

To Emily Roth  
Regional Parks - Open  
Space Dept.

## ESTABLISHMENT OF NATIVE VEGETATION AT ST. JOHNS LANDFILL 1997 SCOPE OF WORK

### Phase I-

Summer/Fall 1997 [July 15 through October 1, 1997]

#### **Statement of Purpose-**

During the Phase I period the project team will research literature, conduct field work and prepare specifications and cost estimates necessary for the initiation of testplot site preparation activities and establishment and planting of a garden plot for increasing the supply of seed needed for testplot planting.

The following specific tasks will be completed during the Phase I time period:

#### **Task 1: Review existing site information.**

- References (as noted in Native Vegetation for St. Johns Landfill section of the RFP)
- Permits and Policies: DEQ, NPDES, Smith Bybee Lakes Management Plan and Committee policies, Metro Alternatives to Pesticides Policy
- SJL Final Closure Construction Contract Documents & Records (soil & compost acquisition)

#### **Task 2: Conduct an inventory of the existing cover vegetation.**

In order to gain additional site knowledge, the team will inventory and characterize the existing native and non-native vegetation and soil seedbanks to complete site data gaps, and determine baseline information and vegetative succession trends.

#### **Task 3: Research regionally appropriate disturbed site revegetation efforts and integrated vegetation management (IVM) techniques.**

The team will initiate inquiries to determine if other regional efforts to revegetate comparably disturbed sites can be adapted for use at SJL. Regional land managers and reference literature will be consulted to determine if specific techniques for the management of invasive non-native species (particularly grasses) have been developed.

#### **Task 4: Design a series of experimental testplots.**

During July and early August, the design team will design soil testing protocols and assist with the collection of soil samples from possible testplot locations. After selection of testplot areas, testplot site preparation cost estimates and specifications will be prepared and submitted to Metro REM for approval on or before August 20, 1997. Testplot site preparation work (including cover crop seeding) is planned for early-mid September 1997. The team will also work with Metro REM Operations staff to select a suitable site for the establishment of a garden plot for increasing the available seed supply of suitable native grasses and forbs. Cost estimates and specifications for garden plot preparation, seeding and/or

growing of plugs will also be prepared and submitted to Metro REM for approval on or before August 20, 1997. Garden plot seeding/planting is planned for mid September 1997.

**Phase II-**  
**Fall 1997 (October 1 through December 1997)**

**Statement of Purpose-**

During the Phase II period, all vegetation surveys, seedbank & soil testing results will be compiled and analyzed. Thereafter, the first round of testplots will be designed, and specifications and budgets prepared.

**Phase II work tasks and team budget will be submitted on or before August 20, 1997.**

**ESTABLISHMENT OF NATIVE VEGETATION AT ST. JOHNS LANDFILL  
1997 PROPOSED BUDGET FOR PHASE I PROJECT DESIGN**

**Professional Fee Schedules-**

Mark Griswold Wilson	\$80.00/per hour
Loverna Wilson	\$80.00/per hour
Laura Brophy	\$70.00/per hour

**Expense Schedule-**

Mileage: \$ .30/mile  
 Travel time: 1/2 hourly rate  
 Meals: 1 per 4 hr. work @ \$8. each  
 Copy/Print/Post: at cost  
 FAX/Telephone: \$2.00 each

**Proposed Worktask Budgets-**

**Task 1: Review existing site information.**

4 hours @ \$70./hr. (LB)  
 11 hours @ \$80./hr. (MGW/LW)  
 15 total hours

\$1160.00

**Task 2: Conduct an inventory of the existing cover vegetation.**

5 hours @ \$70./hr. (LB)  
 10 hours @ \$80./hr. (LW/MGW)  
 15 total hours

\$1160.00

**Task 3: Research regionally appropriate disturbed site revegetation efforts and integrated vegetation management (IVM) techniques.**

7 hours @ \$70./hr. (LB)  
 15 hours @ \$80./hr. (LW/MGW)  
 22 total hours

\$1690.00

**Task 4: Design a series of experimental testplots.**

21 hours @ \$70./hr. (LB)  
 36 hours @ \$80./hr. (MGW/LW)  
 57 total hours

\$4560.00

**Expenses:**

Mileage:	\$120.00 (LB/LW)
Travel time:	\$600.00 (LB/LW)
Meals:	\$40.00
Copy/Print/Post:	\$20.00
FAX/Telephone:	\$100.00

**Subtotal**

\$880.00

**Total proposed budget for Phase I**

\$9450.00

after earlier herbicide applications, as well as the effectiveness of tillage and irrigation if these methods are used.

Phase II site preparation will probably also include irrigation to sprout any remaining seed bank during the dry part of the summer. **Herbicide application after irrigation would provide final control of undesired vegetation.** Irrigation may also be recommended in conjunction with planting, to speed the establishment of the cover crop and desired species before the onset of 1998-99 winter rains. A single tillage operation may also be added to the site prep schedule, depending on results of soil physical testing in winter 1997-98. Tillage is not recommended as the primary method for control of existing non-native vegetation, because repeated tillage would be necessary to achieve the desired level of weed control. Repeated tillage would increase the risk of erosion, because it would weaken the already-poor soil structure at the site.

### **Experimental plot treatments, design and monitoring**

Experimental treatments to be applied to the plots will include different seeding mixtures (cover crops, native grasses and forbs, and non-native grasses), and may also include management practices such as soil amendments, planting techniques, or other cultural practices designed to help establish the desired species. No-till planting will probably be recommended, to maintain existing soil structure and reduce seed bank competition with plantings. No-till planting implements designed to provide good seedling establishment conditions even in compacted soils are now available.

Experimental plot design will be based on the number and structure of treatments chosen, and environmental variability at the site. We expect plant community measurements to be strongly influenced by environmental factors such as water regime, aspect, slope, soil depth and composition, and border effects. We will select plot size, plot shape, blocking/stratification and other design methods to reduce within-treatment variability due to such environmental factors. For example, plots will be blocked across environmental gradients and randomized within blocks to increase statistical reliability. Strip-plot or split plot designs will be used if required, to make it easier to plant and manage the plots.

Quantitative data will be collected for individual species of interest and for the plant community as a whole, in the form of percent cover, frequency, density, and/or other statistically valid measures. These data will be used to answer the question, "Which of the experimental treatments provides the best growth of native or native-dominant vegetation during the 5-year contract period?" . We will select statistical sampling and monitoring methods to maximize accuracy, precision, and repeatability of measurements. Prior to finalization of the statistical protocol, we will conduct preliminary sampling at the site to determine the best type of sampling units, unit size, number of units, and parameters to be measured.

We will interpret experimental data via means comparisons using accepted test statistics; analysis of variance and covariance; regression; and/or other appropriate linear methods.

Prepared by: Mark Griswold Wilson and Laura Brophy, September 24, 1997

No use of  
Herbicides  
hell!  
Otherwise  
would have to  
continue them  
use...

## **ESTABLISHMENT OF NATIVE VEGETATION AT ST. JOHN'S LANDFILL**

### **Preface to Phase I Document: Summary of Proposed Experimental Plot Procedures**

#### **Overview**

This summary provides an explanation of the Wilson-Brophy-Wilson Design Group (WBW) approach to experimental plots at the St. John's Landfill. This summary is provided as a supplement to the Phase I document, "Establishment of Native Vegetation at St. John's Landfill: Proposed Phase I Work Guidelines and Cost Estimates: Draft" submitted to Metro on August 22, 1997 by WBW. Additional information is available in the initial proposal submitted to Metro on May 21, 1997. The initial proposal is entitled "Proposal for Professional Services: Establishment of Native Vegetation at St. Johns' Landfill"; it was the basis for the award of contract #905795. The Phase II document (to be submitted to Metro on November 3, 1997) will expand on the ideas outlined below; changes may be made based on information received before November 3.

#### **Purpose of experimental plots**

The experimental plots are designed to determine the identity of sustainable native grass species and/or native-dominant herbaceous assemblages that can be planted as cover on the landfill, along with management practices for establishment and maintenance of these assemblages. These assemblages and management practices should not jeopardize the integrity and function of the existing cover system at St. John's Landfill, but should prevent or control erosion and the spread of invasive noxious weeds, and enhance the wildlife habitat and scenic values of the landfill.

#### **Question to be answered by experiment**

The proposed experimental plots are designed to answer the question, "Which of the proposed experimental treatments provides the best growth of native or native-dominant vegetation during the 5-year contract period?" Treatments to be tested are described under "Experimental plot treatments..." below. Statistical analysis of experimental results will be used to compare these treatments.

#### **Site preparation methods**

The goal of site preparation is to provide a "clean slate" for the experimental plots -- specifically, an area free of severe competition from undesired vegetation -- so that the different experimental treatments can be evaluated without the serious handicap of different initial weed populations at the beginning of the experiment. A single, uniform site preparation method must be applied across all experimental plot areas in order to allow comparison of the experimental treatments. (Treatments are described below under "Experimental plot treatments.") Given the short (5-year) duration of this contract, both the "clean slate" approach and use of a single, uniform site preparation method are vital to improve the chances of significant experimental results. Uneven initial weed control and/or lengthy experimentation on site preparation methods would almost certainly lead to inconclusive results in the experimental plots. Site preparation for the plots will consist of a combination of herbicide (glyphosate), irrigation, and/or tillage. Application of the herbicide glyphosate is recommended for fall 1997 (see Phase I document) to reduce the vigor of existing non-native vegetation while maintaining erosion control over the winter 1997-98 period. Specifications and rationale for any further site preparation work in late winter and spring 1998 will be provided in the Phase II document. Additional applications of glyphosate may be recommended. For example, a second application should be applied in late winter before winter annuals go to seed. A third application could provide control of the site's dense stand of perennial non-native grasses. Decisions regarding these applications will be based on the extent of regrowth