



# Conservation Commission Meeting

Wednesday, June 3, 2026 at 7:00 PM

Remote Participation Only

## Agenda

Pursuant to Chapter 2 of the Acts of 2025, the meeting and public hearing will be conducted with remote opportunities for participation. Remote participation and access methods include:

### **ACCESS INFORMATION:**

- A. This meeting will be held on June 3, 2026 at 7 pm. Location: Remote Participation Only
- B. The in-person meeting will also be televised through WCATV (Watertown Cable Access Television) on Comcast Channel 22 or RCN Channel 13 and can be streamed online at: <http://vodwcatv.org/CablecastPublicSite/watch-now?site=3>
- C. The Public may join the virtual meeting online: <https://watertown-ma.zoom.us/j/99597080710>
- D. Public may join the virtual meeting audio only by phone: (877) 853-5257 or (888) 475-4499 (Toll Free) and enter Webinar ID: 995 9708 0710
- E. Public may comment through email: [sjenness@watertown-ma.gov](mailto:sjenness@watertown-ma.gov)
- F. Please Visit the Conservation Commission Website here: <https://www.watertown-ma.gov/199/Conservation-Commission>

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1. Call to Order
  2. Roll Call
  3. General Business
    - A. 99 Coolidge Avenue/DCR Bike Path (MassDEP filing #: 321-0187): Certificate of Compliance Request to close out Order of Conditions. Representative: National Development and VHB.  
Link: <https://watertownma.portal.opengov.com/records/382026>.
    - B. 99 Coolidge Avenue (MassDEP filing #: 321-0175): Japanese Knotweed Management Plan. Representative: National Development
  4. Whitney Hill Park
    - A. Presentation on study of carbon storage in WHP trees by Minerva Action Group, LLC
  5. Updates
    - A. Chair update
    - B. CPC update
    - C. Agent's report
  6. Minutes to be approved

- A. May 6, 2026 Conservation Commission
- 7. Adjourn

# 99 Coolidge

## Japanese Knotweed Management Plan

Watertown, MA

PREPARED FOR

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Alexandria Real Estate Equities, Inc.  
2 Kingsbury Avenue  
Watertown, MA 02472

PREPARED BY

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May 2026



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### Japanese Knotweed Invasive Management Plan

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### Attachment A: Knotweed Treatment Plan

# Japanese Knotweed Invasive Management Plan

This Invasive Species Management Plan (ISMP) has been developed to establish routine methodologies for the targeted treatment and removal of Japanese knotweed (*Fallopia japonica*) on the 99 Coolidge property. This ISMP is intended to supplement the existing Operations and Maintenance (O&M) Plan developed for the 99 Coolidge site.

## Background

The purpose of this document is to establish invasive species management methodologies for the property located at 99 Coolidge Avenue in Watertown, Massachusetts (the Site). Several areas within the Site are dominated by dense stands of Japanese knotweed, which is categorized as an “invasive species” by the Massachusetts Invasive Plants Advisory Group (MIPAG). The portions of the Site dominated by Japanese knotweed are depicted in red on the Knotweed Treatment Plan included as Attachment A.

The Site also contains wetland resource areas subject to protection under the Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40) and its implementing regulations (310 CMR 10.00), as well as the Town of Watertown Wetlands Ordinance<sup>1</sup> (Article XV) (WWO; the Ordinance) and its implementing regulations. All treatment activities described below which will occur within a wetland resource area or within jurisdictional buffer zones to resource areas are subject to review and approval by the Watertown Conservation Commission. Prior to performing the work, appropriate approval must be obtained and appropriate notice provided to the Conservation Commission.

Any significant deviation from the work described below within or near a wetland resource area must also be approved by the Commission. The Order of Conditions approving this work was initially issued on May 5, 2021 (DEP File #321-0175 and WWO #2021-02). The OOC was extended for an additional 3 years on April 4, 2024, and as a result of the MA Leads Act passed in November 2024, the OOC was extended for an additional 2 years and is now valid through **April 2, 2029**.

The Site’s vegetative management program is outlined in the sections below.

## Invasive Species Removal and Control Program

The invasive species control program is proposed to treat and control infestations of Japanese knotweed at predetermined locations on the Site (see Attachment A). Control programs shall use a combination of hand removal and limited, targeted herbicide application, as described below.

The most recent science on invasive plant control underscores the importance of well-timed management treatments. Cutting or mowing shall be performed once carbohydrates have been transferred from the roots to the above-ground portion of the plant in early summer, and then again before the carbohydrate stores are returned to

<sup>1</sup> Town of Watertown, Article XV, Revised 2008. Wetlands Ordinance

the root systems in late summer/early fall. Removal of plant mass which contains a large percentage of the available carbohydrate stores weakens the plant and aids in effective removal of the plants over time.

Where dense stands of Japanese knotweed are present, and in areas which cannot be easily routinely cut or mowed, selective herbicide application can be used to provide more effective treatment. Application of herbicides should be conducted during periods of time when the plants would translocate the herbicide most efficiently and therefore destroy existing root materials. This is typically recommended during late summer or early fall. However, as the carbohydrate transfer is dictated primarily by weather, the management timeline is specified by season only and requires field expertise to initiate timely management procedures. Targeted application (rather than widespread foliar applications) will serve to protect the native specimen plants and adjacent wetland resource areas.

The treatment methods described below shall be completed over a **three to five-year** time period.

### Japanese Knotweed

As identified in the Knotweed Treatment Plan included as Attachment A and depicted in the site photographs included below, the presence of Japanese knotweed was identified in several locations on the Site. The following treatment protocol is recommended for the treatment and removal of Japanese knotweed within the area shown in red on the supporting Knotweed Treatment Plan. All herbicides used are to be applied by knowledgeable, licensed individuals only.

#### Annual Treatment Protocol:

1. Contract services of a licensed pesticide applicator experienced with knotweed removal and local conservation ordinances.
2. Licensed pesticide applicator and wetland scientist are to identify areas to be treated with flags, and to post 'Herbicide Warning' and 'Vegetation Management Area' notices, which are to remain throughout the duration of treatment period (which is proposed to be 3-5 years).
3. Prior to applying herbicides, digging or cutting, a licensed pesticide applicator and wetland scientist will identify native specimen plants with flags and identify appropriate protection measures for adjacent wetland areas.
4. Notify the Watertown Conservation Commission via email 48 hours (or more) prior to the start of herbicide application.
5. Conduct Mechanical & Chemical Treatment
  - a. Allow knotweed to grow to approximately 3' height into early summer.
  - b. About mid-June, licensed pesticide applicator will cut the identified knotweed plants to within two to six inches of the ground. **Collect all cuttings and place in plastic garbage bags.** Dispose of garbage bags at an approved invasive species disposal site, or allow to solar sterilize by leaving the bags in direct sunlight for at least 3 months. After 3 months, the contents of the bags may be composted or normally disposed of.
  - c. In late summer or early fall (ideally in mid-August) when plants are still growing and before senescence, repeat the cutting.

- d. After cutting, wipe/paint cut stem tops with herbicide. Herbicide must meet the following criteria:
  - i. Biodegradable
  - ii. Conservation Commission and EPA-approved for use near wetlands
  - iii. Non-toxic to animal and aquatic life
  - iv. Contains glyphosate formula approved for use near wetlands and for foliar applications
- e. Monitor area for regrowth and pull and dispose of juvenile plants as soon as they are evident.
- f. Repeat the treatment as needed, roughly 3-5 growing seasons.
- g. All treated areas should be re-vegetated as quickly as possible to help suppress regrowth of knotweed. Reseed areas with appropriate quick growing erosion control and conservation seed mix and/or replant with quick growing native plants such as pussy willow (*Salix discolor*), red twig dogwood (*Cornus sericea*), witch hazel (*Hamamelis virginiana*), fragrant sumac (*Rhus aromatica*), Virginia wild rye (*Elymus virginicus*), and/or switch grass (*Panicum virgatum*).



NO. 1 / 5.5.2026

**DESCRIPTION**

Looking northeast/upstream from the bank of the unnamed perennial stream. Dense stands of knotweed are present on each side of the stream banks.

Areas within the photo are within the designated herbicide treatment area.



NO. 2 / 5.5.2026

**DESCRIPTION**

Looking east at the dense stands of knotweed located within the upland "island" which bisects the unnamed perennial stream near the southern limits of the site.

Areas within the photo are within the designated herbicide treatment area.



NO. 1 / 5.5.2026

**DESCRIPTION**

Looking northeast/upstream from the bank of the unnamed perennial stream. Dense stands of knotweed are present on each side of the stream banks.

Areas within the photo are within the designated herbicide treatment area.



NO. 2 / 5.5.2026

**DESCRIPTION**

Looking east at the dense stands of knotweed located within the upland "island" which bisects the unnamed perennial stream near the southern limits of the site.

Areas within the photo are within the designated herbicide treatment area.



NO. 3 / 5.5.2026

**DESCRIPTION**

Looking south/downstream at the dense stands of knotweed located along the banks of the unnamed perennial stream near the southern limits of the site.

Areas within the photo are within the designated herbicide treatment area.



NO. 4 / 5.5.2026 1:19 PM

**DESCRIPTION**

Looking southeast at an area where knotweed was previously removed, upgradient of the bank of the perennial stream near the southern limits of the site.

Areas within the photo are within the designated herbicide treatment area and should be treated as needed.



NO. 5 / 5.5.2026

**DESCRIPTION**

Looking northeast/upstream at a dense stand of knotweed located along the western bank of the unnamed perennial stream near the southern limits of the site.

Area within the photo is within the designated herbicide treatment area.



NO. 6 / 5.5.2026 1:20 PM

**DESCRIPTION**

Looking south at the dense stands of knotweed located along the eastern slope down to the wetlands and perennial stream near the southeastern limits of the site.

Areas within the photo are within the designated herbicide treatment area.



# Whitney Hill Park

An Evaluation of Its Forest Carbon

A Quantitative, Science-Based Foundation for Watertown's Climate Goals

A Study By

**The Minerva Action Group**

Bob Leverett as Presenter

# Who is the Minerva Action Group

**Our Mission:** To help students and the public develop informed, personal insight into climate change through interactive experiments, outdoor exploration, and practical learning experiences.

## Members:

Andy Pettifor  
Bob West  
Mike Powers  
Bob Leverett

Gil Rodgers  
William Moomaw  
Ron Whitfield  
Nicola Ianeselli



**Special Thanks:** *Dr. Patrick Fairbairn and the WHP team for providing the rigorous 2015 and 2021 tree inventories that formed the basis of this analysis for supplying us with all the tree identifications and measurements used in the following analysis.*

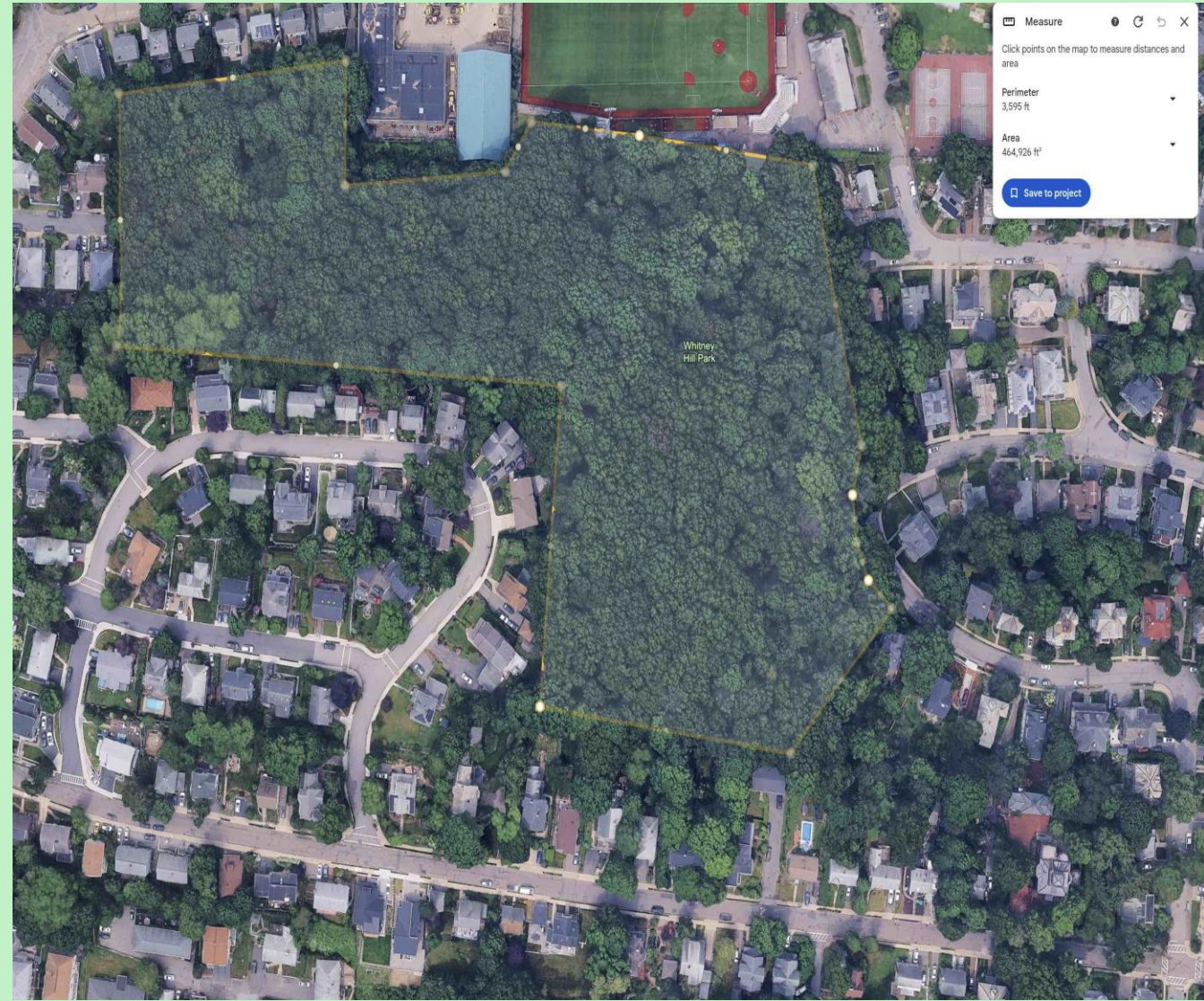
## **Study Objective and Design**

**Using the tree inventories developed by Dr. Patrick Fairbairn and the WHP team in 2015 and 2021:**

- 1. Calculate the biomass and carbon storage in the trees in the sample area**
- 2. Estimate the carbon gain from 2015 to 2021 in the sample trees**
- 3. Project carbon gain to the whole park by total and individual species**
- 4. Outline possible future steps to enhance study returns to refine and improve.**

The objective of this research is to refine and improve methods for estimating the quantity of carbon and carbon dioxide (CO<sub>2</sub>) that is sequestered/captured over time in a well-defined, living forest area such as Whitney Hill Park in Watertown, Massachusetts. This research may be extended using more advanced methods such as Light Detection and Ranging (LiDAR.)

# Whitney Hill Park



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**Park**

32 plots, each with a 10-meter radius. 2.484 acres. A total of 519 sample trees  
Whole park, approximately 10 acres.

# Methodology: How We Measured Tree Carbon in Whitney Hill

**Field Data:** Tree species, condition, and diameter at breast height (DBH) measured in 2015 and re-measured in 2021.

**The Jenkins Model:** Utilized the U.S. Forest Service Jenkins biomass tool to calculate above- and below-ground dry biomass (*bm*) in kilograms via the species-dependent equation:

$$bm_{kg} = 1.15e^{(\beta_0 + \beta_1 \ln(D_{cm}))}$$

The  $\beta_0$  and  $\beta_1$  coefficients are based on tree species.  $D_{cm}$  is the tree's diameter at breast height in centimeters.

**Carbon Conversion:** Applied the commonly used scientific baseline that **50%** of dry biomass of the trunk and branches of a tree is pure stored carbon.

**Scaling Up:** Multiplied the sample area results by a factor of **4** to project totals for the full 10-acre woodland.

## Key Findings: Current Stored Carbon (2021)

**The Sample Baseline:** The **519** sample trees hold an **estimated 344,000 lb (156,000 kg)** of above and below ground carbon. [344,000 lb is equivalent to 1,262,480 lb of CO<sub>2e</sub>.]

**The Full Park Carbon Reservoir:** Scaled to the full **10** acres, Whitney Hill Park's trees store **1,376,000 lb (624,000 kg)** of carbon. [The CO<sub>2</sub> equivalent is approximately **5,050,000 lb**.]

**The Power of Mature Trees:** A core subset of **336** trees were tracked from 2015 to 2021 by Patrick Fairbairn and include most of the park's larger trees. The 336 trees hold **319,000 lbs** of the carbon or **93%** of the total.

## Forest Growth & Sequestration Rates

**6-Year Growth:** The tracked subset of 336 trees increased their carbon storage by **14%** between 2015 and 2021.

**Annual Sample Gain:** This equates to an increase of **8,000 lbs** of live tree carbon per year within the sample area.

**Park-Wide Climate Impact:** Expanded to the full woodland, Whitney Hill Park sequestered an average of **32,000 lbs** of new tree carbon each year.

## Looking at the Total Ecosystem (The 5 Carbon Pools)

Forest carbon extends beyond live trees. Ecologists define five distinct pools, modeled here using U.S. Forest Service ratios for an 80 to 100-year-old forest:

**Live Trees (Above/Below Ground): 57%** of total carbon → **1,376,000 lb.**

**Soil Organic Matter: 31%** of total carbon → **748,000 lb.**

**Dead Wood: 7%** of total carbon → **169,000 lb.**

**Litter: 5%** of total carbon → **121,000 lb.**

**Total Ecosystem Sequestration (2021):** The whole park holds **2,414,000 lb** of carbon.

# Projections Through the 2026 Growing Season

## Conservative Forecasting

Maintaining the 2015–2021 accumulation rate of **32,000 lb/year** park-wide yields a live tree increase of **192,000 lbs** over 6 years.

## 2026 Target

Even assuming zero addition to the soil, litter, or deadwood pools, the park is projected to hold **2,470,000 lb** of forest carbon by the end of this growing season.

## The Bottom Line

This is almost **1,300 standard tons** of carbon kept out of the atmosphere. This is equivalent to almost **4,800** standard tons of CO<sub>2</sub> equivalent.

## Ground-truthing & High-precision Modeling

To tighten these estimates, a two-pronged advanced methodology approach would be required:

**Advanced Sine-Method Height Tracking:** Measure a sample of tree heights. Standard stick or tangent/clinometer methods carry large errors. Laser-based hypsometers executing the two-point **Sine method** should be used to achieve height accuracies of between +/- 1.0 and 1.5 feet.

**Ground Sampling & NSVB Integration:** Compare the Jenkins biomass model returns against the U.S. Forest Service's National-Scale Volume Biomass (NSVB) system to develop a localized correction factor for the entire forest.

## Next Step: Aerial LiDAR Integration

**Historical Calibration:** Integrate ground-based methods with aerial LiDAR scans from 2015 and 2024 to extract highly precise historical tree heights. LiDAR stands for light detection and ranging and uses light in the form of a pulsed laser to map Earth features including forests.

**Back-Projection:** Project sample tree heights back to 2021 to generate a better growth model.

**Scalability:** Apply these corrections to the 336 tracked trees, then to the 519 sample trees, and ultimately build a more accurate carbon map for the whole property.

**Alternative Modeling:** Cross-reference data using the U.S. Forest Service biomass models, iTree carbon equations, and the Canadian Forest Service biomass calculator to establish the best modeling strategy.

## Conclusion

**An Important Climate Asset:** This study shows that Whitney Hill Park is serving as a functional, yearly active carbon sink, helping to draw down CO<sub>2</sub> emissions.

*We are pleased to offer these study results to help the City of Watertown establish municipal climate goals.*