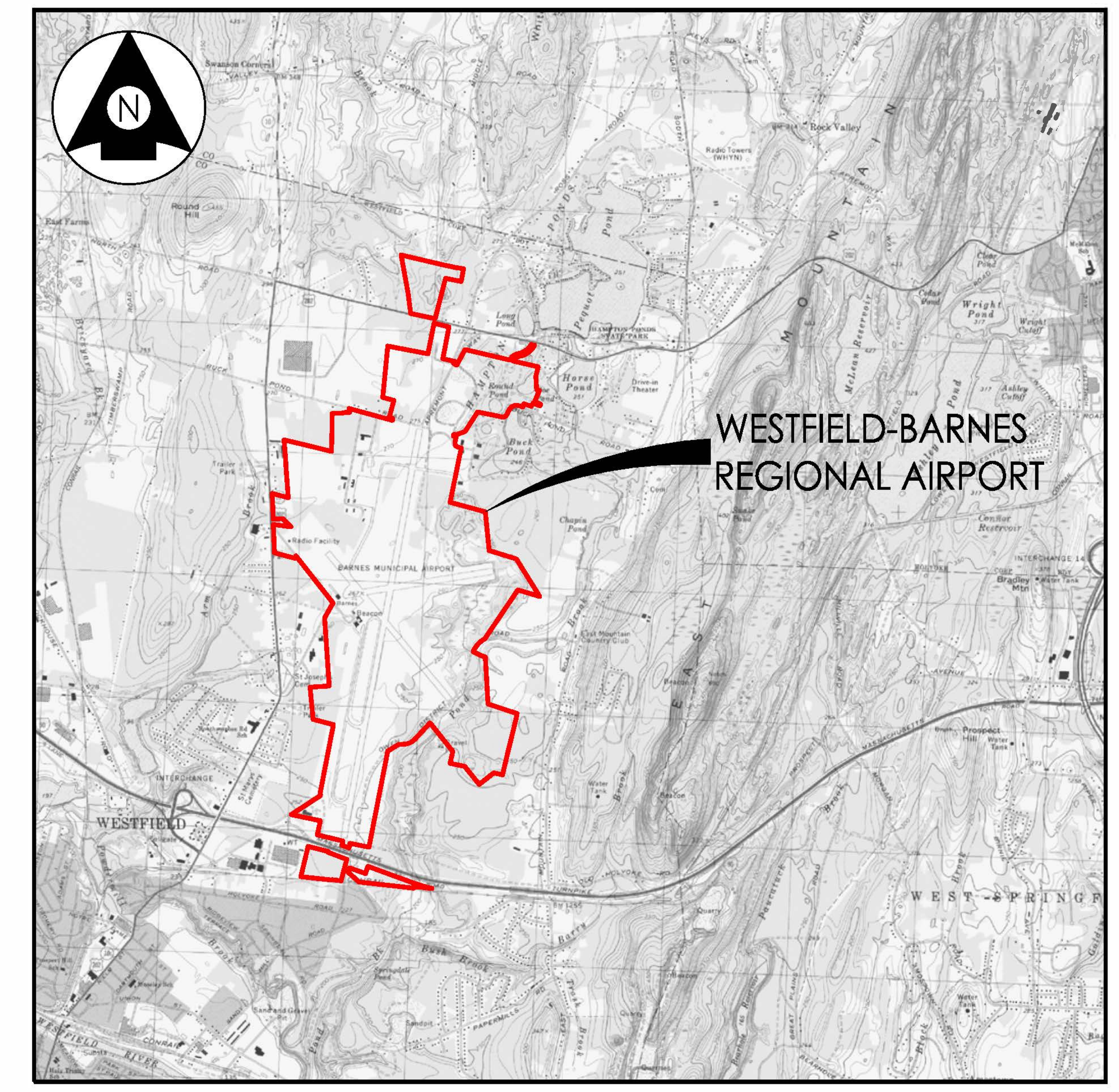
WESTFIELD-BARNES REGIONAL AIRPORT
WESTFIELD, MASSACHUSETTS



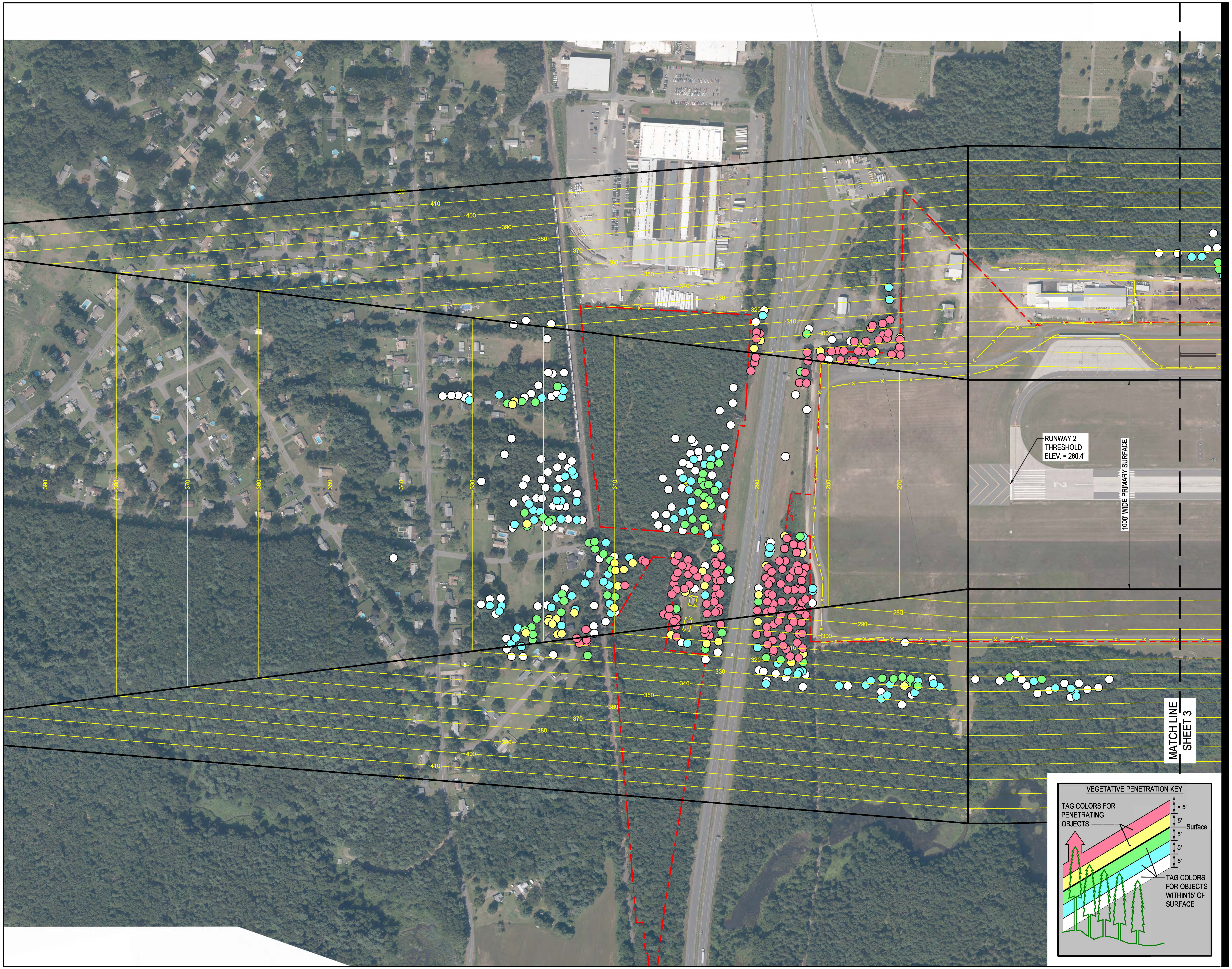
LOCATION MAP
NOT TO SCALE

Westfield-Barnes
REGIONAL AIRPORT

AIRSPACE ANALYSIS

APRIL 2019
PROJECT NUMBER: 1195210988

INDEX OF SHEETS



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 200' 400'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
File Name: SHT_02_TO_06_RW220_FP77	LRK	LRK	JEB	2019.04.11
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

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Westfield-Barnes
REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

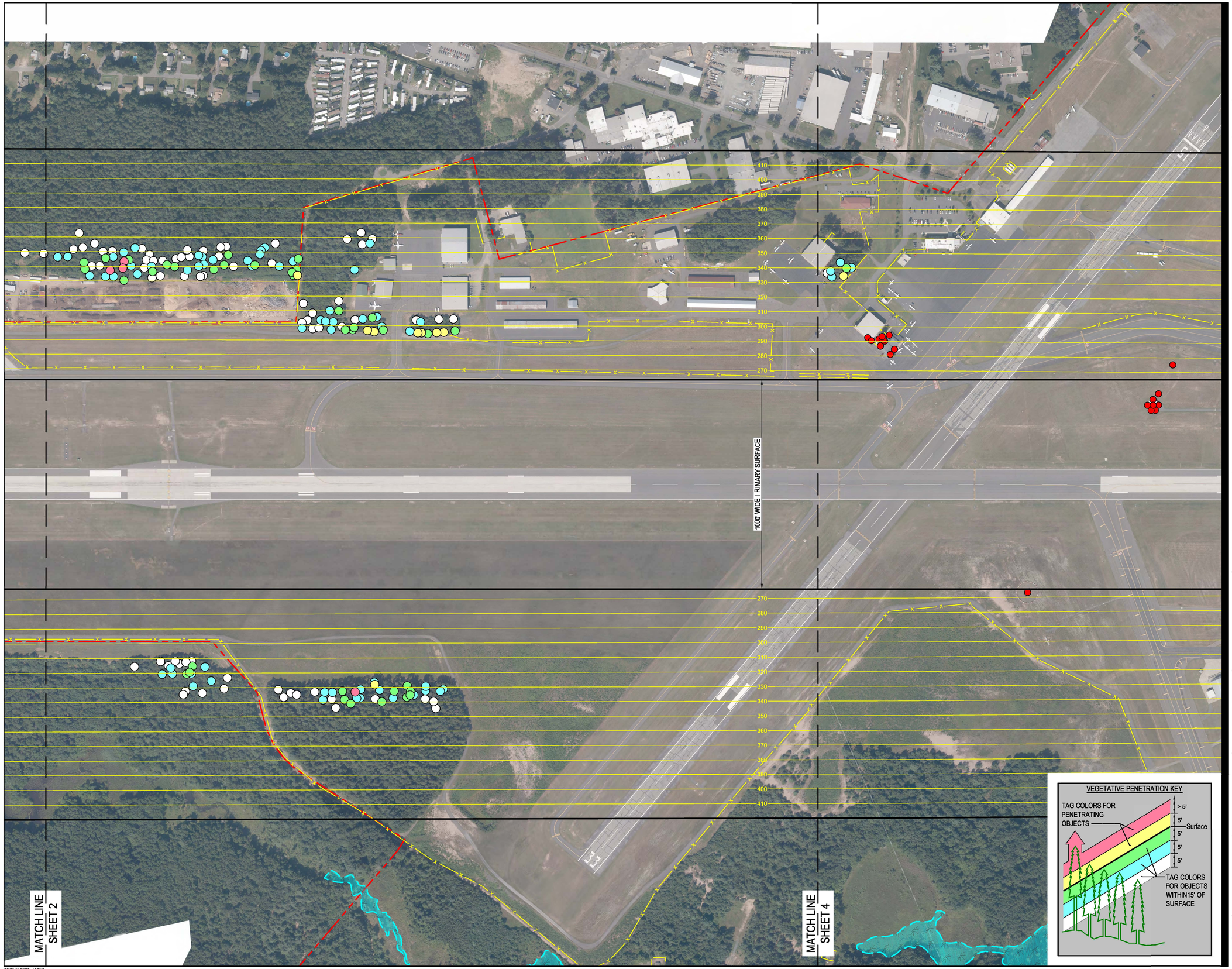
WESTFIELD, MASSACHUSETTS

Title
RUNWAY 2
FAR PART 77 NON-PRESICION
34:1 APPROACH & ADJACENT
7:1 TRANSITIONAL SURFACES
ANALYSIS - SHEET 1 OF 1

Project No.	Scale
195210988	AS SHOWN

Revision	Sheet
0	2 of 33

ORIGINAL SHEET - ARCH D



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- WETLAND BOUNDARY

N

0 200' 400'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_02_TO_06_RW220_FP77	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
	LRK	LRK	JEB	2019.04.11

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WESTFIELD-BARNES REGIONAL AIRPORT

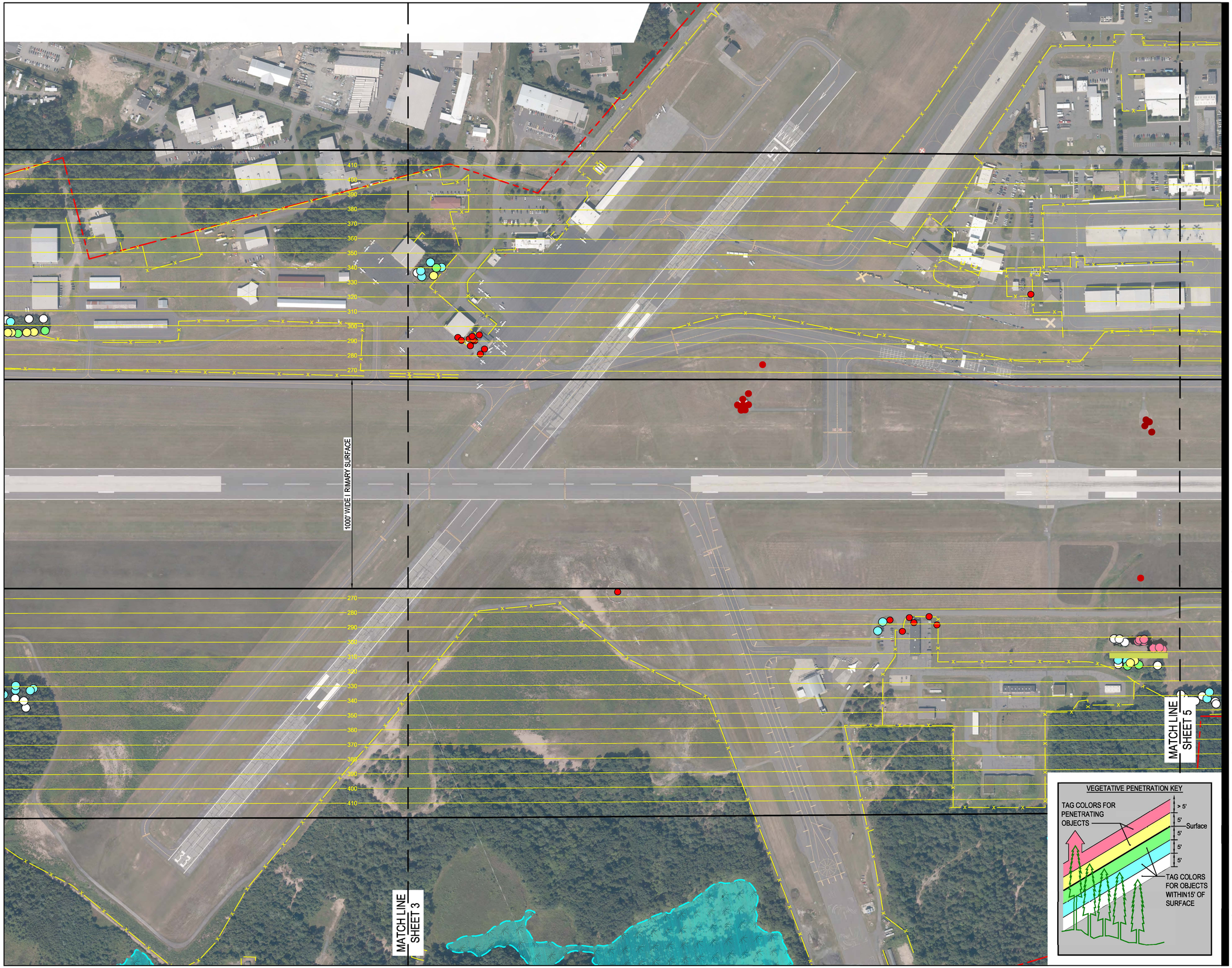
AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 2-20
FAR PART 77 1000' WIDE
PRIMARY SURFACE & ADJACENT
7:1 TRANSITIONAL SURFACE
ANALYSIS - SHEET 1 OF 2

Project No.	Scale
195210988	AS SHOWN

Revision	Sheet
0	3 of 33



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1:100 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

N

0 200' 400'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

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	LRK	LRK	JEB	2019.04.11

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title

RUNWAY 2-20
FAR PART 77 1000' WIDE
PRIMARY SURFACE & ADJACENT
7:1 TRANSITIONAL SURFACE
ANALYSIS - SHEET 2 OF 2

Project No.	Scale
195210988	AS SHOWN

Revision 0 Sheet 4 of 33

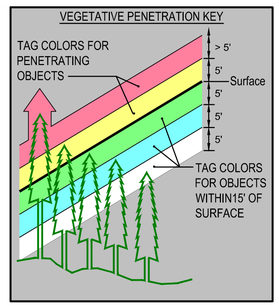
1000' WIDE PRIMARY SURFACE

RUNWAY 20
THRESHOLD
ELEV. = 266.5'

MATCH LINE
SHEET 4

MATCH LINE
SHEET 6

VEGETATIVE PENETRATION KEY



LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 200' 400'

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Issued	By	Appd	YYYY.MM.DD

File Name: SHT_02_TO_06_RW220_FP77	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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Client/Project Logo

Westfield-Barnes REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
FAR PART 77 PRECISION
50:1 APPROACH & ADJACENT
7:1 TRANSITIONAL SURFACES
ANALYSIS - SHEET 1 OF 2

Project No.	Scale
195210988	AS SHOWN

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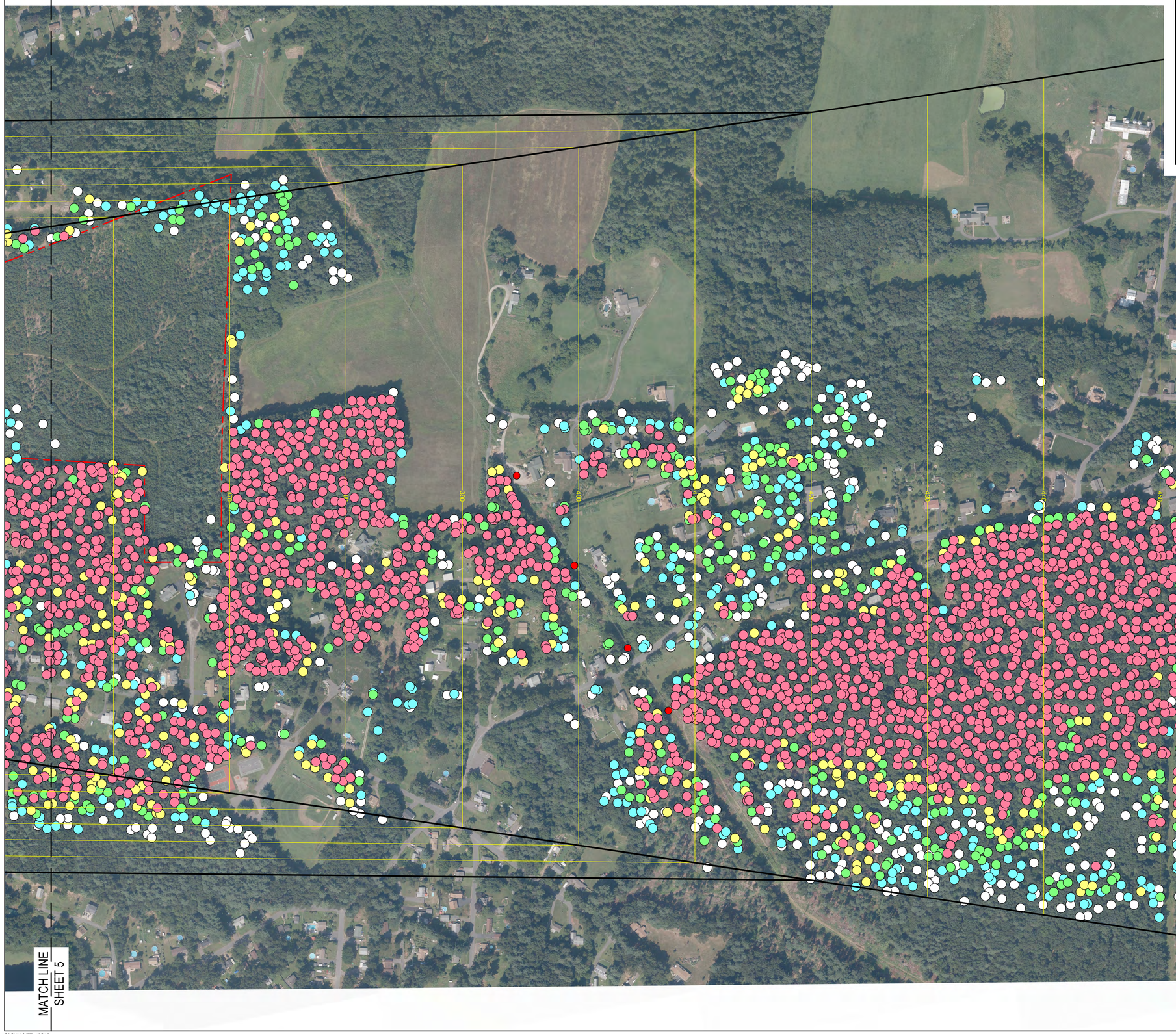

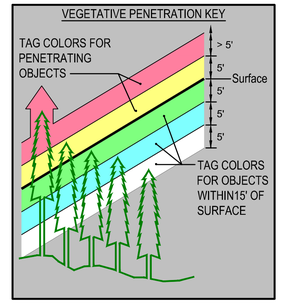

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1:50 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

N

0 200' 400'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_02_TO_06_RW220_FP77	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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Client/Project Logo

Westfield-Barnes REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
FAR PART 77 PRECISION
50:1 APPROACH & ADJACENT
7:1 TRANSITIONAL SURFACES
ANALYSIS - SHEET 2 OF 2

Project No.	Scale
195210988	AS SHOWN

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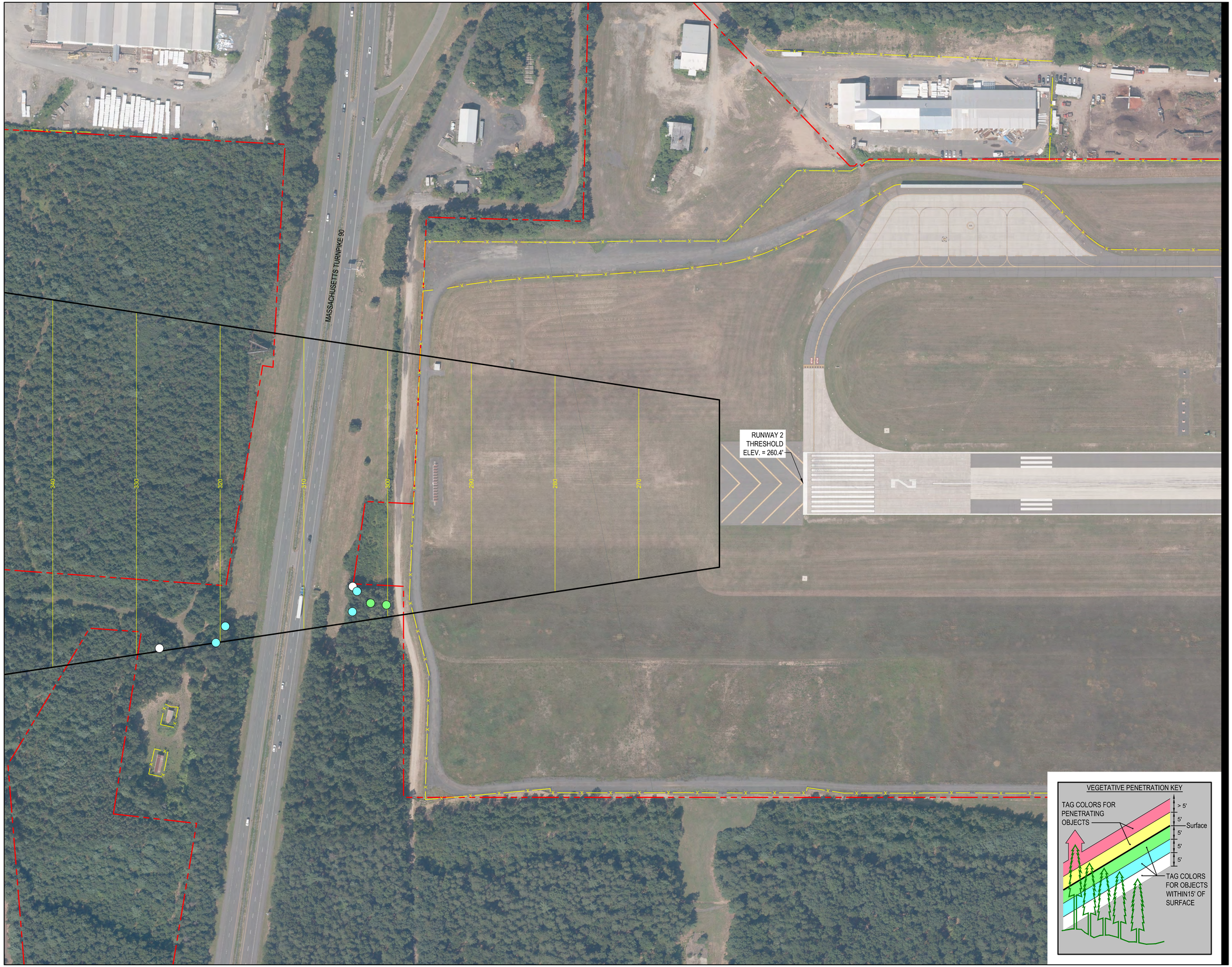

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

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File Name: SHT_07_RW2_VA-OIS	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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WESTFIELD-BARNES REGIONAL AIRPORT

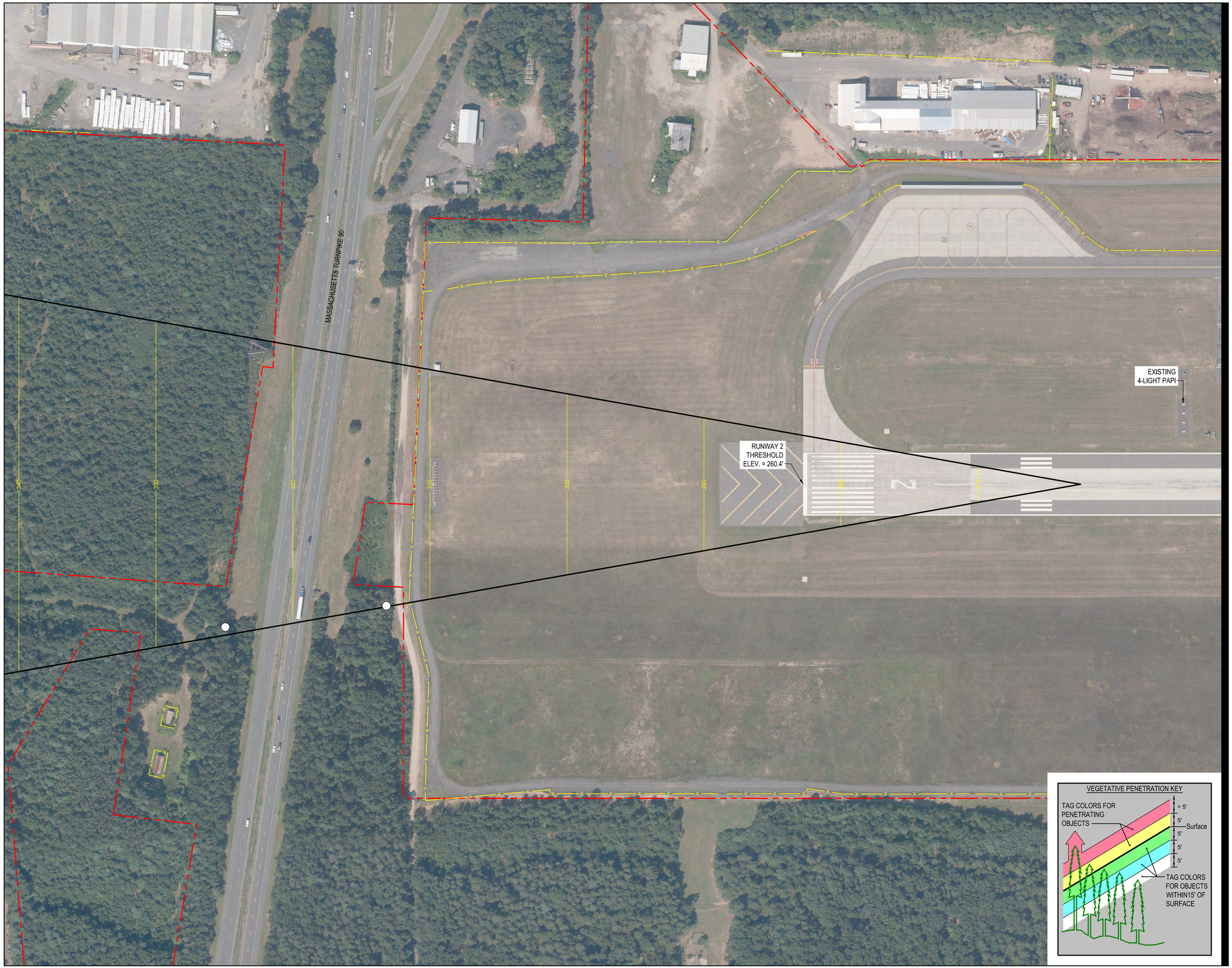
AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 2
20:1 THRESHOLD SITING SURFACE (NO.4)
& TERPS 20:1VISUAL AREA
OBSTACLE IDENTIFICATION SURFACE
(VA-OIS) ANALYSIS - SHEET 1 OF 1

Project No.	Scale
195210988	AS SHOWN

Revision	Sheet
0	7 of 33



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

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File Name: SHT_08_RW2_PAPI_OCS	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 2
(3° VISUAL GLIDE PATH 4-LIGHT PAPI)
1°45' OBSTACLE CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 1 OF 1

Project No.	Scale
195210988	AS SHOWN

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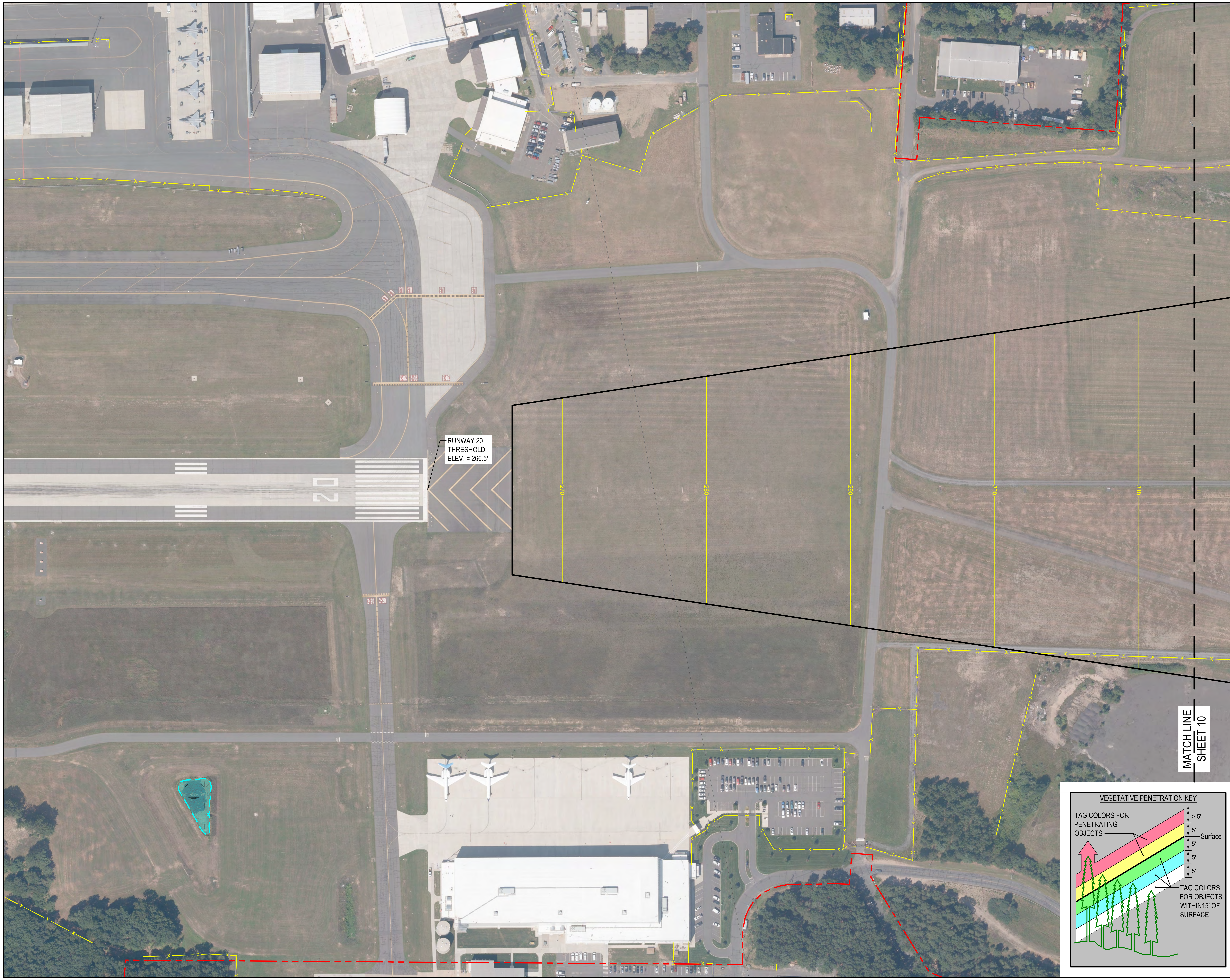

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
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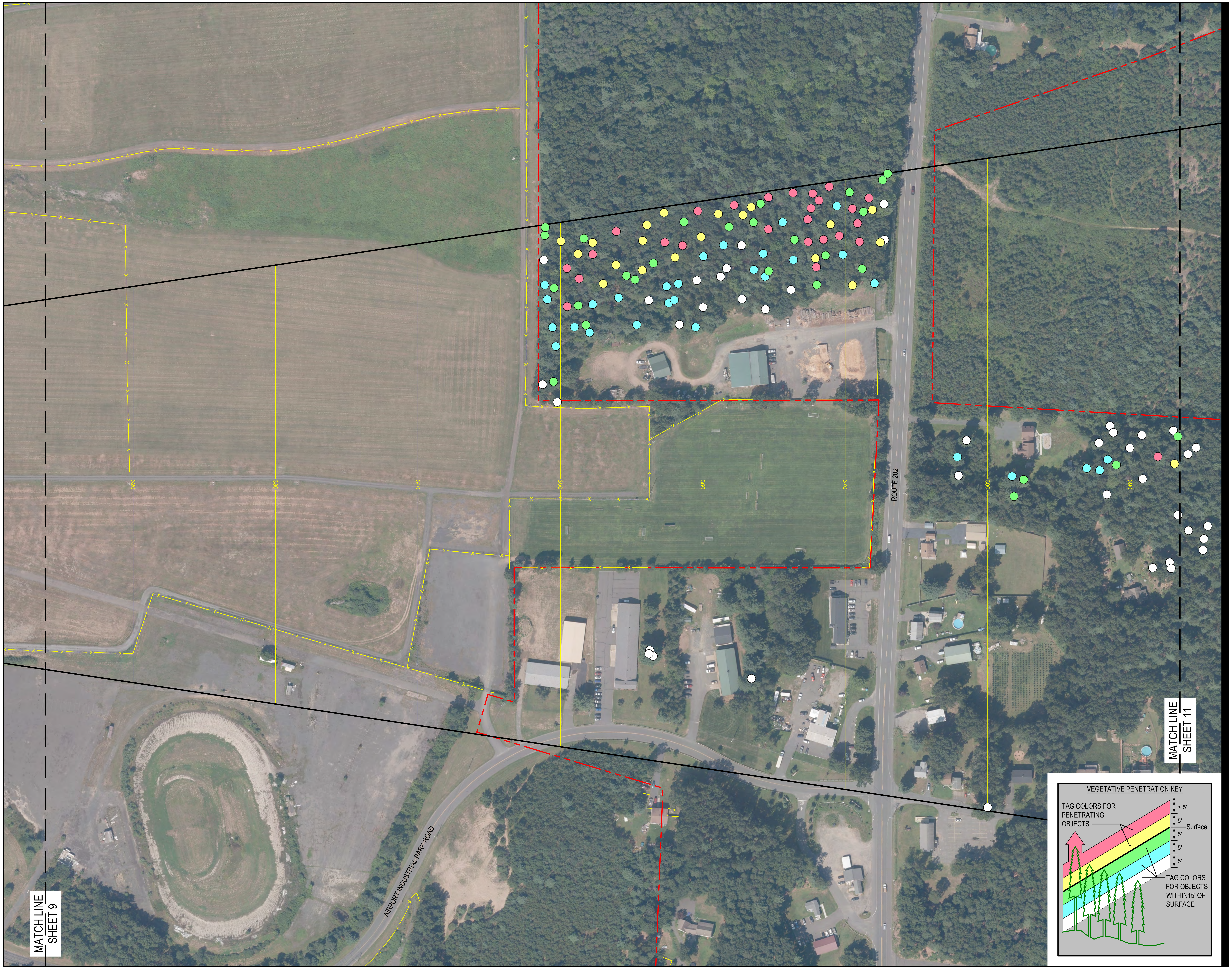
AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
TERPS 34:1 VISUAL AREA
OBSTACLE IDENTIFICATION SURFACE
(VA-OIS) ANALYSIS - SHEET 1 OF 3

Project No. 195210988
Scale AS SHOWN
Revision 0
Sheet 9 of 33

ORIGINAL SHEET - ARCH D



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

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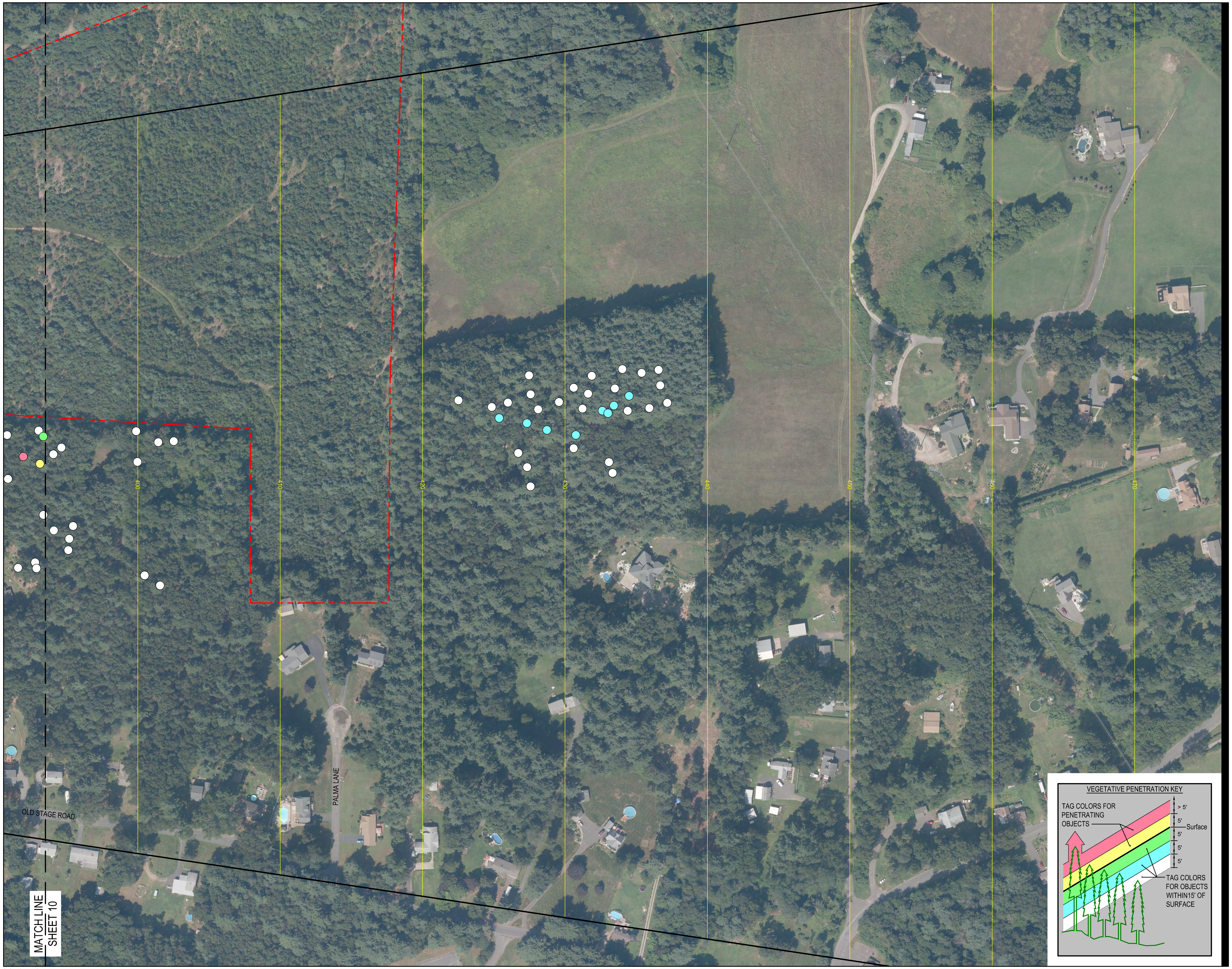
AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
TERPS 34:1 VISUAL AREA
OBSTACLE IDENTIFICATION SURFACE
(VA-OIS) ANALYSIS - SHEET 2 OF 3

Project No. 195210988
Scale AS SHOWN
Revision 0
Sheet 10 of 33

ORIGINAL SHEET - ARCH D



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

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File Name: SHT_09_TO_11_RW20_VA-OIS	LRK	LRK	JEB	2019.04.11
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

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AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
TERPS 34:1 VISUAL AREA
OBSTACLE IDENTIFICATION SURFACE
(VA-OIS) ANALYSIS - SHEET 3 OF 3

Project No.	Scale
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ORIGINAL SHEET - ARCH D

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
File Name: SHT_12_TO_14_RW20_SITING	LRK	LRK	JEB	2019.04.11
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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
34:1 THRESHOLD SITING SURFACE (NO.5) ANALYSIS - SHEET 1 OF 3

Project No. 195210988
Scale AS SHOWN
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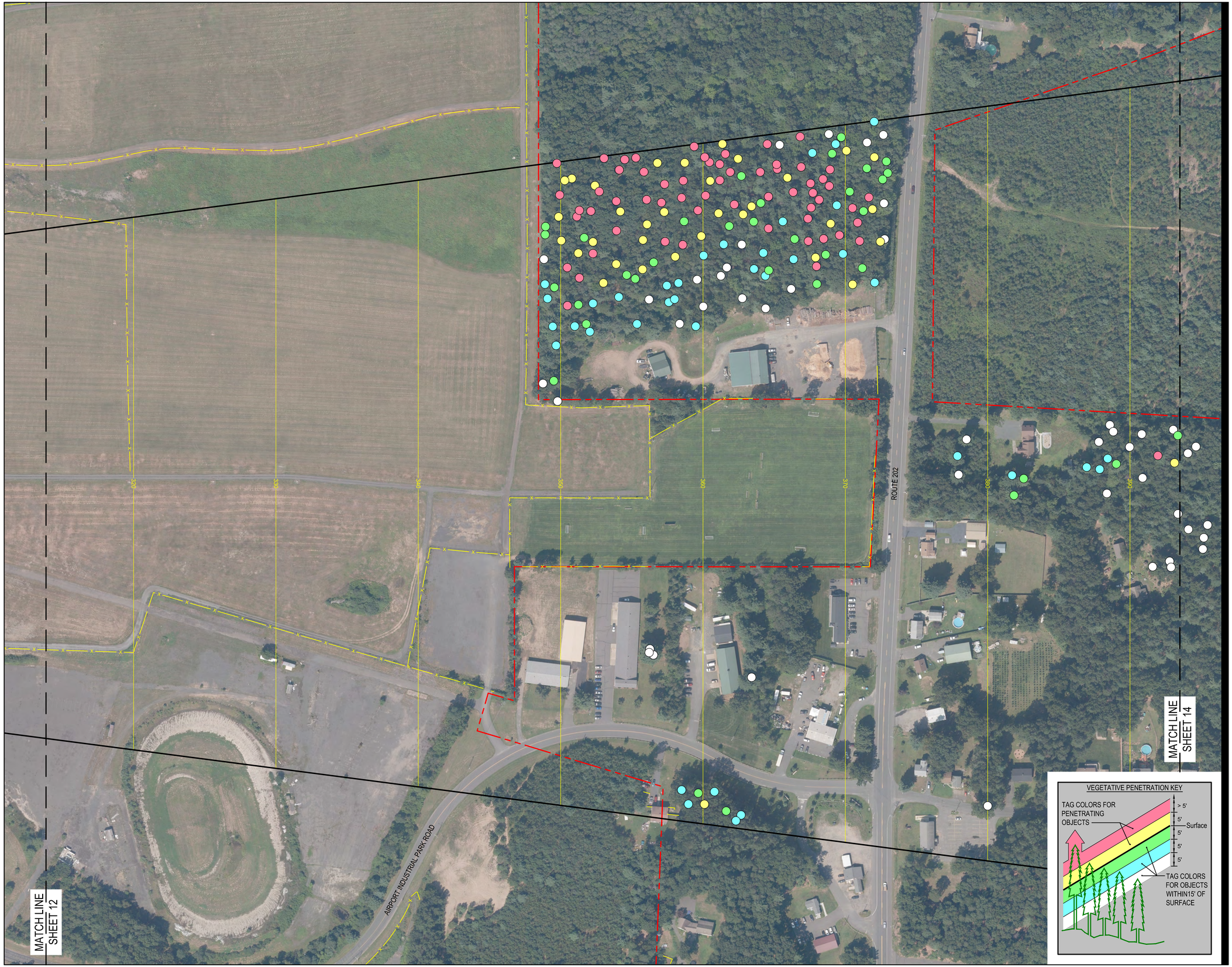
Sheet 12 of 33

ORIGINAL SHEET - ARCH D



LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

VEGETATIVE PENETRATION KEY

N

0 100' 200'

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File Name: SHT_12_TO_14_RW20_SITING	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

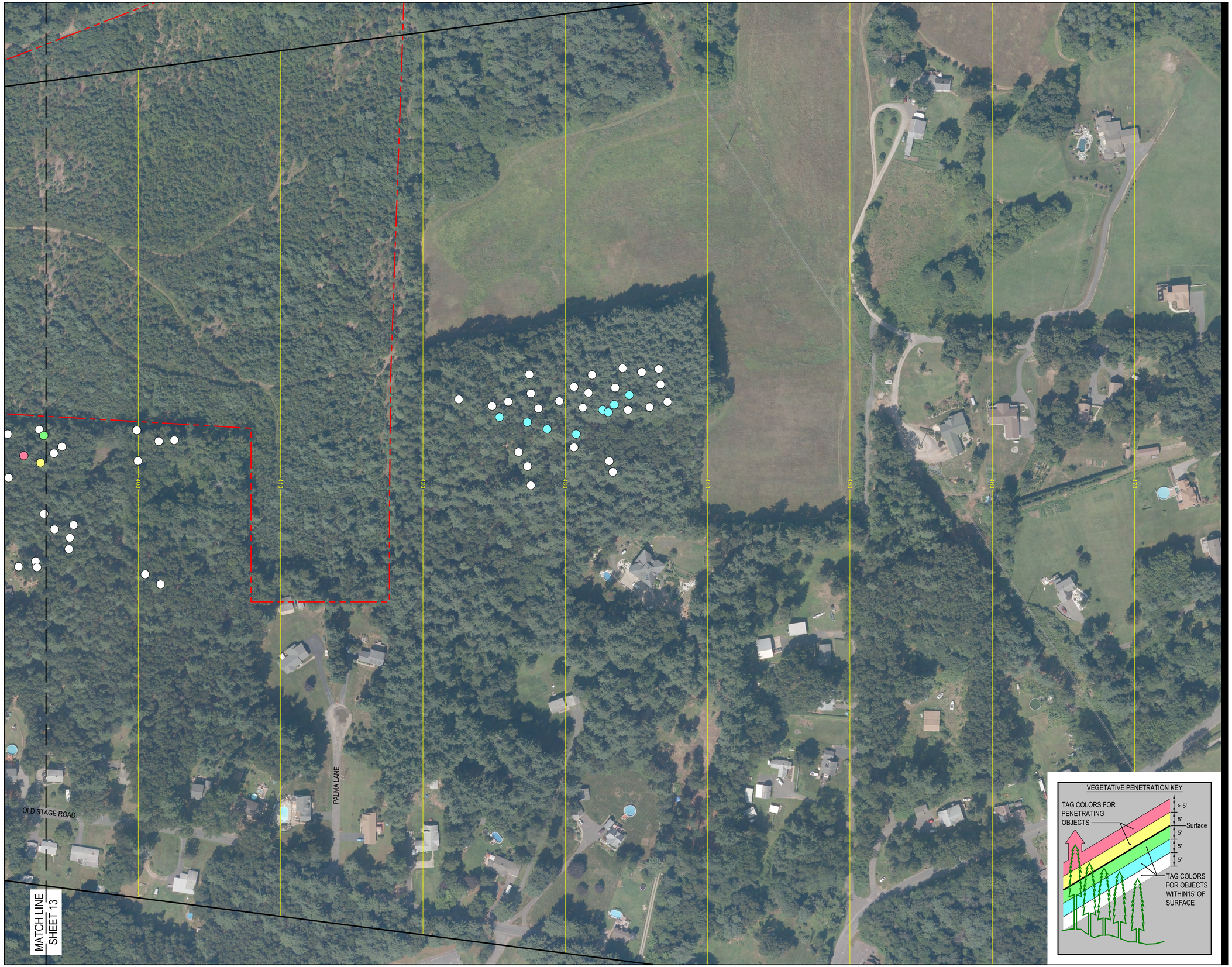
AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
34:1 THRESHOLD SITING SURFACE
(NO.5) ANALYSIS - SHEET 2 OF 3

Project No.	Scale
195210988	AS SHOWN

Revision 0
Sheet 13 of 33



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1:50 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

N

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_12_TO_14_RW20_SITING	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
34:1 THRESHOLD SITING SURFACE
(NO.5) ANALYSIS - SHEET 3 OF 3

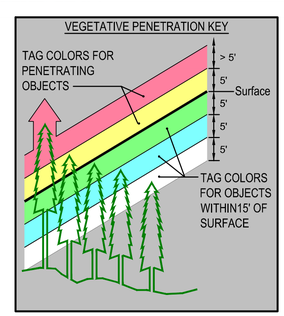
Project No.	Scale
195210988	AS SHOWN

Revision 0
Sheet 14 of 33

RUNWAY 20
THRESHOLD
ELEV. = 266.5'

RUNWAY 02

200 210 220 230 240 250 260 270 280 290 300 310 320 330



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

N

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
File Name: SHT_15_RW20_VGS	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
(3° GLIDE PATH)
2° VERTICAL GUIDANCE SURFACE
(VGS) ANALYSIS - SHEET 1 OF 1

Project No.	Scale
195210988	AS SHOWN

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_16_TO_18_RW20_OCS	LRK	LRK	JEB	2019.04.11
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Westfield-Barnes
REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
TERPS W,X,Y 34:1
PRECISION OBSTACLE
CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 1 OF 3

Project No.	Scale
195210988	AS SHOWN

Revision	Sheet
0	16 of 33

ORIGINAL SHEET - ARCH D

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
File Name: SHT_16_TO_18_RW20_OCS	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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Westfield-Barnes REGIONAL AIRPORT

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
TERPS W,X,Y 34:1
PRECISION OBSTACLE
CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 2 OF 3

Project No.	Scale
195210988	AS SHOWN

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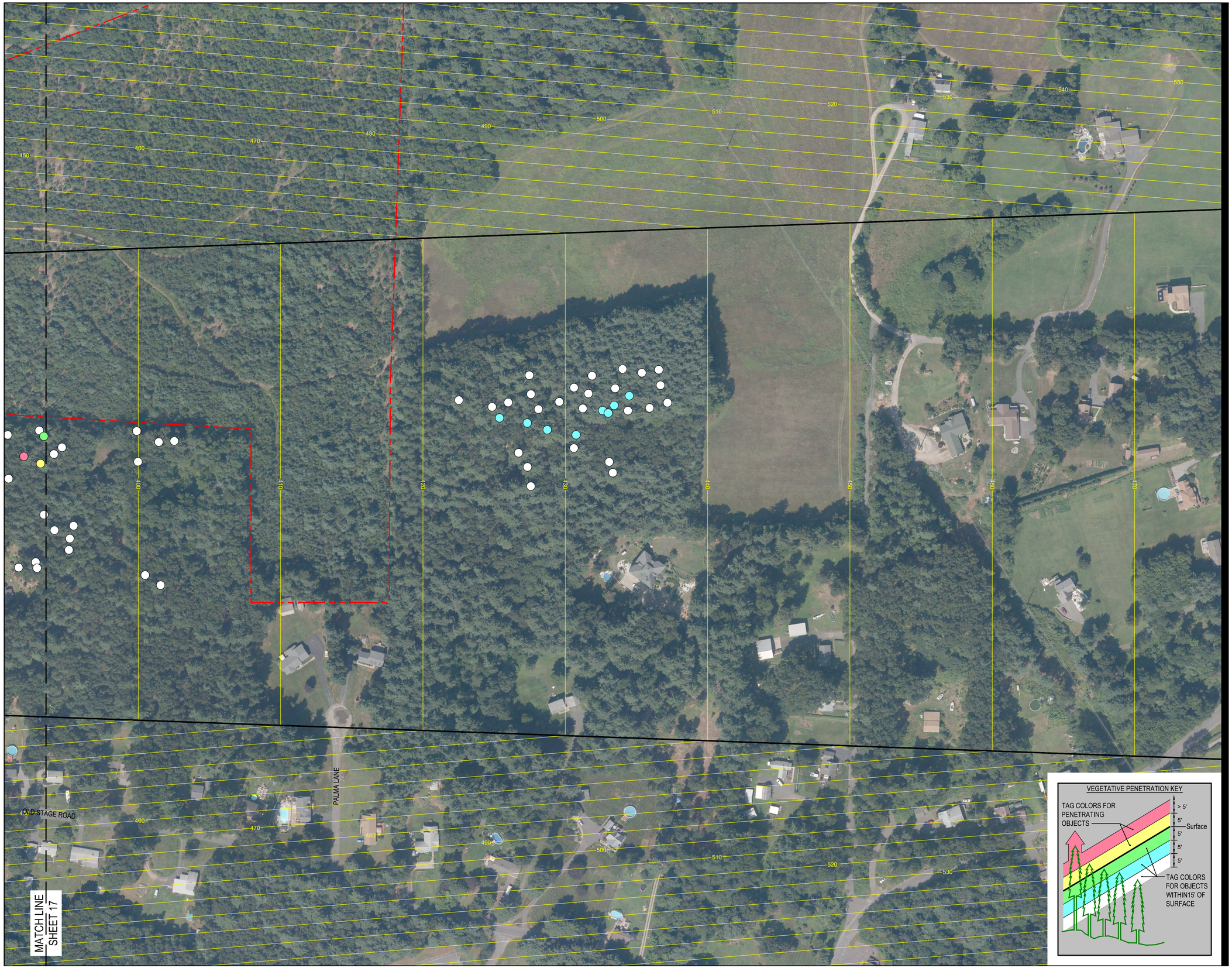

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

N

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_16_TO_18_RW20_OCS	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title

RUNWAY 20
TERPS W,X,Y 34:1
PRECISION OBSTACLE
CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 3 OF 3

Project No.	Scale
195210988	AS SHOWN

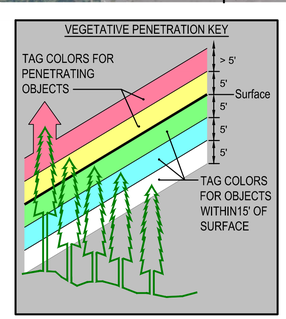
Revision 0 Sheet 18 of 33

RUNWAY 20
THRESHOLD
ELEV. = 266.5'

EXISTING
4-LIGHT PAPI

MATCH LINE
SHEET 20

VEGETATIVE PENETRATION KEY



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

N

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_19_TO_20_RW20_PAPI_OCS	LRK	LRK	JEB	2019.04.11
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Westfield-Barnes REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
(3° VISUAL GLIDE PATH 4-LIGHT PAPI)
1°45' OBSTACLE CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 1 OF 2

Project No.	Scale
195210988	AS SHOWN

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ORIGINAL SHEET - ARCH D

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

N

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
File Name: SHT_19_TO_20_RW20_PAPI_OCS	LRK Dwn.	LRK Dsgn.	JEB Chkd. 2019.04.11 YYYY.MM.DD

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Westfield-Barnes REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 20
(3° VISUAL GLIDE PATH 4-LIGHT PAPI)
1°45' OBSTACLE CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 2 OF 2

Project No.	Scale
195210988	AS SHOWN

Revision	Sheet
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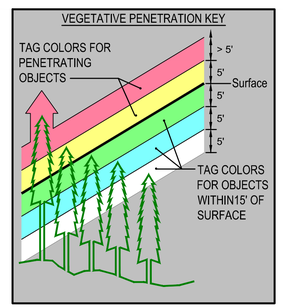

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_21_TO_25_RW1533_FP77	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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Westfield-Barnes REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 15
FAR PART 77 VISUAL
20:1 APPROACH & ADJACENT
7:1 TRANSITIONAL SURFACES
ANALYSIS - SHEET 1 OF 2

Project No.	Scale
195210988	AS SHOWN

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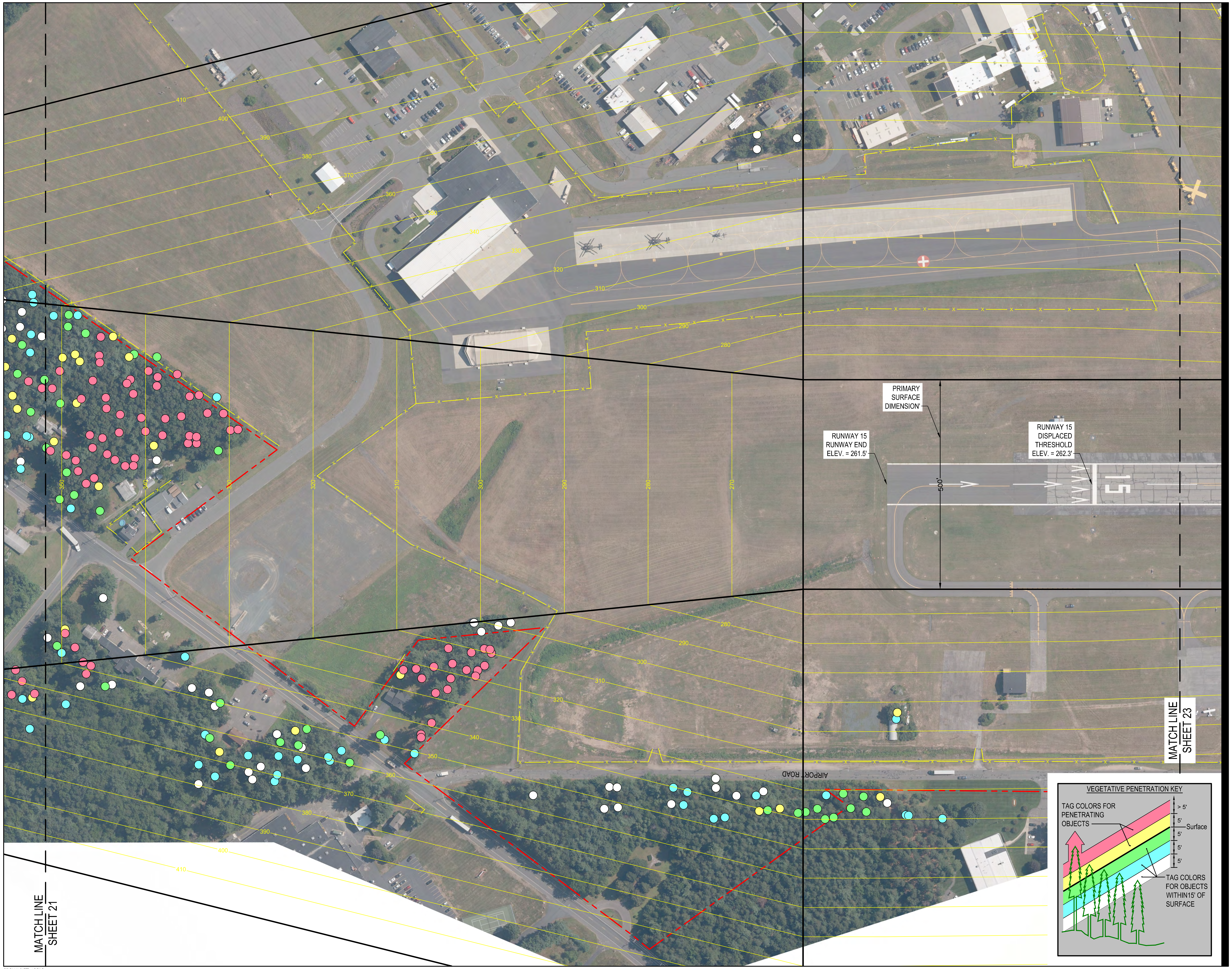
ORIGINAL SHEET - ARCH D



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 15
FAR PART 77 VISUAL
20:1 APPROACH & ADJACENT
7:1 TRANSITIONAL SURFACES
ANALYSIS - SHEET 2 OF 2

Project No.	Scale
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ORIGINAL SHEET - ARCH D

ORIGINAL SHEET - ARCH D

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 15-33
FAR PART 77 500' WIDE
PRIMARY SURFACE & ADJACENT
7:1 TRANSITIONAL SURFACE
ANALYSIS - SHEET 1 OF 2

Project No.	Scale
195210988	AS SHOWN

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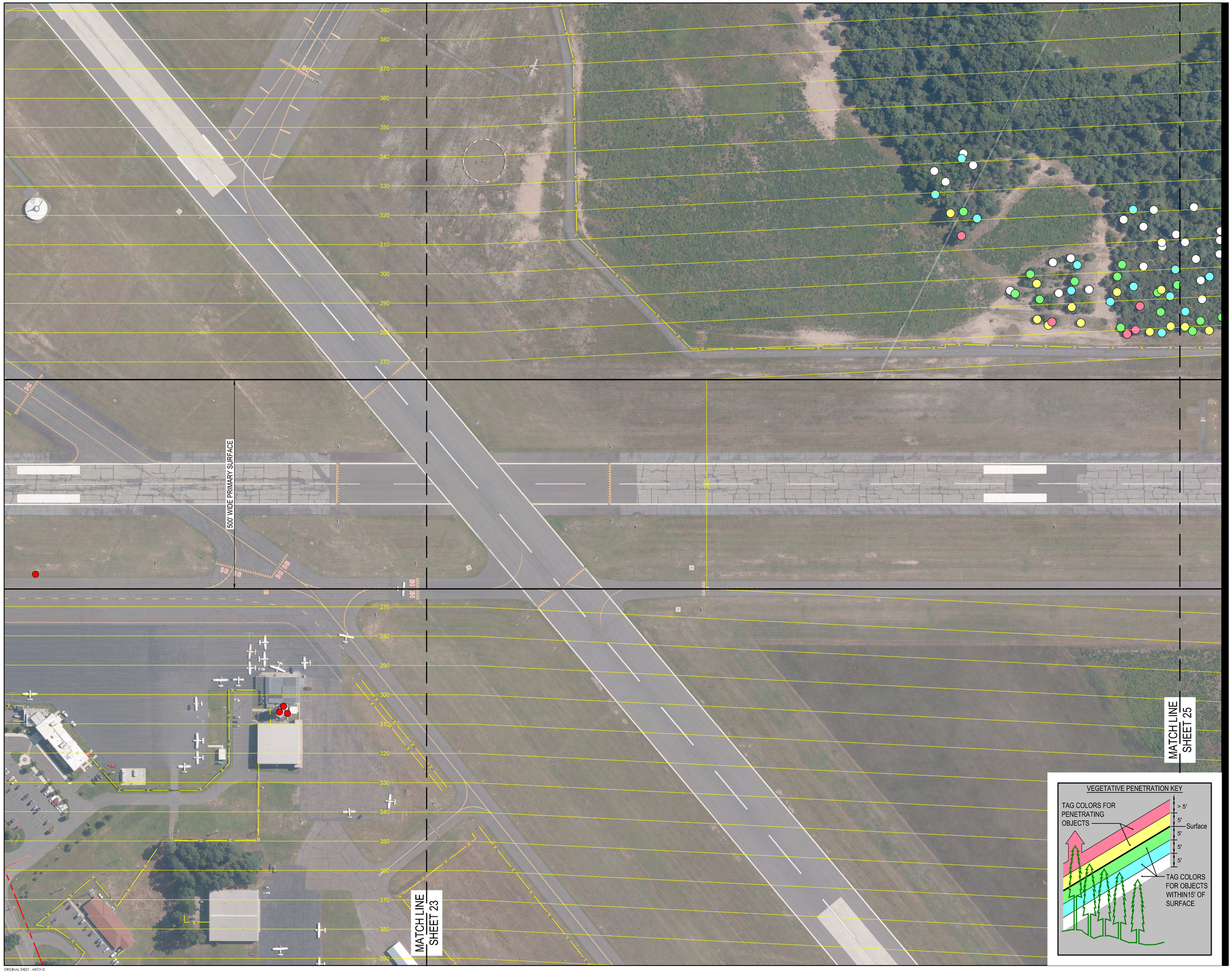

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

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File Name: SHT_21_TO_25_RW1533_FP77	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 15-33
FAR PART 77 500' WIDE
PRIMARY SURFACE & ADJACENT
7:1 TRANSITIONAL SURFACE
ANALYSIS - SHEET 2 OF 2

Project No.	Scale
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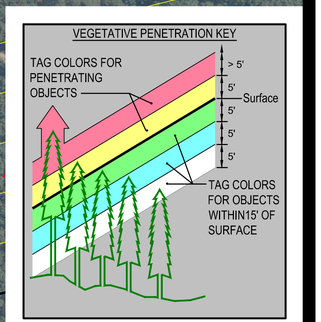
RUNWAY 33
RUNWAY END
ELEV. = 246.9'

500' WIDE PRIMARY SURFACE

OWEN DISTRICT ROAD

MATCH LINE
SHEET 24



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 33
FAR PART 77 VISUAL
20:1 APPROACH & ADJACENT
7:1 TRANSITIONAL SURFACES
ANALYSIS - SHEET 1 OF 1

Project No.	Scale
195210988	AS SHOWN

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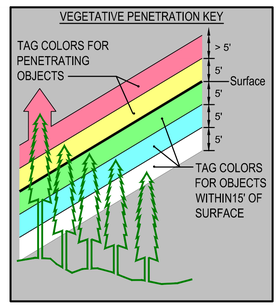
VEGETATIVE PENETRATION KEY



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1:100 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
File Name: SHT_26_TO_27_RW15_VA-OIS	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 15
TERPS 20:1 VISUAL AREA
OBSTACLE IDENTIFICATION SURFACE
(VA-OIS) ANALYSIS - SHEET 1 OF 2

Project No.	Scale
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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- 1150 AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 15
TERPS 20:1 VISUAL AREA
OBSTACLE IDENTIFICATION SURFACE
(VA-OIS) ANALYSIS - SHEET 2 OF 2

Project No.	Scale
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ORIGINAL SHEET - ARCH D

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_28_RW15_SITING	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 33
20:1 THRESHOLD SITING SURFACE
(NO.3) ANALYSIS - SHEET 1 OF 1

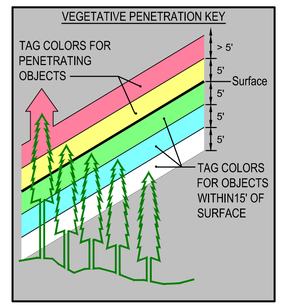
Project No.	Scale
195210988	AS SHOWN

Revision 0
Sheet 28 of 33

LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

VEGETATIVE PENETRATION KEY



0 100' 200'

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Revision	By	Appd	YYYY.MM.DD

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File Name: SHT_29_TO_30_RW15_PAPI_OCS	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 15
(3.5° VISUAL GLIDE PATH 4-LIGHT PAPI)
2°20' OBSTACLE CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 1 OF 2

Project No.	Scale
195210988	AS SHOWN

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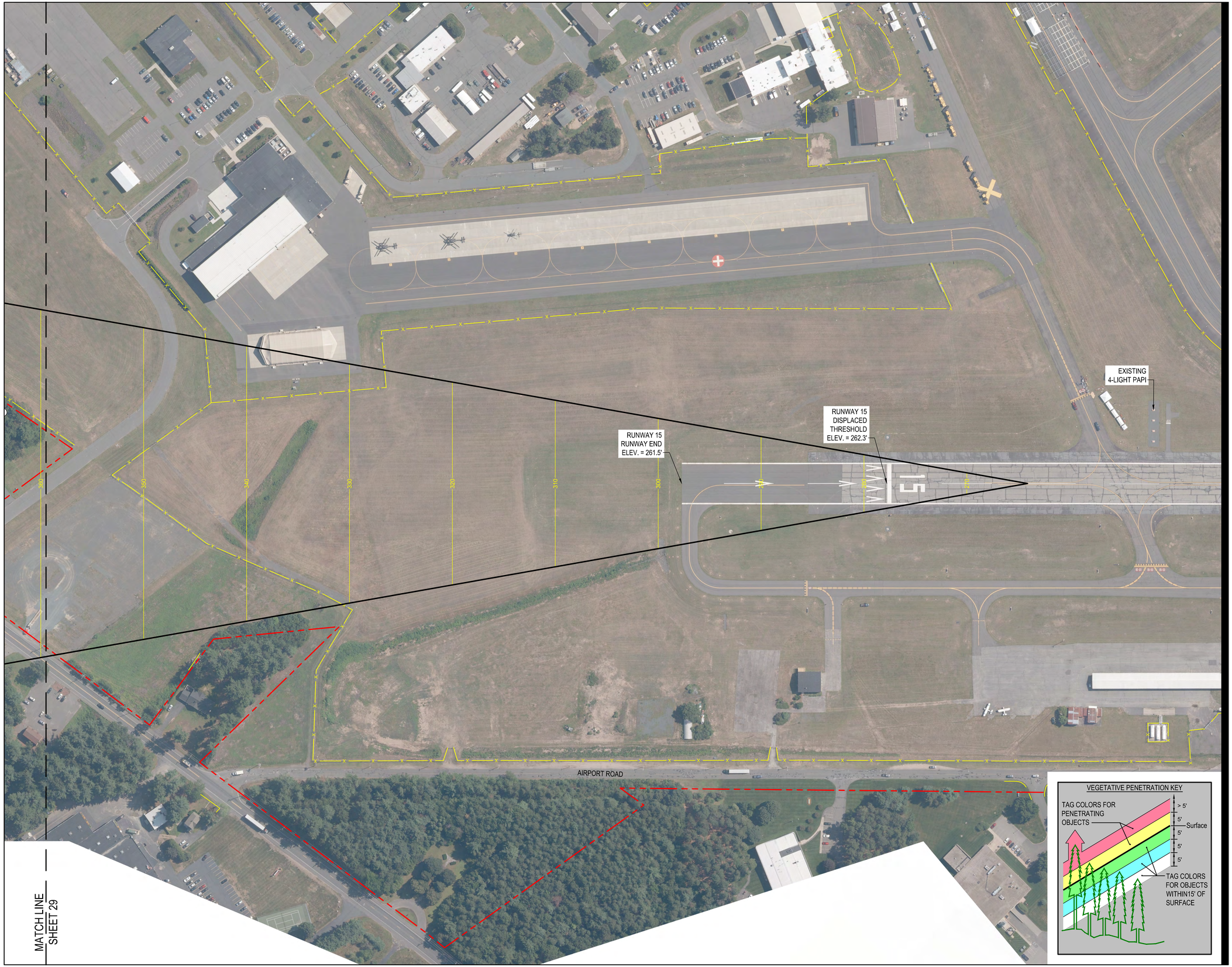

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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_29_TO_30_RW15_PAPI_OCS	LRK	LRK	JEB	2019.04.11
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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title

RUNWAY 15
(3.5° VISUAL GLIDE PATH 4-LIGHT PAPI)
2°20' OBSTACLE
CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 2 OF 2

Project No.	Scale
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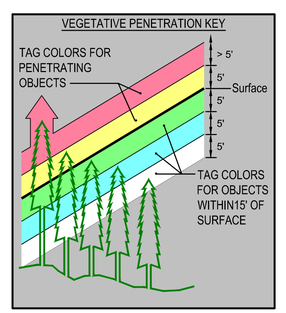
RUNWAY 33
RUNWAY END
ELEV. = 246.9'

OWEN DISTRICT ROAD

250 260 270 280 290 300 310 320 330 340

VEGETATIVE PENETRATION KEY



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD
File Name: SHT_31_RW33_VA-OIS	LRK Dwn.	LRK Dsgn.	JEB Chkd.	2019.04.11 YYYY.MM.DD

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WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 33
TERPS 20:1 VISUAL AREA
OBSTACLE IDENTIFICATION SURFACE
(VA-OIS) ANALYSIS - SHEET 1 OF 1

Project No.	Scale
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Revision	Sheet
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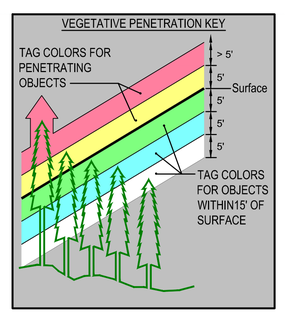
RUNWAY 33
RUNWAY END
ELEV. = 246.9'

OWEN DISTRICT ROAD

250 260 270 280 290 300 310 320 330 340 350

VEGETATIVE PENETRATION KEY



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

File Name: SHT_32_RW33_SITING	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
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AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 33
20:1 THRESHOLD SITING SURFACE
(NO.3) ANALYSIS - SHEET 1 OF 1

Project No.	Scale
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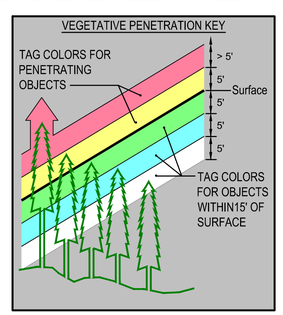
EXISTING
4-LIGHT PAPI

RUNWAY 33
RUNWAY END
ELEV. = 246.9'

OWEN DISTRICT ROAD

270
280
290
300
310
320
330
340

VEGETATIVE PENETRATION KEY



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LEGEND

- AIRPORT PROPERTY LINE
- EXISTING FENCE
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- WETLAND BOUNDARY

0 100' 200'

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Issued	By	Appd	YYYY.MM.DD

File Name: SHT_33_RW33_PAPI_OCS	LRK	LRK	JEB	2019.04.11
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Westfield-Barnes REGIONAL AIRPORT

Client/Project
WESTFIELD-BARNES REGIONAL AIRPORT

AIRSPACE ANALYSIS

WESTFIELD, MASSACHUSETTS

Title
RUNWAY 33
(3.5° VISUAL GLIDE PATH 4-LIGHT PAPI)
2°20' OBSTACLE CLEARANCE SURFACE
(OCS) ANALYSIS - SHEET 1 OF 1

Project No.	Scale
195210988	AS SHOWN

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