Environmental Resources Management

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ERM

14 June 2006

Wayland Conservation Commission
Attention: Brian Monahan
Town of Wayland
Town Building
41 Cochituate Road
Wayland, Massachusetts 01778

Subject: Restoration Plan
DEP File # 322-0647
430 Boston Post Road, Former Raytheon Facility

Dear Mr. Monahan and Commission Members:

On behalf of the applicant Raytheon Company, Environmental Resources Management (ERM) submits the attached restoration plan to provide a ratio of greater than 1 to 1.5 mitigation to compensate for the unavoidable activities in jurisdictional wetlands to perform remedial activities.

The goals of the proposed restoration program are to recreate and enhance the existing shallow swale that is vegetated primarily with herbaceous cover and occasional clumps of shrubs. The areas proposed for restoration will be the site of the excavation for remedial activities, and no further land disturbance is necessary to construct the restoration area.

To gain the additional area needed to meet the 1:1.5 requirement, this restoration design extends the eastern and southern edges of the existing swale by lowering the grades to meet the existing grades in the swale, and will provide a gradient for flow to continue to move to the west. A total of 543 square feet of the existing swale will be within the work footprint, and 1545 square feet of area will be restored, resulting in a ratio of 1:2.8.

As we discussed during our presentation at the public hearing held on 11 May 2006, the portion of the swale that can not be avoided in the remedial program is the most upgradient portion of this wetland system. Field investigations revealed that below the few inches of loamy topsoil, the subsoil horizon is medium sand that lacks hydric characteristics. The

restoration design specifies importing a low permeability soil to form a somewhat perched situation beneath loamy topsoil. Please see the proposed soil profile depicted on Figure 2. The low permeability soil is intended to enhance the hydrology of this upgradient zone of this wetland swale. The existing topsoil will not be utilized in the restoration due to the presence of a purple loosestrife (*Lythrum salicaria*) seed bank in this soil. The plantable soil imported will be loamy topsoil that is fertile, friable, and free of seeds of exotic or invasive species, trash and debris.

The proposed planting regime mimics the existing native vegetative cover in the area to be restored. No trees or saplings are present in this portion of the swale. A mix of four shrubs is proposed that will be randomly spaced to stimulate natural growth patterns, and will be position in the field by a qualified wetland scientist. The herbaceous layer specifies a fern that is present under existing conditions, sensitive fern (*Onoclea sensibilis*), and is a quick colonizer due to its vegetative means of propagation via "runners" or roots just below the soil surface. Although the spores of this fern are also a component of the seed mix specified, the installation of plants will accelerate the recolonization of this species.

A seed mix will be broadcast that consists of a diversity of native grasses, sedges, rushes, and herbs. The plan specifies the New England Wetland Plant's Erosion Control/Restoration Mix for Detention Basins and Moist Sites or an equivalent. This seed mix includes: fox sedge (*Carex vulpinoidea*), bearded sedge (*Carex comosa*), lurid sedge (*Carex lurida*), soft rush (*Juncus effusus*), grassed-leaved goldenrod (*Euthamia graminifolia*), boneset (*Eupatorium perfoliatum*), hop sedge (*Carex lupulina*), blue vervain (*Verbena hastata*), nodding sedge (*Carex gynandra*), green bulrush (*Scirpus atrovirens*), sensitive fern (*Onoclea sensibilis*), blue flag iris (*Iris versicolor*), woolgrass (*Scirpus cyperinus*), spotted joe pye weed (*Eupatorium maculatum*), swamp milkweed (*Asclepias incarnata*), monkey flower (*Mimulus ringens*), soft-stem bulrush (*Shoenoplectus tabernaemontani*), hardstem bulrush (*Schoenoplectus acutus*), nodding bur marigold (*Bidens cernua*), and flat-top aster (*Aster umbellatus*). With the amount of different types of seeds in this mix, while not all species may be present post restoration, it ensures that a diversity of native species will quickly stabilize the soil surface and continue to thrive as the system naturalizes.

Post restoration, annual monitoring of the success of the mitigation area will be conducted in late August for two growing seasons after the completion of the restoration. Reports describing the hydrologic and

vegetative conditions will be submitted to the Commission each year. An invasive species management plan may become necessary due to the presence of several exotic species in the vicinity. The presence of invasive species within the restored wetland will be examined as a component of the annual monitoring. A plan for management will be created and implemented if the criteria of 75% of native cover can not be met.

We look forward to meeting with you at the continued public hearing on 22 June 2006 to present and discuss the mitigation plan for the remedial actions.

Sincerely,

Rachel B. Leary
Project Manager

Ann McMenemy, PWS, CWS
Wetland Scientist

Attachments: Figure 1. Existing Conditions in Northern Excavation Area Plan, 14 June 2006.
Figure 2. Proposed Restoration Plan in Northern Excavation Area, 14 June 2006.

cc: Lewis J. Burkhardt, Raytheon Company

Figure 1 - Existing Conditions in Northern Excavation Area
June 14, 2006
Former Raytheon Facility - Wayland, MA

Legend

- Delineated Wetland Boundary
- 100' Wetland Buffer Zone
- Treeline

Note: Wetlands flagging completed by Mark Christopher, Wetlands Scientist, Woodlot Alternatives, Topsham, Maine, June 2003

THE CONTOURS WERE PREPARED FROM AN ACTUAL ON THE GROUND FIELD SURVEY CONDUCTED BY CHAS H. SELLS, INC. ON MAY 18, 2006.

Planting Table

Scientific Name	Common Name	Size	Number
Salix discolor	Pussy Willow	2 - 4 ' HT	48
Spiraea latifolia	Meadowsweet	2 - 4 ' HT	49
Spiraea tomentosa	Steeplebush	2 - 4' HT	49
Cornus amomum	Silky Dogwood	2 - 4' HT	48
Onoclea sensibilis	Sensitive Fern	1 Gallon	**515**
NE Erosion Control/Restoration Seed Mix for Moist Sites or equivalent		Application Rate 1245 sf/lb	

RESTORATION NOTES:

1. INSTALL SEDIMENT AND EROSION CONTROLS TO PROTECT DOWNGRADIENT WETLAND.
2. CONSTRUCT RESTORATION AREA FOLLOWING COMPLETION OF REMEDIATION EXCAVATION IN THIS AREA, REFERENCE REMEDIATION ACTIVITIES SITE PLANS SUBMITTED APRIL 26, 2006.
3. A QUALIFIED WETLAND SCIENTIST WILL SUPERVISE ALL RESTORATION WORK AND SPECIFY PLANT INSTALLATION LOCATIONS.
4. DISPOSE OF EXISTING SOILS DUE TO SEED SOURCE OF INVASIVE SPECIES, PURPLE LOOSESTRIFE.
5. PLACE A 4 INCH LAYER OF LOW PERMEABILITY SOIL AT 16 INCHES BELOW FINAL GRADE.
6. SPREAD 12 INCHES OF PLANTABLE SOILS ON TOP OF LOW PERMEABILITY SOIL LAYER. THE PLANTABLE SOIL WILL CONSIST OFA LOAMY TOPSOIL THAT IS FERTILE AND FRIABLE AS WELL AS FREE OF SEEDS OR PLANT MATERIAL OF INVASIVE OR EXOTIC PLANTS, TRASH OR DEBRIS.
7. DURING INSTALLATION, SHRUBS WILL BE RANDOMLY SPACED TO STIMULATE NATURAL GROWTH PATTERNS
8. PLANTS TO BE INSTALLED BY HAND
9. INSTALL PLANTINGS BETWEEN APRIL 15 AND JUNE 15, or SEPTEMBER 1 AND OCTOBER 15
10. BROADCAST SEED MIX IMMEDIATELY FOLLOWING SHRUB INSTALLATION AND AVOID FOOT TRAFFIC ONCE PLANTED.
11. ALL PLANTS WILL BE PLANTED IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES AND NURSERY SPECIFICATIONS
12. REMOVE ALL TAGS, RIBBONS, LABELS, ETC., AND ALL PLANT CONTAINERS FROM THE SITE AT THE END OF THE PLANTING OPERATION.
13. MONITORING OF THE RESTORATION WILL BE CONDUCTED DURING THE FIRST 2 GROWING SEASONS BY A QUALIFIED WETLAND SCIENTIST TO ENSURE THE RESTORATION GOALS ARE ACHIEVED
14. IMPLEMENT INVASIVE SPECIES MANAGEMENT PLAN DURING FIRST 2 YEARS FOLLOWING PLANTING.
15. MAINTAIN FUNCTIONING SEDIMENT AND EROSION CONTROLS UNTIL THE GROUNDCOVER IS ESTABLISHED TO AT LEAST 75% COVER AND NO SIGNIFICANT BARE SPOTS EXIST.

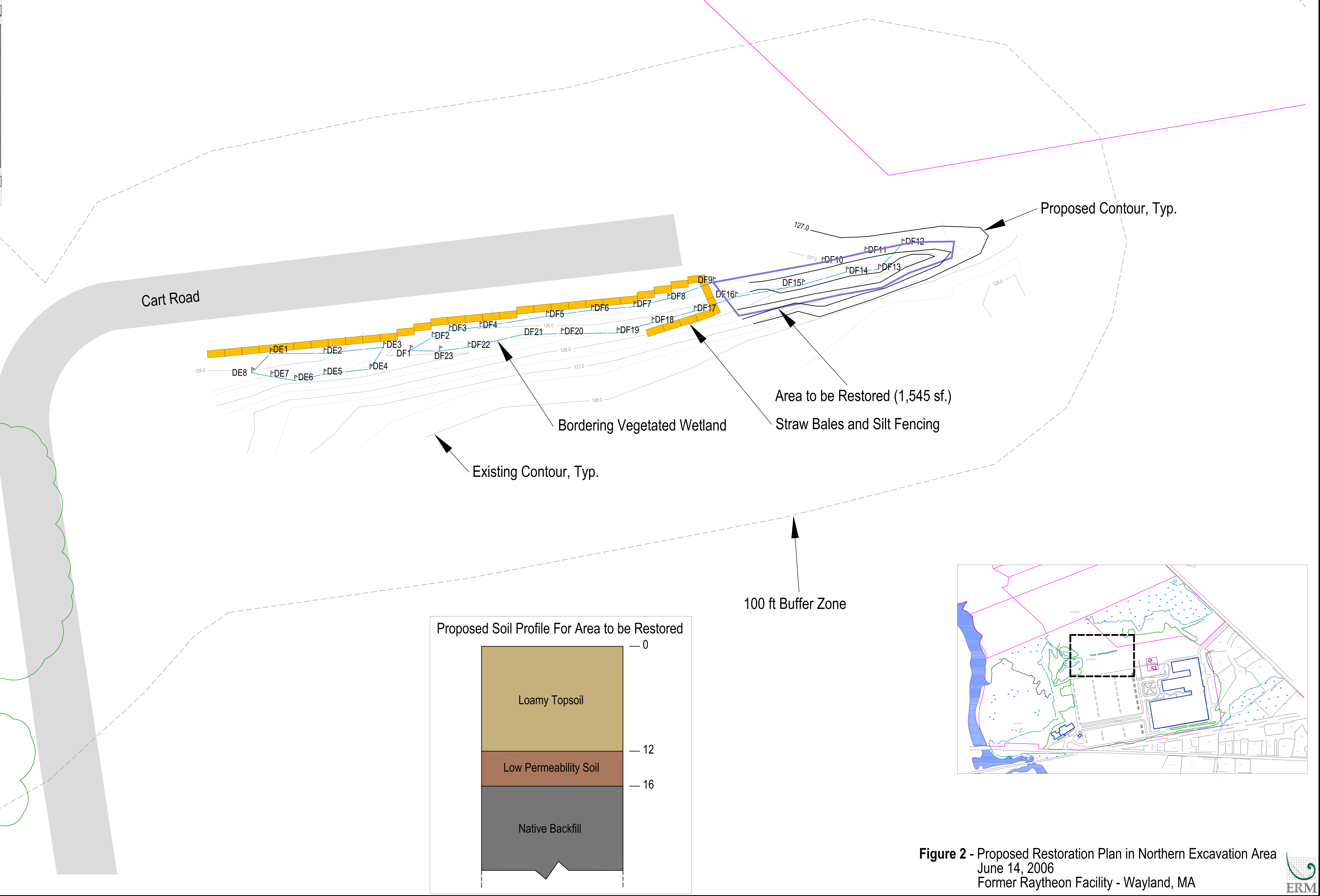

Figure 2 - Proposed Restoration Plan in Northern Excavation Area
June 14, 2006
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