Work Plan Instructions

Introduction

The work plan is the keystone document of your project. It is where the goals and objectives from the proposal are explicated into a series of defined tasks which, if completed, will manifest the project into reality. The functional requirements and constraints, proposal, and site assessment from last quarter provide critical information and framework to formulate the work plan. In addition, the activities of the first three weeks of this quarter (planting design workshop, materials estimating exercise, and draft budget and planting plan) should lead into the development of your work plan.
Work Plan Structure

The work plan should consist of the following parts (which will be described in detail later in this handout):

I. Background
   1. Site description
   2. Restoration needs and opportunities

II. Tasks and Approaches

III. Specific work plans
   1. Site preparation plan
   2. Planting plan
   3. Other plans (as dictated by your goals and objectives)

IV. Work timeline

V. Design for the future

VI. Literature cited

The entire work plan is a large and detailed document. While it is most efficient to partition out different sections to various team members, you should take care to coordinate the development of sections with obvious overlaps. Be sure to allow time in the end to integrate the various sections into one cohesive document.

Work Plan Sections

I. Background

The background material sets the stage for your work plan. It should include sufficient information for a reader (unfamiliar with your specific site) to understand the bases for your approaches, tasks, and specific plan elements.

1. Site description

This site description should provide a descriptive context for the project. It should cover the topics that you were expected to address in the “Site description” section of your proposal. Revise the site description from your final proposal in light of corrections and commentary given on the draft & final proposals as well as the site assessment. Be sure to include two basic maps: (1) a general location map showing where your site is located within the Puget Sound region; (2) a more detailed map showing where your restoration site is located within the boundaries of a meaningful local area (e.g., where is it within the park?; where is it within the neighborhood?).
These maps should be referenced (parenthetically, as figures) in the text of your site description.

2. Restoration needs and opportunities

Following your presentation of the current conditions in the site description, you should describe the needs for ecological restoration that exist and the opportunities that such restoration would present (e.g., ecological opportunities; opportunities for the surrounding human communities), particularly in light of your community partner’s desires (outlined in the RFP) and your own evaluations. We are looking for a single paragraph that will convince the reader of the need for your project and your basic approach, allowing them to proceed smoothly into the next section. Some of this material may have been included into your “site description” section of your final proposal.

II. Tasks & Approaches

Use the goals and objectives from your final proposal as the framework to formulate the tasks and approaches. However do not simply cut and paste the goals and objectives from your final proposal! Revise the goals and objectives as per the comments and corrections provided by the instructors and community partners (yes – we will be checking to make sure you did this!). Use the structured format outlined below to complete this section.

Goal
  Objective(s)
  Task(s)
    Approach
    Approach justification

The elements of this structure are elaborated below, using some examples in each section.

Goal
  Objective
  Use the goals and objectives that were approved from your final proposal (revised from comments as suggested above)

Task(s)

Each objective should have a series of tasks that follow it which are essential to the completion of that objective. To repeat, each task should directly support the objective! Tasks are formulated as ‘how-to’ action statements and should be worded succinctly. Task statements however should not be ‘recipes’ where the specifics of tools, materials, methods, numbers, etc. are explained. For example here are reasonable tasks associated with a specific objective:
If all of these tasks are successfully accomplished then the objective will be met. Contrast this with a task statement that contains too much detail:

Task 1-1a: Cut all Himalayan blackberry (*Rubus armeniacus*) canes to 0.5 m above the ground and then use a clawed mattock to grub out all rootwads in the southwestern portion of polygon 6.

And one that lacks detail and is unclearly related to the objective:

Task 1-1a: Remove LWD.

What is LWD? What does it have to do with the objective?

**Approach**

The approach narrative describes the *methods and materials* involved in implementing each task. For example:

**Example**

**Goal 1:** Promote the establishment and dominance of native vegetation typical of low elevation Puget Sound riparian zones along Yesler Creek

**Objective 1-1:** Remove and suppress recurrence of invasive species along the creek

**Task 1-1a:** Remove all Himalayan blackberry (*Rubus armeniacus*) above and below ground biomass.

**Approach:** In all polygons where they are present *R. armeniacus* canes will be cut to within 0.5 m of the ground with pruners and loppers so that they are visible for rootwad removal. All rootwads will then be grubbed out manually using clawed mattocks and shovels. All canes and root wads will be stockpiled on cardboard to prevent re-establishment until hauled away by the Parks department.
The development of tasks and approaches should provide a ‘reality check’ for the stated goals and objectives. Are they ‘doable’ as stated? If not then restating the task or even reformulation of the goals and objectives is in order.

**Approach justification**

The approach justification should be a brief statement or two that references material to justify the choices of methods and materials made to accomplish each task. These references can come from the primary research literature, information provided by government and nonprofit organizations, text books, handbooks, websites, and any well-recognized, reputable source. Peer reviewed scholarly sources are preferred, but in the emerging, multidisciplinary endeavor of ecological restoration systematic studies are not always available. Personal communications may be used, but only if published work is not available. Use a consistent standard method of citation, e.g., (Ewing, 2005) and list all cited materials in a ‘Literature Cited’ section at the end of the work plan.

An example statement to go along with the approach example given above might be:

Removal of rootwads has been shown to provide lower rates of overall *R. armeniacus* reinvasion along abandoned dikes in western Washington (Brokenback, 2006).

## II. Specific Work Plans

This section should include at least a site preparation plan and a planting plan. Other plans should be included as they are necessary for your project – such as a habitat structures plan; education and interpretation plan; art plan; etc. Where applicable in your plans, reference the theoretical basis for the approach you propose, with particular reference to the ecological theories discussed in fall quarter. There will be a number of maps used in this section. Keep in mind that any maps your present should not rely solely on color to differentiate sections or objects. The document may be photocopied or printed in black and white. Sections or objects should be pattern-coded at a minimum.

### 1. Site preparation plan

The site preparation plan consists of three distinct elements: (A) a detailed description of the current conditions within your site; (B) the site preparation activities you will undertake; and (C) logistical considerations for undertaking the site preparation activities.

**A) Current Conditions**

Present the current conditions of your site. This presentation will be more detailed than what was done in the site description section above (part I). It should include:

(a) Site polygons: provide a map with your site broken into distinct polygons based upon the site assessment. You may be able to use a revised version of the map from your site assessment. Describe the bases for the creation of each polygon. This description
will form the basis for the reader to understand the site preparation you will describe in the following section.

(b) Site vegetation: at least one map with existing vegetation (based upon your polygon map above) and an accompanying text description of that vegetation. In cases of more complex sites you may wish to present separate maps of existing native vegetation and non-native vegetation (this may help to clarify your site preparation described below).

B) Site Preparation Activities

Present your plan for site preparation activities (e.g., invasive removal, topography modification) that will take place prior to planting your site. You site modifications should be based upon the polygons that you identified for your site. Each polygon should be designated to receive site preparation substantially different from other polygons based on their unique ecological conditions and objectives. Using the site polygons map (or non-native vegetation map) as the basis, indicate areas (through pattern-coding) receiving specific site preparations (excavation, invasive removal, mulching, erosion control, etc.). In the text, describe the modifications for each polygon, justifications for that approach, and reference sources where appropriate.

C) Logistical Considerations

Describe your approach to conducting your site preparation activities while minimizing negative impacts to the site and surrounding area/community. You should give due consideration of the types of disturbances that your activities might impart (e.g., parking problems, noise, erosion). Include a logistics map to help illustrate your discussion, which should have at least these elements:

- Point(s) of access and pathways for the delivery and distribution of materials
- Staging areas for materials (mulch, plants, cardboard, etc.)
- Parking for volunteers

You might be able to use the detailed site location map described in the site description section (part I) above as a base map.

2. Planting plan

This is a detailed presentation and justification of your approach to installing plant material on your site. It should be based explicitly upon the different polygons identified above. Each polygon should be discussed separately and designated to receive a suite of plants substantially different from other polygons based on their unique ecological conditions and objectives. The presentation of each polygon should include a narrative description and an accompanying planting map for that polygon (you may use one planting map of your entire site which can be referred to by the text in the different polygon descriptions).

Your planting map(s) should indicate the plant associations to be installed in each polygon (western red cedar-western hemlock (*Thuja plicata* - *Tsuga heterophylla*), red alder-salmonberry (*Alnus rubra* - *Rubus spectabilis*), etc.). In addition to associations, you may wish to indicate specific plants or clusters if they are important to indicate (based upon fulfilling certain objectives) – for example, the location of the single western yew (*Taxus brevifolia*) to be planted to fulfill a community partner’s desire.
The narrative for each polygon needs to present the intended plant association to be
installed, numbers and forms of each species to be planted, spacing between each plant
according to vegetative layer (canopy, shrub, ground cover), anticipated dispersion pattern
(if applicable), and justification for the species you chose based on the site conditions and
objectives. This presentation should be supported by the “plant materials” table described
below. The narrative should also include mention of associated materials that will be used
in the planting and immediate aftercare of the plants if they specifically address project
objectives. For example, you might wish to describe how you are going to mulch after
planting, or the use of protective planting tubes to enclose planted tree seedlings. This text
should be supported by the “general materials” table described below.

Briefly describe the principles that guided your selection of the forms, spacing, and
general numbers of plants for this polygon. You can address this collectively, not
separately for each species. Where appropriate describe the general ecological,
physiological, or horticultural bases behind your selection approach. For instance, “As this
polygon presents disturbed, sun-exposed conditions where we will reinitiate ecosystem
functions such as primary production, soil stabilization and water retention by planting
early-successional species were selected for drought tolerance (Gold, 2009). Since the
reinvasion of Scot’s broom to such sites is a concern (Parker, 2001) the potential
competitiveness of installed species was also considered.”

**In these narratives you should reference the objective and tasks being
accomplished by the actions being taken in each polygon.** This is another opportunity
to ‘reality check’ the tasks you have outlined. Did you describe tasks in the narratives that
don’t exist among your stated tasks? If so, does adding this task directly support an
objective? Are there stated tasks that were not described and referenced in the
narratives? If so, are those tasks essential to meeting objectives? Consider whether or not
the omission was just an oversight or that perhaps the task really isn’t necessary.

**Please create two tables:** (1) Plant materials table and (2) General materials table. The
plant materials table should summarize the plant species, numbers, forms, and spacings
for the whole site by polygon. For example:

<table>
<thead>
<tr>
<th>Polygon 1</th>
<th>Polygon 2</th>
</tr>
</thead>
<tbody>
<tr>
<td># Form centers (m)</td>
<td># form centers (m)</td>
</tr>
<tr>
<td>Cornus sericea 25 Live stakes 1</td>
<td>10 2 gal 2</td>
</tr>
<tr>
<td>Thuja plicata</td>
<td>15 B&amp;B 3</td>
</tr>
</tbody>
</table>

The general materials table should summarize the materials and tools required for each
task with approximate quantities and sources. For example:

<table>
<thead>
<tr>
<th>Materials</th>
<th>Qty</th>
<th>Source</th>
<th>Tools</th>
<th>#</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1-1a</td>
<td>Cardboard</td>
<td>100 m²</td>
<td>Liquor store</td>
<td>Loppers</td>
<td>5</td>
</tr>
<tr>
<td>Woodchips</td>
<td>10 m³</td>
<td>Local arborists</td>
<td>Shovels</td>
<td>10</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>Mattocks</td>
<td>10</td>
<td>&quot;&quot;</td>
<td>Gloves</td>
<td>10</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>Task 1-1b</td>
<td>Cardboard</td>
<td>65 m²</td>
<td>Liquor store</td>
<td>brushcutter</td>
<td>1</td>
</tr>
<tr>
<td>Woodchips</td>
<td>5 m³</td>
<td>Local arborists</td>
<td>Rakes</td>
<td>5</td>
<td>&quot;&quot;</td>
</tr>
</tbody>
</table>

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3. Other plans

Your site preparation and planting plans may very likely not fully cover the range of activities that you plan to undertake to fulfill the objectives of your project. For example, you may have tasks that include educational or interpretative activities, or the installation of habitat structures. For each such set of major activities not described in the previous plans, you should present a plan modeled upon the planting plan above. It is probably not necessary to base such other plans upon specific polygons (though there could be instances where that is appropriate). Rather, in most instances you may discuss the plan on a whole-site basis. You should present a map to accompany each plan (or a combined map for multiple “other” plans if it is not too cluttered). A table of required tools, materials, quantities, and sources should also be included for each plan.

IV. Work timeline

Provide a project timeline in a Gantt chart format that clearly shows approximately when each task will be undertaken. Specific dates are not necessary. Every task should appear on this timeline with a brief description of that task. Pay careful attention to the sequencing of your tasks! Here’s yet another opportunity to consider the viability and logistics of the stated tasks. Here’s an example:

| Task 1-1a: R. armeniacus removal | January | February | March | April |
| Task 1-1b: remove P. arundinacea | | | |
| Task 1-1c: mulch over removal areas | | | |
| Task 1-1d: Install native plants | | | |

V. Design for the Future

This section should be a narrative that addresses the following points / questions:

1. Stewardship expectations and development plan

   Now that you have some familiarity with your community partner(s), you should have begun to develop a notion of how the site may be take care of following your departure in June. Describe your expectations and what you plan to do to develop the kind of stewardship necessary for your project to succeed. Be specific in discussing the stewardship development. It is not sufficient to indicate that you will be holding community work parties. How will you recruit and get people to come? What will you do at those events to excite or educate people?

2. Project design and stewardship

   In this section we expect you to discuss how the design of various aspects of your project fit with your stewardship expectations to result in long term success of the project. This would be a good place to bring forth your long term vision of the project (e.g., successional development).
VI. Literature Cited

Alphabetically list all sources cited in the work plan using a consistent format (CBE name-date format preferred, such as that used in the journal Ecology).