

VEGETATION MANAGEMENT PLAN

2019-2023

MBTA, Massachusetts Bay Transportation Authority
Rapid Transit System

Prepared August 2018

*CW Layton Consultants
For MBTA*

VEGETATION MANAGEMENT PLAN MBTA

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1. INTRODUCTION

This Vegetation Management Plan (VMP) has been prepared for the Massachusetts Bay Transportation Authority (MBTA) rapid transit system and shall apply to their transportation rights-of-way within the Commonwealth of Massachusetts. This plan does not apply to the Commuter Rail system. This five-year VMP details the program intended to be carried out by the MBTA for the control of unwanted vegetation within their rights-of-way that may interfere with the safe operation of the railroad. It will establish goals and objectives for managing vegetation along a railroad corridor and detail the implementation of a program that integrates chemical, physical and biological methodologies commonly referred to as integrated vegetation management (IVM).

The Massachusetts Department of Public Utilities (DPU) exercises regulatory oversight of maintenance and inspection of MBTA rail pursuant to M.G.L. c. 161A, section 3(i). Per provisions outlined in Title 49 of Code of Federal Regulations, Part 659, the DPU is the oversight agency which reports to the Federal Transit Administration regarding transit system safety practices and procedures. The ability to effectively inspect and maintain transit system infrastructure is dependent upon proper vegetation control. Accordingly, the MBTA takes direction from the DPU in all matters affecting system safety, including vegetation management.

2. GENERAL DESCRIPTION AND HISTORICAL BACKGROUND

This VMP will apply to sections of above ground transportation right-of-way on the MBTA rapid transit system, also known as the Red, Orange, Green, and Blue Lines, that are located in the following municipalities as shown in Appendix A:

Boston, Braintree, Brookline, Cambridge, Malden, Medford, Milton, Newton, Quincy, Revere, Somerville.

Historically the transportation right-of-way has been treated with herbicides, this practice dates back to the 1950's. These herbicides were applied at active ingredient (A.I.) rates as high as 100 lbs per acre. Over time chemistries and application methodologies changed, by the mid 1980's rates were down to 6-8 A.I. lbs per acre. Beginning in 2006 a new program of selective weed control was implemented by the MBTA for the roadbed weed control portion of the program. Utilizing WeedSeeker technology, a spray boom was designed to cover the entire ballast area and only treat weeds that had emerged and were green. This technology eliminates broadcast spraying of the roadbed while reducing the amount of herbicide applied to just the amount necessary to control emerging weeds. This, combined with a selective handheld application to target woody vegetation on shoulders, creates a selective program and achieves the goals of 333 CMR 11.00 to create an effective program with the least amount of impact and reduce the amount of herbicide applied to its lowest effective rate. Rates lower than 3 lbs A.I. per acre are now achievable. Another important historical change is the soil persistence of chemicals. In the 50's the herbicides were very persistent in the soil, not breaking down for long periods of time. Current herbicides approved for use in Massachusetts in sensitive sites break down quickly and are not bio-accumulating.

The VMP has evolved as a result of our awareness of the environment, good science, and professional implementation utilizing an integrated approach to vegetation management.

3. GENERAL STATEMENT OF GOALS AND OBJECTIVES

This VMP will provide a plan for the MBTA to operate its above ground Rapid Transit passenger rail system in a safe and efficient manner by reducing the interference of vegetation that could seriously impact the system and put at risk the passengers and employees of the MBTA. It also creates a framework and provides the necessary information for the proper implementation of vegetation management program and methodology that is respectful of the people who use, work and live along the right-of-way while minimizing the impact to the environment. This document gives guidance to regulatory agencies and the municipalities, as well as railroad employees for the implementation of an effective plan. The VMP describes the approach called integrated vegetation management that will detail the chemical, mechanical, and biological methods used that are combined to manage the vegetation in the railroad right-of-way so that it will not become hazardous to the transportation right-of-way.

Federal Regulations (CFR) ss 213.37 mandates that 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;
- (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.

This program will address these requirements while protecting sensitive areas and complying with 333 CMR 11.00. The MBTA will also prepare a Yearly Operational Plan (YOP) which will provide specific information and details about the vegetation management plan to be carried out for a specified year. The YOP shall contain all information required by the Massachusetts Department of Agricultural Resources (MDAR) and will be submitted to MDAR for its review, comment, and subsequent approval. As per 333 CMR 11.06(3)(b), copies of the YOP or a web site where the YOP can be viewed will be submitted to the chief elected municipal official, Conservation Commission and Board of Health, and where applicable, the Massachusetts Department of Conservation and Recreation, and Massachusetts Water Resources Administration (MWRA) for each affected community listed in the YOP.

4. INTEGRATED VEGETATION MANAGEMENT

Integrated vegetation management is the integration of all known control techniques and methodologies to develop a treatment plan that will result in the lowest impact to the environment through the reduction in chemical and mechanical impacts. Integrated Vegetation Management begins with qualified professionals reviewing a site to determine what plant types are being controlled, for what site specific reason they need to be controlled, and what options for their control exist. This review takes into account sensitive environmental areas, plant communities adjacent to the right-of-way, and the people who live nearby as well. A vegetation management professional also works with railroad management to take into consideration all regular, planned or capital maintenance that may reduce or change areas needing control. Vegetation management is a continuous process involving the following steps; development of plan, implementation of the plan, review of the results and modification of the plan. It is a cycle of constant review and adjustment that always insures desired results with the lowest impact and protection of sensitive sites.

There are three components of this vegetation management plan: chemical, mechanical and biological. These are the control technologies that a vegetation manager uses to control vegetation in a way that protects the natural environment and meets the need of good environmental stewardship.

- a. Chemical: The application of herbicide to control vegetation. Herbicides are important tools because they have the ability to kill the root system of a plant and prevent it from re-sprouting. When applied with low pressure (60 psi or less) systems the application amount can be closely controlled which reduces the amount of herbicide necessary to control a plant while also reducing off target drift.
- b. Mechanical: The use of mechanical equipment such as brush mowers, chain saws, pruning saws, grubbing equipment, to physically remove part or all of a plant. With the exception of physically grubbing out a plants entire root system, physically cut plants will re-sprout. This method will require more visits to a site to repeatedly cut vegetation that re-sprouts. Grubbing can be effective in some sites for reclamation purposes, but also can be very detrimental to sensitive sites like wetlands.
- c. Biological: Chemical and mechanical controls seek to eliminate vegetation totally, but they can also be used together to create and establish plant communities that require very low management input to maintain them. These low growing sustainable plant communities can be established on

the right-of-way edge by mechanically and chemically eliminating tall growing non-compatible species and allowing low growing woody and herbaceous plants to take over. Once these become established they reduce the ability of other plants seeding in and reduce the amount and frequency of chemical to maintain them. The sides of the right-of-way that extend beyond the drainage area out to edge of easement are ideal for this method.

Utilizing these three methods together by integrating them is the core of vegetation management. They are the tools that a vegetation manager uses to create stable communities of vegetation and reducing both chemical and mechanical intervention to a minimum.

5. MANAGEMENT REQUIREMENTS OF RAILROAD RIGHTS-OF-WAY AND TARGET VEGETATION

Public safety, employee welfare, and protection of the environment are primary factors for the creation of a vegetation management program that is specific to railroads unique environment and operational constraints which include limited track down time for maintenance, different structural components, and evaluating sensitive sites along the corridor. Vegetation targeted for control varies to the part of the transportation ROW being managed, below is each area described. See Exhibit A below.

a. Roadbed

The roadbed consists of rails, ties, ballast, and ballast shoulder. The ballast is stone, constructed to support the rail track and allow for water to drain away from the structure. Vegetation in this area can inhibit inspection of the rail components, clog the ballast with roots and prevent drainage, dry out and become a fire hazard. This area typically requires complete vegetation control.

b. Bridges

Bridges with open decks will not be treated. Roadbed approaches are treated up to the bridge abutment as long as necessary sensitive area setbacks can be maintained. Vegetation growing in stone work of abutments is also treated to prevent structural damage. The area underneath bridges can be maintained in low growing vegetation by both mechanical and chemical means. No herbicide use within ten feet of any Wetlands or Water Over Wetlands or within ten feet of the mean annual high-water line of any river as listed in Section 7, A, (g), (h). For a complete setback listing see Section 7.

c. Culverts

Pipes and culverts under roadbeds will be treated with mechanical equipment. Herbicides will only be used when proper conditions and setbacks allow for it, see Section 7.

d. Ditches

Drainage ditches need to be kept clear and weed free to allow water to move away from the rail bed ballast and shoulder in order to maintain a stable roadbed. This can be done with mechanical means, and or herbicides when the ditches are dry. No Herbicide use within ten feet of any Wetlands or Water Over Wetlands as listed in Section 7, A, (g). For a complete setback listing see Section 7.

e. ROW Area Adjacent to the Shoulder

Areas beyond the shoulder can have low growing vegetation that will be compatible with railroad operations. Near the shoulder grasses, forbs, and herbaceous plants are desirable, further out low growing woody shrubs are acceptable and can provide visual screening of the railroad ROW. Tall growing woody vegetation is not acceptable and will be selectively treated in order to encourage low growing vegetative communities to thrive.

1. Grade Level Road Crossings

Vegetation that obstructs the line of sight at road crossings between motorists and rail traffic must be controlled.

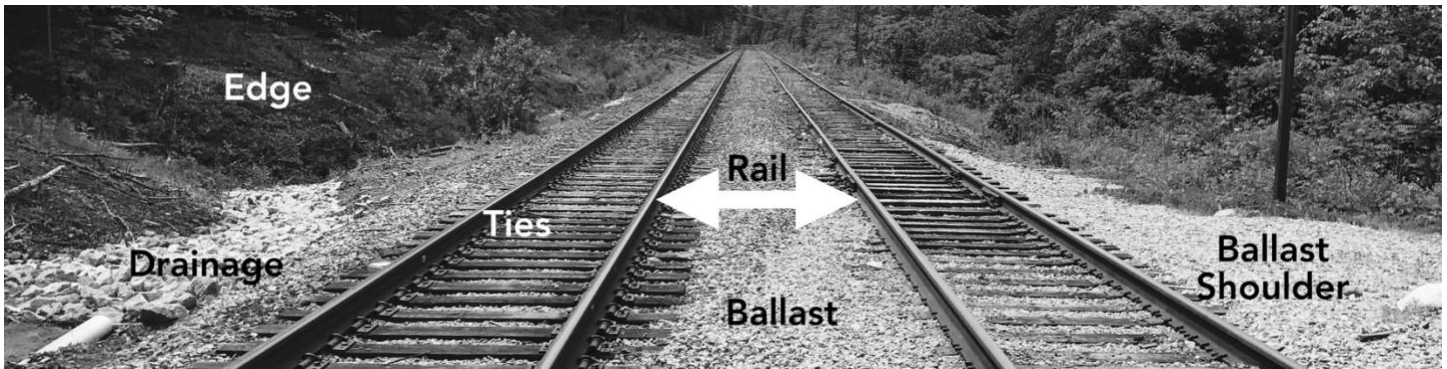
2. Railroad Signals and Switch Boxes

Railroad signals and signal equipment, including signs must be kept clear of vegetation for line of sight with the engineer and for access and maintenance by railroad personnel.

3. Inside Curves

The shoulder area of inside curves need to be kept clear of taller vegetation to allow railroad employees to inspect the train.

Exhibit A: Roadbed



Railroad Facilities

Railroad yards, storage areas, buildings, off track areas, switching areas, that are fenced, limited access areas on railroad property are not under the jurisdiction of this VMP.

6. VEGETATION MANAGEMENT TECHNIQUES AND METHODS

A. Mechanical Equipment and Techniques

Mechanical methods, including brush mowers, chain saws, brush saws, and weed wackers, are primarily used in sensitive areas where herbicides may not be used or areas that may need to be reclaimed before they can be effectively treated with herbicides because the vegetation is too high or dense to be treated and remain in compliance with the label. Non-chemical sensitive areas may be mowed or hand cut depending on site conditions and accessibility for the mechanical equipment and depending on the growth conditions that exist the mechanical cut areas may need to be redone each year. It is important to note that mechanical means of vegetation control has severe limitations within the ballast area of the roadbed and are primarily used on the edge of the rights-of-way. Mowers are better suited for brush work and can be mounted on hi-rail equipment or all-terrain vehicles designed for this purpose. Most sensitive areas on the MBTA rail system are small enough to be effectively maintained by hand cutting with chain saws, brush saws, and trimmers.

B. Herbicide Application

Herbicides are used because they have the ability to eliminate a plant by killing the root system, this is essential in the roadbed ballast area to prevent root systems from clogging the ballast and preventing drainage of water from the roadbed. In the shoulder and adjacent areas herbicides are effective in eliminating

non-desirable tall growing vegetation which allows low growing vegetation to fill in and take over to develop stable low growing plant communities.

1. Weed Control on Roadbed

Pre-emergent Roadbed Herbicide Program

The pre-emergent application of herbicides occurs early in the season before weeds germinate. When the weed germinates it comes in contact with the herbicide and dies. This is a non-selective broadcast application utilizing low pressure equipment and is rarely used on the MBTA roadbeds.

Post-emergent Roadbed Herbicide Program

The post-emergent application of herbicides occurs when vegetation has emerged and is past its initial growth spurt, usually after the first of June and lasting until October, but primarily effective June through August. All herbicide applications made by MBTA will use only materials listed on MDAR's sensitive area material list. This application is done by a low pressure boom application to the entire ballast area excepting sensitive sites. Low pressure is defined by 333 CMR 11.02 as less than 60 psi. The boom is mounted on hi-rail equipment and is controlled from the cab. It consists of three booms, center, left and right, allowing the operator effective control. This is the desired application method utilized by the MBTA, and all of its roadbeds are treated using this method.

2. Brush Control on Non-Roadbed Areas

Non-roadbed vegetation under twelve feet tall that is not desirable, like taller woody vegetation growing in the shoulder area, at the edge of the rights-of-way, bridge abutments, obstructing safety equipment, general visibility, line of site and access will be treated by selective foliar application. Low pressure hand application from the hi-rail vehicle or low pressure backpack applications on the ground selectively applying herbicide to target vegetation.

Vegetation over twelve feet in height must be cut per regulation. Where applicable this vegetation will receive a cut surface treatment of herbicide where the herbicide is applied to the outer ring or cambial tissue of the cut stump. A basal application may also be used where herbicide is applied to the lower 18" of stem. Low pressure backpack or spray bottles are used for these applications. These treatments can also be done during dormant season, this extends the treatment window and allows for dormant season work adjacent to and in sensitive sites allowing for better identification and protection of sensitive areas. These treatments should not be made when snow is covering the area of the stem or surface to be treated.

7. SENSITIVE AREAS

A. Identification and Location of Wells and Surface Water Supplies

Sensitive Areas, as defined in 333 CMR 11.04, are any areas within Rights-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. Sensitive areas are identified using maps prepared by the Massachusetts Department of Environmental Protection (DEP), by reference to state regulations, and/or indicated by other local sources of specific information including Conservation Commissions, Boards of Health, and Water Departments. Private wells on record with MDAR's private well registry will be delineated and updated yearly through YOP process. Field observations, as in the cases of new private wells and inhabited areas, will also be used. MBTA will apply herbicides where warranted in accordance with the Vegetation Management Plan in compliance with the requirements of 333 CMR 11.00, including all sensitive area restrictions.

No herbicide application is allowed within the following sensitive areas:

- (a) Within a Zone I (area of contribution to a drinking water supply);
- (b) Within 100 feet of any Class A Surface Water Source;
- (c) Within 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) Within ten 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) Within a lateral distance of 100 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake;
- (f) Within 50 feet of any identified Private Well;
- (g) Within ten feet of any Wetlands or Water Over Wetlands;
- (h) Within ten feet of the mean annual high-water line of any river;
- (i) Within ten feet of any Certified Vernal Pool.

Herbicide application is restricted to no more than one application every two years:

- (a) Within any Zone II or Interim Wellhead Protection Area;
- (b) Between 100 feet and 400 feet of any Class A Surface Water Source;
- (c) 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) Between 100 and 200 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake;
- (e) Between a 50 and 100 foot radius around a private well.

Herbicide application is restricted to no more than one application per year:

- (f) Between 10 and 100 feet from wetlands or water over wetlands;
- (g) Between 10 feet from the mean annual high water line of any river to the outer boundary of the Riverfront Area;
- (h) Between 10 feet from any Certified Vernal Pool to the outer boundary of the Certified Vernal Pool Habitat (100 foot buffer);
- (i) Within one hundred 100 feet of any agricultural or inhabited area.

B. Identification and Delineation of Wetlands

The MBTA identified and delineated all wetlands in accordance with State regulations 310 CMR 10.02. These consist of: any bank, freshwater wetland, coastal wetland, beach, dune, flat, marsh, or swamp bordering on the ocean, any estuary, creek, river, stream, pond, or lake; land under any of those water bodies; and land subject to tidal action.

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

8. OPERATIONAL GUIDELINES FOR APPLICATORS RELATIVE TO HERBICIDE USE

A. Applicator Requirements

No applications of herbicides can be made by railroad personnel or contractors who are not properly licensed by the MDAR. Further, no applications of herbicide can be made without the direct onsite supervision of an applicator who is certified in Category 40 Rights-of-Way Pest Control, pursuant to Massachusetts Pesticide Board Regulations 333 CMR 11.00. The Certified Applicator will report daily to the railroad representative assigned to oversee the task. The railroad is responsible for adherence to this VMP by railroad employees and their contractor. The MBTA will provide oversight to the operation by providing Track Engineers to accompany the crew while working.

Roadbed and ballast applications are often done at night so the applicator must have adequate lighting for this operation.

The applicators will follow all relevant state and federal laws and requirements regarding the application of herbicides. They will follow all railroad safety procedures and requirements.

The applicator will have all necessary maps and information of the treatment area in their possession during treatment.

B. Inspections and Record Keeping

Prior to vegetation management activities the vegetation manager or professional qualified personnel will review the right-of way to insure all boundary markers are in place and visible. Survey vegetation types

and conditions in order to establish a proper treatment plan and herbicide selection. During treatment a daily field report will be kept and contain the following information at a minimum.

Date and Time of application

Track or ROW designation

Herbicides and associated materials used and quantities of each

Weather, including wind speed and direction

Weather constraints affecting applications (Inclement weather halting operations)

Calibration of equipment

General narrative of the days application activities

Name of applicators and license numbers

A follow up inspection by the vegetation manager in two weeks will determine the accuracy and efficacy of the treatment.

9. ALTERNATIVE LAND USE

Safety of passengers and railroad personnel is the key driver behind managing vegetation on a railroad rights-of-way and all shared uses are subject to that requirement. Uses such as utility or telecom lines, or pipelines may work, but would not significantly change or reduce the use of herbicides, which is the intent of the alternative land use requirement. The MBTA would welcome any suggestions in this area, but at this time has none planned.

10. REMEDIAL PLAN TO ADDRESS SPILLS AND RELATED ACCIDENTS

Pesticides are defined by MDAR as substances or mixture of substances that prevent, destroy, repel or mitigate pests, or defoliate, desiccate or regulate plants. This remedial plan outlines proper procedures for addressing pesticide accidents. Since every incident is different, applicators must weigh factors specific to the situation and use their own judgment to decide on the appropriate course of action. Because applicators normally carry only small amounts of pesticides, the potential for serious accidents is relatively small. Federal and state statutes establish emergency response procedures that must be followed by the companies and their contractors in the event of a spill or related accident. Under the Federal Environmental Pesticide Control Act, it is the applicator's legal responsibility to clean up pesticide spills resulting from their use and handling of

the product. Applicators are liable for damages, subject to penalties, and obligated to cleanup and decontaminate areas resulting from pesticide spills.

A. Handling, Mixing, and Loading

All mixing and loading of pesticides will be managed and performed by a hired licensed contractor in a controlled environment in accordance with manufacturer's instructions. Only the amount of pesticides necessary to carry out vegetation control work planned for that day will be mixed to minimize waste and the need for excess handling. The vehicles carrying out the spray operations will be equipped with a bag of absorbent, activated charcoal, leak-proof containers, a broom and a shovel in case of minor spills. A clipboard log of all pesticides on board the vehicle will be kept on the vehicle. Pesticide labels and safety data sheets (SDS) will be carried on-site by the applicator.

B. Spills and Related Accidents

For the purpose of this VMP, major spills involve reportable quantities of hazardous materials as defined by the Department of Environmental Protection (DEP) 320 CMR 40.000. Related accidents include fire, poisoning and automobile accidents. Any minor spill will be reported to the Pesticide Bureau. Major spills will be handled in a similar manner as minor spills, except in cases where the spill cannot be contained and/or removed by the crew. In this case the MassDEP Incident Response Unit and the Pesticide Bureau must be contacted. Emergency first responders (including but not limited to fire and police) will be notified immediately of any major spills and/or incidents of any size deemed to be a potential risk to public health, safety and the environment. MassDEP will be contacted when there is a spill of a regulated quantity, regardless of major or minor spill status, and in accordance with 310 CMR 40.00 Massachusetts Contingency Plan. In the event that any spill is observed, immediate action will be taken to contain the spill and protect the spill area as follows:

- a) Administer proper first aid and call an ambulance and/or Massachusetts Poison Information Center in cases involving injury due to poisoning.
- b) Call the police and/or fire department in cases involving automobile accidents or fire.
- c) If possible, control the spill by stopping the leak or source of spill.
- d) Confine the spread of liquids with a dike composed of soil or other absorptive materials.
- e) Call ChemTrec, Massachusetts Pesticide Bureau, or chemical manufacturer for assistance (see Emergency Contact List below) if unable to handle the spill, or if the material is unfamiliar.

- f) Notify the MADEP if water bodies are contaminated, and for releases or threatened releases of reportable quantities of hazardous material.
- g) Clean up spill:
- 1) If the spill occurs in a public location, isolate the spill areas and deny unauthorized entry until cleanup is complete.
 - 2) Absorb spilled liquids with sand, absorptive clay, spill control gel, vermiculite, pet litter, sawdust or other absorptive material. Wear proper protective clothing and equipment.
 - 3) Sweep or shovel contaminated absorbent into a leak proof, sealable container for proper disposal.
 - 4) Dry pesticides, such as dust, granular and pellets can be directly swept or shoveled into leak proof sealable containers without absorptive materials.
 - 5) Neutralize contaminated area with hydrated lime, sodium hypochlorite (bleach), or soapy water. Never mix bleach and ammonia base products or a poisonous gas will result.
 - 6) Dispose of contaminated material at an approved location.

Emergency Information and Points of Contact

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

- Massachusetts Pesticide Bureau Main # (617) 626-1720
- MA Department of Agricultural Resources (MDAR) (617) 626-1700
- MA Department of Environmental Protection (DEP) Incident Response Unit 1-888-304-1133
- ChemTrec (800) 424-9300
- MA Poison Control Center (800) 222-1222
- Environmental Protection Agency Pesticide Hotline (800) 858-7378
- MA Department of Public Health, Bureau of Environmental Health, Environmental Toxicology Program (617) 624-5757
- MBTA (617) 222 3200

A copy of the YOP shall be carried with the herbicide applicator at all times. The YOP contains telephone numbers for the state police, local fire departments, poison control center, MBTA Safety Department, and herbicide manufacturer(s), as well as a spill response checklist and SDS's.

11. IDENTIFICATION AND QUALIFICATIONS OF INDIVIDUALS DEVELOPING THE PLAN

This plan was developed by Calvin Layton of New Salem, Massachusetts, a vegetation management consultant with over thirty years of direct vegetation management supervision as a Certified Massachusetts Category 40 Pesticide Applicator, including writing two other Vegetation Management Plan's and several Yearly Operational Plans. His experience includes all aspects of utility, municipal, highway and railroad rights-of-way vegetation management, from the application of herbicides to the management and implementation of programs. He researched, developed, and implemented the current WeedSeeker application method used by the MBTA. He was also a long term member of the Massachusetts Invasive Plant Advisory Group.

Individuals supervising execution of the VMP and representing the railroad.

Name & Title:

Joseph Gushue MBTA, Director – Maintenance of Way

Danny Payne MBTA, Deputy Director - Maintenance of Way

Christian Torres, Track Engineer

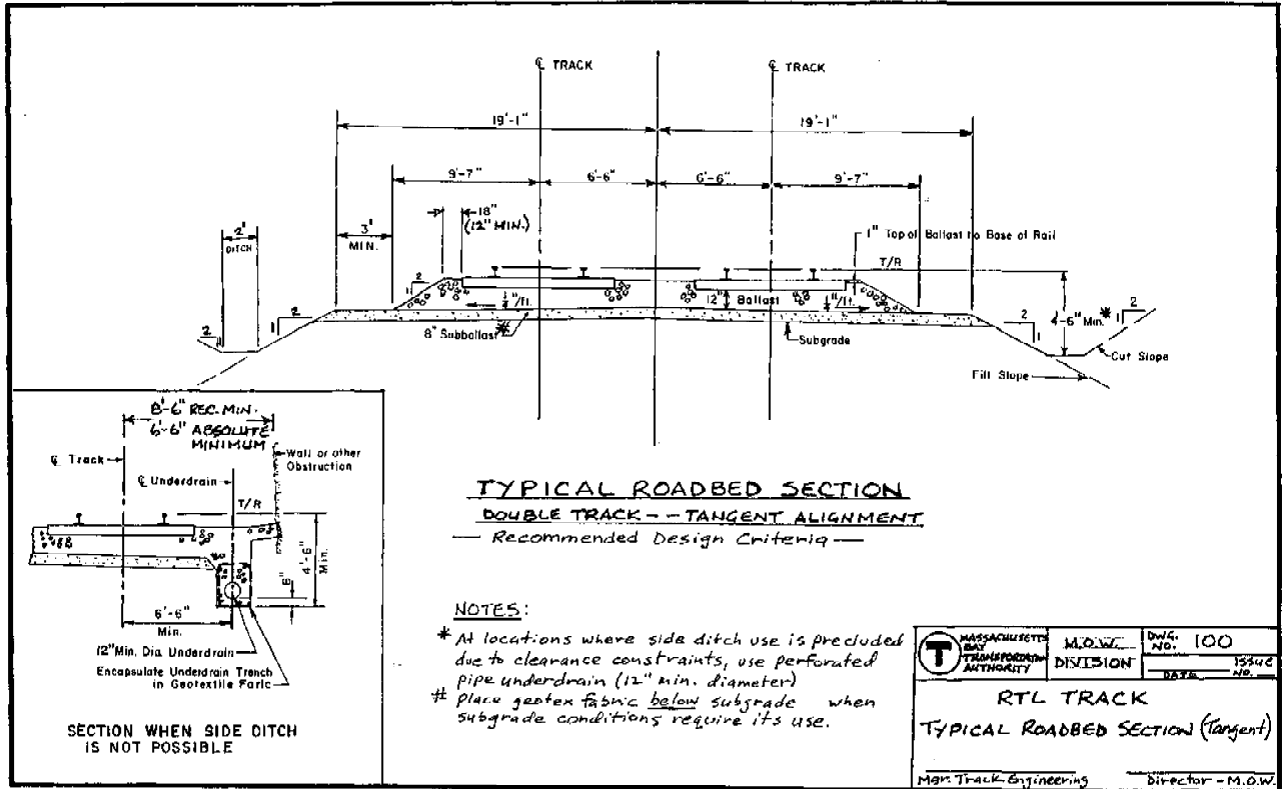
Address

MBTA Maintenance of Way
21 Arlington Ave
Charlestown, MA 02129

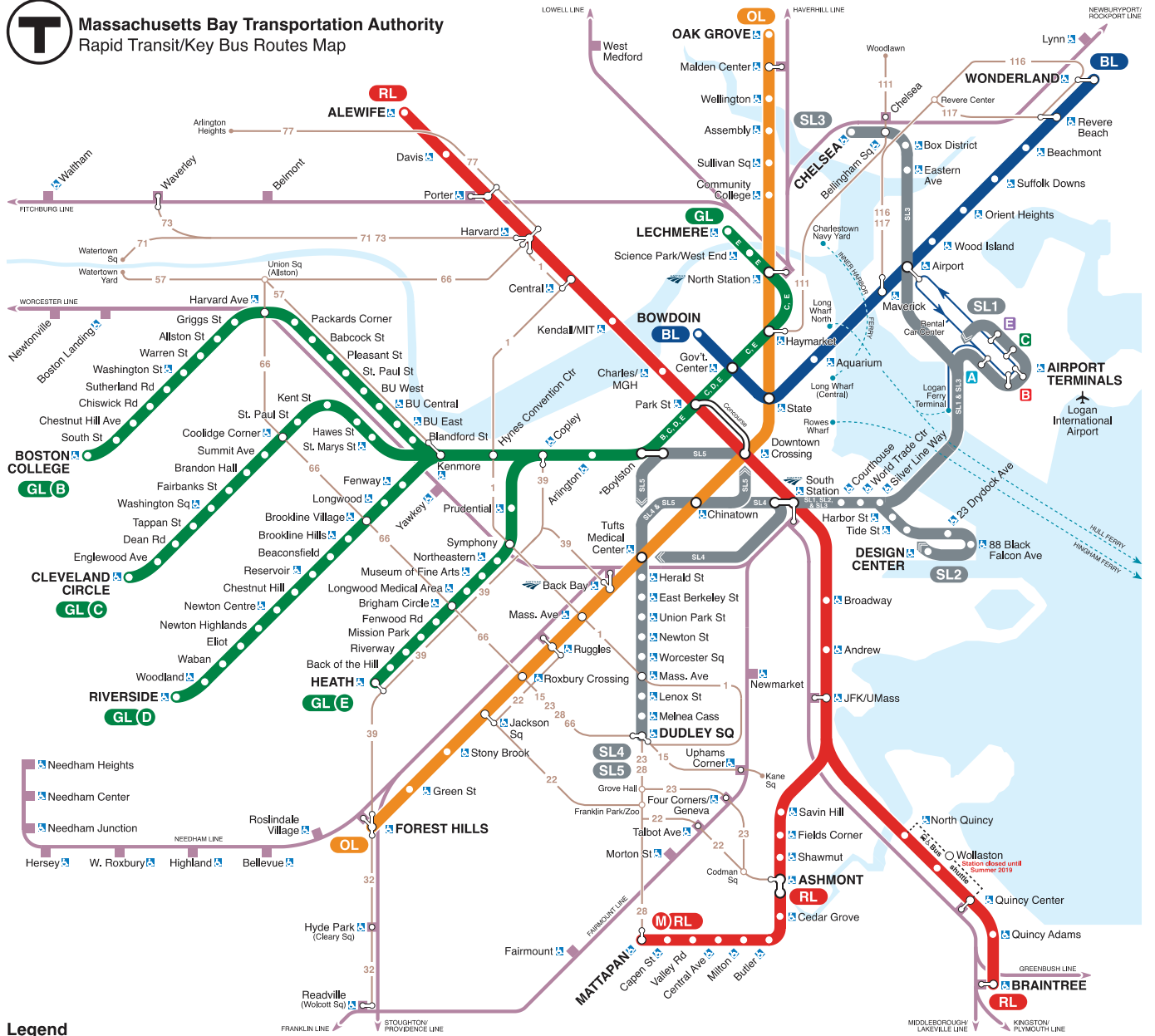
Telephone # (617) 222-3200

Appendix A

SYSTEM MILES BY COMMUNITY		
LINE	COMMUNITY	MILES
GREEN (COMBINED)	CAMBRIDGE	0.45
	BOSTON	11.48
	BROOKLINE	5.12
	NEWTON	5.74
RED	BOSTON	9.35
	CAMBRIDGE	4.46
	SOMERVILLE	0.74
	QUINCY	4.40
	BRAINTREE	1.70
ORANGE	BOSTON	6.79
	SOMERVILLE	1.48
	MEDFORD	1.14
	MALDEN	1.77
BLUE	BOSTON	4.48
	REVERE	1.46



T Massachusetts Bay Transportation Authority Rapid Transit/Key Bus Routes Map



Legend

- RL** RED LINE
- M** MATTAPAN LINE
- OL** ORANGE LINE
- BL** BLUE LINE
- GL** GREEN LINE and branches
 - B** Terminates at Park St
 - D** Terminates at Gov't Center
 - C** Terminates at N. Station
 - E** Terminates at Lechmere
- SL** SILVER LINE and branches
 - SL1**
 - SL2**
 - SL3**
 - SL4**
 - SL5**
- 000 —** KEY BUS ROUTE
Frequent service
- ····· —** FERRY
- COMMUTER RAIL
- ♿** Accessible station
All MBTA and Massport bus and ferry services are accessible
- ↔** Rapid Transit transfer station
- ↔** Commuter Rail transfer station
- Free Logan Airport shuttle bus
- Amtrak service
Back Bay, North & South stations
- ☎** Customer Communications & Travel Info
617-222-3200, 800-392-6100,
TTY 617-222-5146, www.mbta.com
- 👮** MBTA Transit Police: 911
TTY 617-222-1200
- 🛗** Elevator/escalator/lift updates: 800-392-6100

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Not to scale