OPERATOR OF
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
COMMUTER RAIL SYSTEM

32 COBBLE HILL ROAD
SOMERVILLE, MA 02143

2026

YEARLY OPERATIONAL PLAN

PREPARED BY:

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ABSTRACT:

This Yearly Operational Plan (YOP) describes the vegetation management maintenance activities for the Commuter Rail rights-of-way (ROW) scheduled for 2026 in compliance with the Commonwealth of Massachusetts Rights-of-Way Management Regulations 333 CMR 11.00.

This YOP is a companion document to the Massachusetts Department of Agricultural Resources (MDAR) approved Vegetation Management Plan (VMP) for years 2026-2030 which includes Integrated Vegetation Management (IVM).

INTRODUCTION TO THE PROGRAM

The Commuter Rail transports over a million passengers every year. The railroad right-of-way (ROW) spans over 700 miles and more than 100 communities. The general maintenance of the infrastructure requires the control and management of vegetation along the ROW and railroad assets for safe operations. Natural hazards, fallen vegetation, and slippery rail is a significant concern. Extreme weather events exacerbate the problem of vegetation falling over tracks causing damage to assets and interfering with safe operations. With this ever-increasing threat to safety and infrastructure, Massachusetts Bay Transportation Authority (MBTA) and Keolis have implemented an Integrated Vegetation Management (IVM) approach that includes both mechanical and chemical controls. Vegetation along the ROW will be addressed and maintained as described within the five-year Vegetation Management Plan (VMP). Large canopies and encroaching tall woody vegetation pose a high risk to safe operations by impeding prompt access to assets for general inspections and maintenance activities, or by obstructing required locomotive and personnel line-of-sight along the ROW, in curves, at grade crossings, and at signals. Visibility is critical to safe operations and to the public navigating the many grade crossings throughout the Commonwealth every day. MBTA and Keolis continues to build awareness with each community on vegetation management activities and has enhanced communications by providing electronic information relevant to each community. Best management practices have been implemented to ensure that operations and maintenance activities are managed in the protection of resource areas and the general safety of the communities and passengers.

Federal and State laws require railroads to control vegetation on their ROW:

Code of Federal Regulations Title 49, Part 213 Track Safety Standards, Subpart B - Roadbed, § 213.37 - Vegetation

Vegetation on railroad property which is on or immediately adjacent to roadbed shall be controlled so that it does not -

- *a) Become a fire hazard to track-carrying structures;*
- *b) Obstruct visibility of railroad signs and signals:*
  - *1) Along the right-of-way, and*
  - *2) At highway-rail crossings; (This paragraph (b)(2) is applicable September 21, 1999.)*
- *c) Interfere with railroad employees performing normal trackside duties;*
- *d) Prevent proper functioning of signal and communication lines; or*
- *e) Prevent railroad employees from visually inspecting moving equipment from their normal duty stations.*

Massachusetts Department of Environmental Protection (MassDEP) and Department of Agricultural Resources (MDAR) developed 333 CMR 11.00: Rights of Way Management "to establish a state-wide and uniform regulatory process which will minimize the uses of, and potential impacts from herbicides in rights-of-way on human health and the environment while allowing for benefits to public safety provided by the selective use or herbicides."

The purpose of 333 CMR 11.00, Rights of Way Management, is to promote the implementation of Integrated Vegetation Management (IVM) techniques and to establish

standards, requirements, and procedures necessary to minimize the risk of unreasonable adverse effects on human health and the environment associated with the use of herbicides to maintain rights-of-way. These regulations establish procedures which guarantee opportunity for public and municipal agency review and input.

The VMP is the long-term management plan for the railroad which describes the intended strategy for vegetation control over a five-year period and includes both the chemical application and the manual and mechanical controls implemented through an IVM approach. On August 29, 2025, Keolis's VMP was submitted to MDAR. The VMP was reviewed through a series of advertised public comment periods and meetings. The Conservation Commission, Board of Health, and Board of Selectmen or Mayor in each community was notified. The VMP was approved by MDAR March 17, 2026 for the period 2021-2025.

A Yearly Operational Plan (YOP) is required to be submitted to MDAR each year. The YOP provides the details of the vegetation management for the calendar year including the herbicides that are intended for use to maintain ROWs. It includes the IVM approach which incorporates chemical and mechanical controls, and drainage ditch clearing as required to ensure safe operations. The YOP is a companion document to the MDAR approved VMP. This YOP is submitted via certified mail to all communities which previously received a Request for Determination during the VMP permit process. The chemical application zones have been reviewed by each community. Any changes or updates to the chemical application zones may be requested at any time during the public comment period of the YOP. Communities also have an opportunity to inform MDAR of any new private wells. Based on received comments and information provided during the public comment period, Keolis will review information and update chemical application zone maps to ensure the most updated maps are used for the YOP.

The schedule of vegetation management activities throughout the year depends on multiple logistics and is dependent on the allowed track time for maintenance activities. Keolis will follow Best Management Practices outlined in Appendix A.

YOP Annual Review Process

Upon receipt of this YOP, MDAR publishes a notice in the Environmental Monitor. The applicant will provide a copy of the YOP and Environmental Monitor notice to the Board of Health, Conservation Commission, and the chief elected municipal official for the city or town in which the herbicide treatment is proposed.

Public notification of herbicide applications to the ROW is made by registered mail under separate cover at least 21 days in advance of the treatment. Notice is made to MDAR; the Mayor, City Manager or chairman of the Board of Selectman; the Board of Heath; and the Conservation Commission of the municipality where the right-of-way lies.

MDAR allows a 45-day comment period on the proposed YOP beginning with publication of the notice in the Environmental Monitor and receipt of the YOP and Environmental Monitor notice by each municipality.

The general maintenance activities this YOP details are critical to the safety of employees, passengers, and communities that the commuter rail passes and serves. To maintain and improve safety for all involved, the YOP is intended to:

- Manage vegetation to maintain clear line-of-sight by removing or trimming vegetation along signs and signals, grade crossings, inside curves and other critical assets.
- Trim or remove vegetation from encroaching on ROW assets.
- Trim or remove target overstory trees and woody vegetation that encroach over the ROW.
- Maintain communication lines, pole lines, fiber optic cables, positive train control system and other assets free of vegetation.

The YOP permitted maintenance activities under the approved VMP:

- Chemical application of roadbed will be conducted in spring (May-July).
- Chemical application for brush control in areas adjacent to the roadbed will be conducted in late summer or fall (July-October).
- Chemical application for stem treatment will be applied selectively throughout the year as needed.
- Off-track chemical application (June-August).
- On-track and off-track mechanical controls including the use of hand tools will be conducted selectively throughout the year.
- Target vegetation such as large canopy trees will be planned for trimming or removal throughout the year as needed and conducted with the support of third-party contractors and overseen by a professional arborist.
- Drainage ditch clearing will be conducted throughout the year as needed.

The chemical application schedule will be dependent on MDAR approval after public comment period is completed. The vegetation chemical controls detailed in this YOP will be implemented with the approval letter issued by MDAR and will follow the requirements of 333 CMR 11. All other vegetation maintenance activities will be conducted throughout the year.

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ANY COMMENTS ON THIS YOP SHOULD BE DIRECTED TO:

Tim Dermody
Benesch
19 Ocean Avenue, Suite 5
Portland, ME 04103
(207) 747-4651
mdonovan@benesch.com

AND

Ana Rita Pascoal
Director of Environment
and Sustainability
Keolis Commuter Services
(617) 222-8084
Ana.Pascoal@keoliscs.com

I. THE COMPANY PERFORMING THE HERBICIDE TREATMENT

This company or contractor will perform the herbicide treatment. Applicators are certified by MDAR in the applicator category Right-of-Way Pest Control.

Company Name RWC, Inc.

Address Lockhouse Road

P.O. Box 876

Westfield, MA 01086

Telephone # (413) 562-5681

Contact Person(s) Tyler Chateauvert

Company Name Northern Tree Service

Address 1290 Park Street

Palmer, MA 01069

Telephone # (800) 232-6132

Contact Person(s) Tim Lamotte

Company Name Maltby and Company

Address 614 Park Street

Stoughton, MA 02072

Telephone # (800) 660-6572

Contact Person(s) John Murphy

II. INDIVIDUAL REPRESENTING APPLICANT & SUPERVISING THE YOP

Individual supervising execution of the YOP and representing the railroad.

Name & Title John Steiniger

Chief Engineer

Address Keolis Commuter Services, LLC.

32 Cobble Hill Road

Somerville MA 02143

Telephone # (617) 222-8244

III. MUNICIPALITIES THE TREATMENT DESCRIBED WILL BE MADE

Maps of the individual municipalities affected by this Yearly Operational Plan can be found at:

FDCErailroadvegetation.com
➡ KEOLIS Commuter Services
➡ "YOUR MUNICIPALITY"
➡ Right-of-Way Maps

Abington	Hamilton	Plymouth
Acton	Hanson	Plympton
Andover	Haverhill	Quincy
Ashland	Hingham	Randolph
Avon	Holbrook	Raynham
Ayer	Hopedale	Reading
Bellingham	Ipswich	Revere
Belmont	Kingston	Rockport
Berkley	Lakeville	Rowley
Beverly	Lawrence	Salem
Billerica	Leominster	Saugus
Boston	Lincoln	Scituate
Boxborough	Littleton	Shirley
Braintree	Lowell	Somerville
Bridgewater	Lunenburg	Southborough
Brockton	Lynn	Stoughton
Brookline	Malden	Swampscott
Cambridge	Manchester	Taunton
Canton	Mansfield	Tewksbury
Chelsea	Medford	Wakefield
Cohasset	Melrose	Walpole
Concord	Middleborough	Waltham
Dedham	Milford	Wellesley
East Bridgewater	Millbury	Wenham
Everett	Milton	West Bridgewater
Fall River	Natick	Westborough
Fitchburg	Needham	Weston
Foxborough	New Bedford	Westwood
Framingham	Newbury	Weymouth
Franklin	Newburyport	Whitman
Freetown	Newton	Wilmington
Gloucester	Norfolk	Winchester
Grafton	North Andover	Woburn
Halifax	Norwood	Worcester

IV. HERBICIDES, APPLICATION RATES, CARRIERS, & ADJUVANTS

PROGRAM FOR THE ROADBED

The roadbed herbicide program is designed to keep the ballast section and shoulder, yards, switches, signals, and grade crossings weed free. Areas scheduled for weed control treatments have been inspected for density of target vegetation to determine appropriate control methods. This program is applied to a 24-foot width (12 feet each side of track), or approximately 3.5 acres per mile.

Location	Herbicide(s)	Carriers or Adjuvants	Application Technique	Application Rate
Sensitive area buffer zone	Esplanade 200SC		Foliar	5 oz/acre
	Oust XP		Foliar	4 oz/acre
	Milestone		Foliar	7 oz/acre
	Roundup Pro Concentrate		Foliar	32-64 oz/acre
		Novita 90	Foliar	12-24 oz/acre
		Orion Drift Control	Foliar	1-4 oz / 100 gal
Non-sensitive areas	Esplanade 200SC		Foliar	5 oz/acre
	Oust XP		Foliar	4 oz/acre
	Milestone		Foliar	7 oz/acre
	Roundup Pro Concentrate		Foliar	32-64 oz/acre
		Novita 90	Foliar	12-24 oz/acre
		Orion Drift Control	Foliar	1-4 oz / 100 gal
Touch-up applications	Esplanade 200SC		Foliar	5 oz/acre
	Oust XP		Foliar	4 oz/acre
	Milestone		Foliar	7 oz/acre
	Roundup Pro Concentrate		Foliar	32-64 oz/acre
		Novita 90	Foliar	12-24 oz/acre
		Orion Drift Control	Foliar	1-4 oz / 100 gal

PROGRAM FOR AREAS ADJACENT TO THE ROADBED (BRUSH PROGRAM)

The brush control herbicide program is designed to prevent the re-growth of trees and other woody vegetation in areas adjacent to the roadbed. Areas scheduled for brush control treatments are limited to target vegetation which obscures visibility or interferes with railroad signs, signals, communication wires and other areas where vegetation represents a hazard to assets and safe operations. This program is applied to 20 feet each side of track from toe of ballast, or approximately 6 acres per mile.

Location	Herbicide(s)	Carriers or Adjuvants	Application Technique	Application Rate
Sensitive area buffer zone	Escort XP or Patriot		Foliar	2 oz/acre
	Milestone		Foliar	14 oz/acre
	Aquaneat or Roundup Pro Concentrate		Foliar	64 oz/acre
		Novita MSO	Foliar	16-32 oz/acre
		Orion Drift Control	Foliar	1-4 oz / 100 gal
Non-sensitive areas	Escort XP or Patriot		Foliar	2 oz/acre
	Milestone		Foliar	14 oz/acre
	Aquaneat or Roundup Pro Concentrate		Foliar	64 oz/acre
		Novita 90	Foliar	16-32 oz/acre
		Orion Drift Control	Foliar	1-4 oz / 100 gal
Touch-up applications	Escort XP or Patriot		Foliar	2 oz/acre
	Milestone		Foliar	14 oz/acre
	Aquaneat or Roundup Pro Concentrate		Foliar	64 oz/acre
		Novita 90	Foliar	16-32 oz/acre
		Orion Drift Control	Foliar	1-4 oz / 100 gal

V. HERBICIDE APPLICATION TECHNIQUES

Herbicide applications within the railroad ROW will be performed using low pressure application from a specialized hi-rail truck equipped with a spray boom. This method is suitable for application within the buffer zone, or restricted application zone of sensitive areas, as defined in 333 CMR 11.04. The spray vehicle is equipped with spray nozzles and controls to allow for treatment of the entire roadbed, or to selectively treat individual sections of the ballast and ballast shoulders. Within sensitive areas, a container will be used to catch any accidental dripping of herbicide. It is a trough-shaped apparatus mounted just behind and above the boom and will be hydraulically lowered to sit underneath the spray nozzles while the vehicle is traveling through areas where herbicide spraying is prohibited.

An environmental monitor, equipped with approved maps and knowledge of existing site conditions, accompanies the applicator to assist in the identification of “sensitive areas” in the field.

Touch-up techniques control any target vegetation within the ballast and ROW that may have been missed or not treated during the initial phase. Control of vines and other vegetation that might creep onto the ballast from roots growing outside the original treatment boundaries can be managed as a selective, foliage, or spot spray. No more than 10% of the initially identified target vegetation on the right-of-way in any municipality

may be treated during a touch-up application and the total amount of herbicide applied in any one year shall not exceed the limits specified by the label or YOP (333 CMR11.03(8)(c)).

The brush control program is designed to control vegetation in areas adjacent to the shoulder using post-emergent herbicides. The herbicides selected will depend on the species of target vegetation present. The application method will depend on the density of target vegetation and previous mechanical control methods. Shrubs and herbaceous vegetation in these areas will be maintained where possible.

There are several methods for the application of post-emergent herbicides to the target vegetation. The variety of methods allows the applicator to selectively apply the herbicide directly onto the target vegetation. These applications are described below:

FOLIAR: Selective application of the herbicide to the foliage and or stem by low-pressure mechanical spray devices. This type of application is useful on busy, high speed rail lines where the work intervals between trains are too short for slower mechanical methods. Selective foliar application will not be used on vegetation over 12 feet in height, except for side trimming (333 CMR 11.03 (5)). Side trimming, when done with herbicides, is the selective application of the herbicide to target portions of a tree and avoids removal of the entire tree. During side trimming operations in residential areas, the railroads utilize low pressure application techniques and appropriate adjuvants to minimize drift. Experience indicates minimal drift occurs, usually within 5 feet of side trimming operations.

STEM OR BASAL SPRAYING: Selective application of the herbicide in a petroleum or crop oil base carrier to the lower portion of the main stem (trunk of a tree). The equipment for basal spraying is often a manual-pump apparatus.

CUT SURFACE: Application of herbicide to the stump immediately after a cutting procedure which may include mowing. Traditionally, the herbicide is manually applied directly to the cut stump surface.

Some areas may have specific requirements contained in permits from other state agencies, see Specific Requirements from Previous Permits (Appendix B) for details.

VI. ALTERNATIVE CONTROL PROCEDURES

No alternative vegetation control methods are feasible for the ballasted roadbed track areas of the ROW. The YOP applies manual and mechanical trimming, cutting and removal of target vegetation within the entire ROW where the application of herbicide is prohibited and where vegetation may represent a hazard to assets and safe operations.

Mechanical control techniques include methods involving the use of hand tools, power equipment, and mowing. Mechanical control techniques are limited to woody and brush vegetation and include target vegetation that interferes with the ROW that cannot be controlled with herbicide. Mechanical control removes unwanted vegetation in areas restricted for herbicide application and the areas adjacent to the roadbed and outside of the limit of herbicide application. Trees and brush interfere with pole lines, signal

structures, low voltage power lines, communication and signal lines, reduce visibility, and intrude into the track zone.

Mowing is the mechanical process of cutting woody target species with cutting heads. Mowing is commonly used for trees having a diameter of less than six inches and brush. These machines can be mounted on off-track, on-track, or hi-rail equipment. The railroad strives to limit the amount of mowing and/or cutting by maintaining as much of the right-of-way with herbicide applications.

MBTA and Keolis contract the services of third-party contractors to manage and control large overstory tree canopies and woody vegetation that requires specialized hi-rail equipment. An arborist works closely with the contractor and Keolis personnel to identify at risk and hazardous trees for removal following the ANSI A300 methodology. Dead or dying, extensively decayed, or unstable trees are hazardous and shall be cut and removed following the Best Management Practices (Appendix A). Cutting is used for trees having a diameter greater than six inches or in restrictive locations where other mechanical methods are not viable. All trees and brush identified as interfering with safe operations, personnel performing their duties, and public safety shall be trimmed or removed.

Manual, mechanical, and chemical control are all accepted methodologies, and can be used for vine control depending on the severity of growth and threat to the operation of the structures. In general, chemical application of an approved herbicide is the most effective methodology for controlling woody invasive vines such as Oriental bittersweet (*Celastrus orbiculatus*), and other invasive species, and non-invasive but hazardous vines such as Poison ivy (*Toxicodendron radicans*). The control of invasives will follow the procedures established within the approved VMP. At times, and when necessary, a Wetlands Professional will assist in the planning and removal of invasives.

All mechanical maintenance activities will follow Best Management Practices to ensure, to the extent practicable, the protection of resource areas.

VII. IDENTIFICATION OF TARGET VEGETATION

Prior to herbicide application, a review will be made noting location, density, and type of vegetation present along ROW. This information is used to develop priority locations for herbicide application that will be effective against target vegetation.

In accordance with the Code of Federal Regulations, 49 CFR 213 - Track Safety Standards, all vegetation growing in the ballast and ballast shoulder; in yards; and around switches, signals, signs, and highway grade crossings is considered target vegetation and must be controlled or eliminated so that it does not:

a) Become a fire hazard to track-carrying structures;
b) Obstruct visibility of railroad signs and signals:
    1) Along the right-of-way, and
    2) At highway-rail crossings; (This paragraph (b)(2) is applicable September 21, 1999.)
c) Interfere with railroad employees performing normal trackside duties;

d) *Prevent proper functioning of signal and communication lines; or*
e) *Prevent railroad employees from visually inspecting moving equipment from their normal duty stations.*

Woody vegetation growing in the ROW and adjacent to the shoulder will be trimmed, cut, or removed to promote the growth of low growing shrubs when practicable. Targeted woody vegetation will be that which has the potential to block visibility, increase slippery rail conditions, invade the roadbed, interfere with switches, signals, and overhead communication lines, interfere with general operations, encroach on assets, and generally increase risk to safe operations.

The control of invasive and nuisance vines from critical railroad infrastructure, including but not limited to switch boxes, bungalows, light towers, and crossing gates is essential for ensuring railroad safety and operation. Although not all vines encountered growing on infrastructure are considered invasive species in Massachusetts, all can present a danger to the operation of such infrastructure and can interfere with infrastructure daily operation and communication functions.

VIII. METHODS TO DESIGNATE SENSITIVE AREAS ON THE ROW

Sensitive areas are defined in the Rights-Of-Way Management Regulations (333 CMR 11.02) are as defined in 333 CMR 11.04, any areas within the Right-of-Way, including No-Spray and Limited-Spray Areas, in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects. These include but are not limited to the following:

No Spray Area, any area that is both within a Right-of-Way and within:

(a) any Zone I;
(b) 100 feet of any Class A Surface Water Source;
(c) 100 feet of any tributary or associated surface water body where the tributary or associated surface water body runs within 400 feet of a Class A surface water source;
(d) 10 feet of any tributary or associated surface water body where the tributary or associated surface water body is at a distance greater than 400 feet from a Class A surface water source;
(e) a lateral distance of 100 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake;
(f) 50 feet of any identified Private Well;
(g) 10 feet of any Wetlands or Water Over Wetlands;
(h) 10 feet of the mean annual high-water line of any river; and,
(i) 10 feet of any Certified Vernal Pool.

Limited Spray Area, any area that is both within a Right-of-Way and within:

(a) any Zone II or IWPA;
(b) a distance of between 100 feet and 400 feet of any Class A Surface Water source;

(c) a distance of between 10 and 200 feet of any tributary or associated surface water body where the tributary or associated surface water body runs outside the Zone A for the Class A surface water source;
(d) a lateral distance of between 100 and 200 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake;
(e) a distance of between 50 and 100 feet of any identified Private Well;
(f) a distance of between 10 and 100 feet of any Wetlands or Water Over Wetlands;
(g) a distance of between 10 feet from the mean annual high water line of any river and the outer boundary of the Riverfront Area;
(h) a distance of between 10 feet from any Certified Vernal Pool and the outer boundary of any Certified Vernal Pool Habitat; and
(i) a distance of 100 feet of any Agricultural or Inhabited Area.

* Limited Spray Area(s) are those in which spraying is restricted to one annual application of a herbicide through low pressure foliar techniques.

Non-Sensitive Areas are upland areas and/or track not in proximity to sensitive areas and do not require specific precautions or herbicide restrictions.

Sensitive areas, no-spray areas, limited-spray areas, and non-sensitive areas will be marked at their boundaries with permanent color-coded markers. Sensitive areas considered to be readily identifiable in the field (i.e. agricultural and inhabited areas) will not be marked. The markers will be one or any combination of the following:

color-coded signs attached to posts
color-coded signs attached to the railroad ties
color-coded painted rail sections

Sensitive and non-sensitive areas will be designated by the following color-codes:

white	non-sensitive areas
blue	sensitive area in which a minimum of 12 months shall elapse between herbicide applications
double blue	sensitive areas in which a minimum of 24 months shall elapse between herbicide applications.
yellow	no spray zone

See Appendix B for the Invasive Species Management and Control Plan, specific to Thatcher's pond in Taunton.

IX. PROCEDURES FOR HANDLING, MIXING, & LOADING OF HERBICIDES

The herbicide application crew will wear protective clothing and personal safety equipment when mixing, handling, loading, or applying herbicide, including standard work clothing or coveralls, work gloves, and work boots. Latex or nitrile rubber gloves, as well as eye goggles are recommended to be worn during mixing of herbicide concentrate as some herbicides may cause mild eye and skin irritations.

Mixing and use of herbicide shall be consistent with the labeling instructions included on the packaging. The herbicide mix will be prepared from herbicide concentrate and water. In compliance with the regulations, the handling, mixing and/or loading of this material will not occur within 100 feet of any sensitive area. Wherever and whenever possible, the herbicide applicator will prepare the herbicide mix on non-porous surfaces, such as pavement or concrete.

Sources of Water and Safeguards to Prevent Contamination

Water used for herbicide mix will be obtained from hydrants and freshwater sources. During the herbicide mix preparations and during herbicide application, strict adherence to the following safeguards will be maintained:

1) Water will be obtained using trucks equipped with anti-siphon devices to eliminate herbicide backflow.

   a) Trucks used to extract water from water bodies will be equipped with two such devices: one will be found directly behind the mouth of the hose and another will be at the coupling that joins the hose to the mix tank.

   b) Hoses used to extract water from the hydrant will utilize the same setup as described above, except that a third anti-siphon device will be found within the coupling joining the hose to the hydrant.

2) The herbicide concentrate will not be added to the tank until the water has been obtained and the application apparatus is at least 100 feet outside a sensitive area.

Disposal of Herbicidal Wastes

Disposal of all chemical herbicidal wastes will be the sole responsibility of the licensed applicator. It is the applicator's responsibility to ensure that such disposal will be carried out in an environmentally sensitive manner, in compliance with all Federal and State regulations and guidelines.

X. HERBICIDE FACT SHEETS, HERBICIDE LABELS, AND S.D.S. SHEETS

Below is a list of herbicides potentially in use by this Yearly Operational Plan. For the exact products used in this year's program please refer to section IV of this document.

MANUFACTURER	PRODUCT NAME	ACTIVE INGREDIENT(S)	EPA #
ALBAUGH, INC.	KRENITE S	FOSAMINE AMMONIUM	42750-247
NUFARM AMERICAS	ARSENAL	IMAZAPYR	241-346
NUFARM AMERICAS	ARSENAL POWERLINE	IMAZAPYR	241-431
BAYER CROPSCIENCE	ESCORT XP	METSULFURON METHYL	432-1549
BAYER CROPSCIENCE	OUST XP	SULFOMETURON METHYL	432-1552

MANUFACTURER	PRODUCT NAME	ACTIVE INGREDIENT(S)	EPA #
BAYER CROPSCIENCE	ROUNDUP PRO CONCENTRATE	GLYPHOSATE	524-517
BAYER ENVIRONMENTAL SCIENCE	ESPLANADE 200 SC	INDAZIFLAM	432-1516
BAYER ENVIRONMENTAL SCIENCE	OUST EXTRA	SULFOMETURON METHYL & METSULFURON METHYL	432-1557
CORTEVA AGRI-SCIENCE	MILESTONE	AMINOPYRALID	62719-519
CORTEVA AGRI-SCIENCE	OPENSIGHT	AMINOPYRALID	62719-597
CORTEVA AGRI-SCIENCE LLC	GARLON 4	TRICLOPYR, BUTOXY ETHYL ESTER	62719-40
CORTEVA AGRI-SCIENCE LLC	GARLON 4 ULTRA	TRICLOPYR, BUTOXY ETHYL ESTER	62719-527
ENVU, ENVIRONMENTAL SCIENCES, U.S, LLC	ESPLANADE 200 SC	INDAZIFLAM	101563-144
ENVU, ENVIRONMENTAL SCIENCES, U.S, LLC	ESCORT XP	METSULFURON METHYL	101563-167
ENVU, ENVIRONMENTAL SCIENCES, U.S, LLC	OUST EXTRA	SULFOMETURON METHYL & METSULFURON METHYL	101563-173
ENVU, ENVIRONMENTAL SCIENCES, U.S, LLC	OUST XP	SULFOMETURON METHYL	101563-168
NUFARM AMERICAS	PATRIOT SELECTIVE	METSULFURON METHYL	228-391
NUFARM AMERICAS	POLARIS AC COMPLETE	IMAZAPYR	228-570
NUFARM AMERICAS	POLARIS HERBICIDE	IMAZAPYR	228-534
NUFARM AMERICAS	SPYDER SELECTIVE	SULFOMETURON METHYL	228-408
NUFARM AMERICAS	AQUANEAT	GLYPHOSATE	228-365
RAINBOW TREE CARE	CAMBISTAT	PACLOBUTRAZOL	74779-3

LABELS & SAFETY DATA SHEETS (SDS):

The labels and SDS sheets for the above products can be found by:

1. *Open your internet browser and enter the following address in the **Address bar**: http://www.cdms.net/Label-Database*
2. *Select the **Manufacturer** (as found above) you wish to be informed about from the side bar on the left side of the page.*
3. *A list of products will appear. Please be sure to reference the **Product Name** to locate the correct information.*

HERBICIDE FACT SHEET:

Herbicide fact sheets for the above products can be found by:

1. *Open your internet browser and enter the following address in the **Address bar:** https://www.mass.gov/service-details/rights-of-way-sensitive-area-materials-list*
2. *Choose the link that corresponds to the **Active Ingredient** present in the product.*

Hard copies of any of these documents may also be obtained by calling Benesch at (207) 741-1905

XI. EMERGENCY CONTACTS

In the event of a spill or emergency, information on safety precautions and cleanup procedures may be gathered from the following sources:

Herbicide Label
Herbicide Fact Sheet
Herbicide Safety Data Sheet
Herbicide Manufacturer

Albaug, Inc.	(800) 247-8013
Bayer Environmental Sciences	(866) 992-2937
Bayer Cropscience	(800) 334-7577
Corteva Agri-Sciences	(800) 992-5994
Envu Environmental Sciences	(800) 331-2867
Nufarm Americas	(800) 345-3330
Rainbow Tree Care	(952) 922-3810
Massachusetts Pesticide Bureau	(617) 626-1776
Massachusetts DEP Emergency Response	(888) 304-1133
Chemtrec	(800) 262-8200
EPA National Pesticide Information Center	(800) 858-7378
Massachusetts Poison Control Center	(800) 222-1222

Local Community Chief of Police and/or Fire Chief:

Abington	(781) 878-3232	Hamilton	(978) 468-1212	Plymouth	(508) 830-4218
Acton	(978) 264-9638	Hanson	(781) 293-4625	Plympton	(781) 585-3339
Andover	(978) 475-0411	Haverhill	(978) 373-1212	Quincy	(617) 479-1212
Ashland	(508) 881-1212	Hingham	(781) 749-1212	Randolph	(781) 963-1212
Avon	(508) 583-6677	Holbrook	(781) 767-1212	Raynham	(508) 824-2716
Ayer	(978) 772-8200	Hopedale	(508) 473-8444	Reading	(781) 944-1212
Bellingham	(508) 966-1515	Ipswich	(978) 356-4343	Revere	(781) 284-1212
Belmont	(617) 484-1215	Kingston	(781) 585-0523	Rockport	(978) 546-1212
Berkley	(508) 822-7040	Lakeville	(508) 947-4422	Rowley	(978) 948-7644
Beverly	(978) 922-1212	Lawrence	(978) 794-5900	Salem	(978) 744-1212
Billerica	(978) 667-1212	Leominster	(978) 534-7560	Saugus	(781) 233-1740
Boston	(617) 343-4500	Lincoln	(781) 259-8113	Scituate	(781) 545-1212
Boxborough	(978) 264-1750	Littleton	(978) 952-2300	Shirley	(978) 425-2642
Braintree	(781) 794-8600	Lowell	(978) 937-3200	Somerville	(617) 625-1600
Bridgewater	(508) 697-0914	Lunenburg	(978) 582-4531	Southborough	(508) 485-2121
Brockton	(508) 941-0200	Lynn	(781) 595-2000	Stoughton	(781) 344-2424
Brookline	(617) 730-2222	Malden	(781) 397-7171	Swampscott	(781) 595-1111
Cambridge	(617) 349-3300	Manchester	(978) 526-1212	Taunton	(508) 824-7522
Canton	(781) 821-5090	Mansfield	(508) 261-7300	Tewksbury	(978) 851-7373
Chelsea	(617) 466-4855	Medford	(781) 391-6404	Wakefield	(781) 245-1212
Cohasset	(781) 383-1212	Melrose	(781) 665-1212	Walpole	(508) 668-1212
Concord	(978) 318-3400	Middleborough	(508) 947-1212	Waltham	(781) 314-3600
Dedham	(781) 751-9300	Milford	(508) 473-1113	Wellesley	(781) 235-1212
E. Bridgewater	(508) 378-7223	Millbury	(508) 865-3521	Wenham	(978) 468-4000
Everett	(617) 389-2120	Milton	(617) 698-3800	W. Bridgewater	(508) 586-2525
Fall River	(508) 676-8511	Natick	(508) 647-9500	Westborough	(508) 366-3060
Fitchburg	(978) 345-4355	Needham	(781) 455-7570	Weston	(781) 786-6201
Foxborough	(508) 543-4343	New Bedford	(508) 991-6300	Westwood	(781) 320-1000
Framingham	(508) 872-1212	Newbury	(978) 462-4440	Weymouth	(781) 335-1212
Franklin	(508) 528-1212	Newburyport	(978) 462-4411	Whitman	(781) 447-1212
Freetown	(508) 763-4017	Newton	(617) 796-2100	Wilmington	(978) 658-5071
Gloucester	(978) 283-1212	Norfolk	(508) 528-3206	Winchester	(781) 729-1214
Grafton	(508) 839-2858	North Andover	(978) 683-3168	Woburn	(781) 933-1212
Halifax	(781) 293-5761	Norwood	(781) 440-5100	Worcester	(508) 799-8466

APPENDIX A
BEST MANAGEMENT PRACTICES

Vegetation on rail rights-of-way (ROW) affects operations and maintenance activities, and most importantly has a potential risk to the safety of passengers, employees, community, and the environment. As part of the commuter rail VMP, vegetation will be removed from the following areas:

- Ballast section (chemical only)
- Ballast shoulder (chemical and/or mechanical)
- Yards (chemical and/or mechanical)
- Switches, signals, and signs (chemical and/or mechanical)
- Highway grade crossings (chemical and/or mechanical)
- Bridges, abutments & buildings (chemical and/or mechanical)
- Off-track areas (chemical and/or mechanical)
- Inside of curves (chemical and/or mechanical)

The VMP incorporates an *Integrated Vegetation Management* (IVM) approach that includes chemical and physical/mechanical controls for the reduction of vegetation hazards along the ROW that may:

- Become a **fire hazard** to track-carrying structures;
- **Obstruct visibility** of railroad signs and signals:
- Prevent railroad employees from conducting federally **required inspections;**
- **Interfere with railroad employees performing normal trackside duties**;
- Prevent **proper functioning of power, signal and communication lines;**
- Present a risk to the safe operation of trains;
- Along the right-of-way, and highway-rail crossings.

The Yearly Operating Plan (YOP) covers the permitted activities under the approved five-year VMP under the jurisdiction of the Massachusetts Department of Agricultural Resources (MDAR) in compliance with 333 CMR 11.00: M.G.L. c. 132B. The YOP is submitted for review and approval to MDAR at the beginning of every calendar year. The MDAR has 90 days upon receipt of the YOP to review and issue written approval. Upon receipt of the YOP, MDAR publishes a public notice in the Environmental Monitor and a 45-day public comment period begins. Concurrently, the YOP is communicated via certified mail to all communities included within the VMP. In addition, Keolis submits the previously approved maps included as part of the VMP to the National Heritage of Endangered Species Program for review.

The approved VMP and the YOPs can be found on the MDAR website. The YOP serves to inform communities on annually of activities planned for vegetation controls and may include the following:

- Chemical(s) to be applied pre-emergent spring and post-emergent/brush in late summer and early fall;
- Chemical(s) for Off-track brush control late summer and fall;
- Chemical(s) used for stem treatment throughout the year;
- Mechanical controls throughout the year;
- Roadbed drainage ditch vegetation clearing throughout the year.

CHEMICAL APPLICATION:

Chemical application is required to ensure railroad **roadbed** is clear of *all* vegetation. Areas adjacent to the roadbed, will be treated as needed and following the controls specified within the VMP and the approved zone maps for each community. Every year, the Environmental & Sustainability Department reviews the areas and conditions based on Keolis Engineering Department inspections, previous YOPs and areas of significant concern for prioritization of target vegetation for chemical application or mechanical controls. Keolis employs strategies for *selective application* of herbicides focusing on the methodology of spray to control target vegetation. In doing so, we reduce the application to non-target vegetation and protect the environment.

In addition, and to further reduce chemical application, Keolis has implemented best management practices to avoid “spray” of herbicides along the “roadbed” locations or other critical infrastructure along the ROW requiring full removal of vegetation, where:

(1) Rail Tie replacement has been conducted within a period of 24 months.
(2) Major construction requiring disturbance of ballast and/or replacement of ballast has been completed within a period of 12 months.

Chemical application is planned according to the maps by line. In addition, Keolis only utilizes chemicals included within the approved MDAR ROW Sensitive Areas Material List.

Further, Keolis employs only certified/licensed applicators. The application of herbicide follows a review process that incorporates planning for reduction of herbicide application. This is done with the support of a Keolis trained Environmental Monitor who follows the maps and guides contractor to employ best management practices and monitor real time conditions. The herbicide is not applied:

- Near people;
- Near animals / livestock;
- Near agricultural areas;
- Onto active train platforms nor over nonrailroad fences;
- Onto nonrailroad property;
- Nonrailroad structures (Sheds, Tarps, garages, playgrounds, firewood piles, etc.);
- Landscaped areas;
- Well-kept shrubs;
- Branches of trees above 12 feet in height except for side trimming;
- If the following is observed in the field: free standing or moving water, wetland vegetation, people, animals, nonrailroad property, ground water supply areas, public/private wells;
- Near active, or soon to be active work areas.

Personnel applying herbicides are required to maintain daily records of application. Further, Keolis requires applicators to incorporate best management practices and the following:

- Drift control product to produce larger droplets to control drift to non-target areas.
- Monitor weather and wind speed direction to avoid drift of herbicide to non-designated areas (Nonrailroad property, sensitive areas, water, etc.)
- Weather conditions that may adversely affect the effectiveness of the herbicide. No application will be done during rain and/or after heavy rain events. Dry conditions provide a more effective treatment of areas.
- Applicator will maintain a daily log to document conditions at the start/end of chemical application.

PHYSICAL AND MECHANICAL CONTROLS:

Keolis employs third party professional arborists to conduct tree clearing activities. Keolis Engineering Department staff conduct general brush cutting and manual vegetation clearing as needed.

Keolis staff and contractors review video and GIS tools to assess key critical areas to target annually. Keolis best management practices for physical/mechanical methods include:

- Evaluation of statistical/historical conditions for target areas (derailments, slippery rail, incidents, inspections, etc.) to determine target vegetation;
- Survey - lines via hi-rail with contractor and Keolis engineers reviewing work with GPS-enabled video cameras;
- Drone use for evaluation of canopy over ROW;
- Evaluation of sensitive areas utilizing MapGIS;
- Evaluate VMP maps and identified No-Spray and Limited Spray Zones;
- Superintendents work in advance of crews to best determine property lines and assess tree characteristics and mitigation methods using GIS applications, physical markers, fences and Val maps to aid in property boundary determinations.
- Contractor arborists utilize tree hazards assessment techniques to target hazardous conditions and defected trees (ANSI A-300) standards, and invasive species identification;
- Regular track inspections to identify emerging hazards.

Mechanical cutting & trimming methods - Selective Vegetation Approach

- Tree cutting/removal is prescribed where trimming approach is insufficient or impracticable focusing on the safety and operational needs to ensure compliance with 40 CFR 237.
- Preference for trimming will be considered for sensitive resource areas when practicable.
- Tree work is performed utilizing aerial lifts and specialized tree equipment fitted with hi-rail gear for rail travel to avoid disturbance of sensitive resource areas. No land disturbance will be conducted while performing vegetation controls.
- Tree stumps are left at approximately between 6 to 12 inches to avoid soil disturbance.
- All chainsaws utilize environmentally friendly biodegradable bar and chain oil.
- Debris generated is either transported to an off-site location for a variety of recycling purposes, or it's chipped on site.
- Chips are broadcast within MBTA property limits on the shoulders of the corridor a minimum of 25ft from resource areas.
- Chippings will not be stockpiled more than 12 inches and whenever practicable they will be spread along ROW.
- Chippings need to be spread away from tracks and drainage ditches.

Work performed in accordance with this VMP and the above referenced Best Management Practices complies with the M.G.L. c. 131 Section 40 and 310 CMR 10.00.

APPENDIX B

Specific Requirements from Previous Permits

1. Division of Fisheries & Wildlife, Permit No. 018-324.DFW
   Special Conditions for Future Vegetation Management specific to Thatcher's Pond in Taunton:
   a. In order to ensure long-term protection of State-listed species, mechanized vegetation maintenance (e.g., mowing) within Priority Habitat (according to the Massachusetts Natural Heritage Atlas) shall occur between November 1 and March 31 of each year.
   b. In order to ensure long-term protection of State-listed plants, and for as long as the Permit Holder maintains active rail service associated with the Project, the Permit Holder shall monitor and control invasive plant species in the vicinity of Thatcher's Pond (Lakeville/Taunton municipal boundary) pursuant to the Invasive Species Management and Control Plan (Attachment 6) prepared by VHB, Inc. Said Plan shall be implemented by a qualified botanist approved in writing by the Division. If changes to said Plan are proposed, a revised Plan must be submitted to the Division for review and written approval prior to implementation of said changes.

SCR SOUTH COAST RAIL

Conservation and Management Plan
Revised 8/23/18

Attachment 6 – Invasive Species Management and Control Plan

MassDOT has developed this Invasive Species Management and Control Plan to provide long-term protection to the populations of the state-listed plant species (*Sabatia kennedyana*, Plymouth gentian, and *Eleocharis tricostata*, three-angled spike-rush) found in Thatcher's Pond (Priority Habitat 628) in Taunton, MA. As there are no permanent impacts, there are no requirements for measures to provide a long-term net benefit to these species.

Right-of-way maintenance is critical to the protection of the tracks and ties and to maintaining railroad safety. Right-of-way maintenance can only be done in accordance with an approved Vegetated Management Plan (VMP) and Yearly Operating Plan (YOP) that have been reviewed by the Massachusetts Department of Food and Agriculture (DFA) and made available for public comment. These management plans are developed in accordance with the DFA's regulations, which prohibit or restrict the application of herbicide in sensitive areas such as close proximity to wetlands and public or private drinking water supplies.

MassDOT has agreed to restrict the use of herbicides within the ROW adjacent to Thatcher's Pond (an area approximately 500 feet long, starting at the Lakeville/Taunton municipal boundary). This area will be marked "No Herbicide Application" using standard metal markers affixed to the ties. This specific location will be identified and shown on detailed project plans during the subsequent final design and permitting phase of the Project, when a VMP is developed. This designation and signage will prohibit the railroad operator from spraying herbicide from rail-mounted vehicles. Herbicide application by hand (using backpack sprayers) would be used as needed to remove vegetation and control invasive species within the right of way.

Invasive Species Monitoring and Control

At the completion of construction, the limit of the MassDOT right-of-way, on the south side, will be staked at 50-foot intervals. MassDOT will be responsible for controlling invasive species within the entire right-of-way. Where the railroad right-of-way includes wetland, invasive species control within the wetland will be by hand only (backpack sprayers may not be used) using a cut-and-swipe technique.

MassDOT or the railroad operator with responsibility for right-of-way maintenance will inspect this area annually for the presence of invasive species within the railroad ballasted area. The inspection will be done by a qualified botanist. The botanist will supervise any herbicide usage within this area. Invasive species include:

- *Phragmites australis*, common reed
- *Rhamnus frangula*, glossy buckthorn
- *Phalaris arundinacea*, reed canary grass
- *Fallopia japonica*, Japanese knotweed
- *Elaeagnus umbellata*, Autumn olive
- *Celastrus orbiculatus*, oriental bittersweet
- *Rosa multiflora*, multiflora rose

Invasive species will be controlled manually by pulling (autumn olive, oriental bittersweet, multiflora rose, glossy buckthorn) or herbicide application (common reed, reed canary grass, Japanese knotweed). Herbicide (glyphosate) will be applied manually using a backpack sprayer. The herbicide will be colored with a dye so that the applicator can ensure that only the invasive target plants are sprayed. Where it is necessary to treat invasive species within the wetland, treatment will be by hand only (backpack sprayers may not be used) using a cut-and-swipe technique.

Annual Monitoring Report

MassDOT will prepare and submit to NHESP, by December 15 of each calendar year, an annual report. The report shall contain:

- The date of inspection
- The name and qualifications of the botanist
- An assessment of invasive species within the right-of-way, including the species, size of the invasive species population, location of the population (within ballast, within wooded areas, within the wetland)
- A description of treatment used (manual, herbicide treatment).