

## **FOR 459. Forest Resource Planning and Decision-Making**

FOR 459 has four major objectives:

(i) to provide students with an opportunity to integrate the knowledge gained in their previous course work in the process of developing a solution to a resource management problem. Our ultimate objective in the Department is to educate people to be effective resource managers. We believe that this entails, in part, the ability to see the linkages between all of the many attributes and uses of the forest. You have taken courses in many disciplines and subject areas, which at the time may not have seemed linked or interconnected in any way. The case study in FOR 459 should provide an opportunity to see how all of these seemingly disparate courses in fact support each other and provide a basis for a comprehensive planning view.

(ii) to give students experience in comprehensive long-range resource planning. We believe that what differentiates our students from those in other professional management programs is their ability to think comprehensively, holistically, across many resource dimensions when addressing a management problem AND to look ahead at the long-range implications of management actions and resource conditions. Developing a useful proposal for solution of the problem addressed in this class will require that you take both a comprehensive and long-range view and thus gain some experience in this approach.

(iii) to provide experience working in a multi-person, multi-disciplinary problem-solving context. Virtually all resource management problems today involve dimensions and issues that span a wide range of technical and professional disciplines. Most organizations employ teams of experts to help identify problems and solutions. This class will provide some experience in this approach.

(iv) to provide a culminating exercise in written and oral communication. Throughout your program of studies you've had the need to communicate the results of your work or research in written and oral forms. Many of the classes you've taken have emphasized the development of these communication skills. FOR 459 provides one final opportunity to gain communication experience in a simulated "real world" context.

In addressing our planning problem we will use the analytical problem solving approach. While researchers have identified many different ways to approach problem solving in many different personal and institutional contexts, we will stress what is called the "analytical" approach. In the framework of our resource management problem, the analytical approach involves five major steps or questions.

(1) What is the nature of the problem?

Why is there dissatisfaction with the current situation? What are the concerns of the individuals, groups and/or agencies involved with management of the resource? What values are being impaired or objectives being missed that lead to the need for change?

(2) What are the objectives and values of the decision-maker?

What are the decision maker's short and long term goals for management of the resource in question? Is it possible to articulate what a "good" or "bad" management result would be? Can objectives and values be expressed in some way that would allow the ranking of alternative management options and associated outcomes—is there some way to tell if one alternative is "better" or "preferred" to another?

(3) How can alternative management actions be examined or evaluated to provide enough information so the manager can rank them?

What analytical tools can be used to predict the performance of different alternatives in terms of the decision-makers objectives and values?

(4) What alternative management actions are available and how do they rank in terms of the decision-maker's objectives and values?

What is the range of possible decisions to resolve the problem? What is involved in each decision? Using the analytical tools identified in (3), how do these alternatives compare?

(5) What alternative would you suggest to the decision-maker?

Which alternative ranks "highest" in terms of the decision-maker's objectives and values? What objective or subjective evidence causes you to recommend this alternative?

In summary, the steps can be stated as:

Identify the problem.

Determine the decision-maker's objectives and values.

Establish how to measure results on the basis of these values (identify criteria).

Identify alternatives and evaluate them in terms of the decision-maker's values.

Recommend and justify an alternative.

Of course, many practical issues impede our ability to carry out this idealized planning approach. Decision-maker objectives are often unclear or difficult to articulate and may involve conflicting desires. There is often a wide range of possible alternatives and it is difficult to narrow down the options to a few representatives. It may be too costly in terms of time and resources to fully evaluate even a small number of alternatives using the full set of decision-maker objectives. Key data may not be available to carry out the desired evaluation. Even with a complete evaluation, a clearly preferable alternative may not emerge.

Organization of class:

The entire class will work on the same management problem: development of a comprehensive, 50-year management plan for the North Zone of the McDonald-Dunn Research Forest. The class will be divided into 4 person crews, each with a mix of Forest Management and Forest Resource Recreation students. **Crews will be tentatively assigned on April 1 and finalized by April 2 or April 3 at the latest.** Each crew's efforts will address the full range of resources in the Zone and propose a plan for their integrated use and management. Each crew will prepare

a written report describing their analysis and justifying their management proposal. A summary of analysis and results will also be given in an oral report to the decision-makers.

**You have only 10 weeks to prepare your plan.** The attached sheet (page 9) gives you a full schedule of lectures, labs, and due dates. To assist you in moving expeditiously through the planning process, a set of required written submissions and interim verbal reports are established.

The In-Process Reviews (IPR) provide teams with an opportunity to gauge their progress toward project completion in discussions with the instructor. The following time schedule and due dates for interim written submissions suggest the major tasks to be accomplished in the conduct of the projects and the approximate times by which they should be completed. Dates and topics for the IPR's are also noted. Crews should sign-up in advance for times.

### **Summary of Dates for Reports and IPR's**

**April 8:** A written work plan for the project indicating the duties and assignments of each crew member and outlining a time table for completion of each step in the project, including preparation of the written and oral reports.

**April 15:** A written statement of the team's initial evaluation of the decision-maker's objectives and values and what criteria might be available to measure these values.

**April 24:** A written statement of the methods of analysis the team will use to evaluate different alternatives using the criteria set out in the previous report.

**April 25:** In-Process Review #1. Teams schedule a time to meet with instructor in lab to discuss: work plan, nature of management problem, decision-maker objectives and values, available criteria, proposed methods of analysis, identifying alternatives, and data needs.

**May 9:** Final report outline due in PVY 201 by 1700.

**May 16:** In-Process Review #2. Teams schedule a time to meet with instructor in lab to discuss: data and analysis problems, comparing alternatives, identifying the "best" alternative.

**May 22:** Draft written reports due in PVY 201 by 1700.

**May 29:** Pick-up drafts with comments in PVY 201 at 0900.

**June 6:** Final draft written reports due in PVY 201 by 1700.

**June 9-13:** Oral presentations—to be scheduled.

Grading:

The final written report will comprise 75% of the grade, the oral report 15% and the three interim written reports on work plan, owner objectives, and methods of analysis 10%. Criteria to be used in the grading of the final written and oral reports are attached.

All team members must also submit an intra-team rating report at the conclusion of their oral report. These ratings are used to determine any deviations in individual grades from the team grade (both higher and lower). **The ratings are strictly confidential.** The ratings together with the instructor's evaluation of oral reports are the only basis for changing individual grades from the team grade.

The intra-team reports are extremely important. **An incomplete will be given to the entire crew if all intra-team reports are not submitted by Friday of finals week.**

The grade scale is fixed as follows:

| <u>Percent of total points</u> | <u>Grade</u> |
|--------------------------------|--------------|
| 90+                            | A            |
| 80-89.99                       | B            |
| 70-79.99                       | C            |
| 60-69.99                       | D            |
| 59.99-                         | F            |

The organization and length of the written report is entirely at the team's discretion. A sample report outline is attached, which may serve as a starting point for the organization of the team's report. Also see the attached criteria for evaluating the final written report as a guide to what the report should address. For the final report, please submit it in a 3-ring binder to make copying easier.

Organization of the oral report is also at the team's discretion, but it should last no longer than 45 minutes.

## EXAMPLE FINAL REPORT OUTLINE

### TABLE OF CONTENTS

- I. Executive Summary
  - A. Brief description of project
  - B. Brief summary of findings
  
- II. Introduction
  - A. Description of project
  - B. Discussion of the owner's objectives, values, and constraints
  - C. Discussion of format for analysis
    - 1. Outline of analysis
    - 2. Limitations (scope) of analysis
    - 3. Criteria employed to measure accomplishment of owner's objectives
    - 4. Relative importance of each criteria
    - 5. Key assumptions
  
- III. Background for analysis
  - A. Resource models (This section tells how you modeled the response of the resource base to management actions.)
  - B. Social, economic, and other models (This section tells how you modeled, or what you assumed about, the response of the social, economic, or other relevant systems to management actions.)
  - C. Identification of alternatives (What alternatives did you consider and how were they selected for analysis?)
  
- IV. Analysis  
(This section provides the details of your analysis of alternatives together with illustrative graphs, tables, figures, etc.)
  
- V. Discussion of results and recommendations  
(This section describes the results of the analysis as they relate to the assigned problem. It also presents a specific recommendation and justification for the recommendation in terms of the owner's objectives.)
  
- VI. Literature citations
  
- VII. Appendix  
(Details of calculations - if these are not obvious - data needed to support analysis, etc.)

## QUESTIONS TO CONSIDER IN DEVELOPING YOUR FINAL WRITTEN REPORT

### Introduction and Background

1. Does it focus on the client, situation, and land being analyzed in describing physical, biological, economic, and institutional conditions?
2. Does it put the client, the situation and the tract of land into perspective in time and space?
3. Does it describe the purpose of the analysis and the report? Is the scope of the analysis clear?

### Objectives and Constraints

1. Are the objectives and constraints of the client clearly presented?
2. Is there a clear hierarchy of client objectives - the realization that some things are more important to the client than others?
3. Are economic, institutional, technical, and time constraints clearly distinguished and identified?
4. Are constraints well-stated in measurable terms?
5. Are the objectives and constraints valid and relevant to the situation?

### Analysis, Evaluation, Selection of Recommended Alternative

1. Is it clear how the analysis was intended to be done?
2. Is the analysis related to the objectives and constraints of the client?
3. Are assumptions clearly stated?
4. Are criteria for evaluation clearly stated and derived from objectives?
5. Is it clear which alternatives were considered for in-depth analysis and which were rejected?
6. Are the limitations of the analysis clearly stated and discussed?
7. Is it evident how weights were assigned to each criterion?
8. Is it clear how things were calculated - is enough information presented so work can be checked?
9. Are all units of measure clearly presented?
10. Are alternatives clearly evaluated in terms of specified criteria?
11. Given the analysis, is it clear how an alternative is selected?
12. Does the analysis and evaluation make the reader aware of trade-offs among the several objectives?

### Information and Data Retrieval

1. Are the data and information employed substantive, up-to-date and of adequate quality given needs of the problem and constraints faced by the team?
2. For published material - is there evidence of a thorough library search? Are latest publications referenced?
3. For interviews - is there evidence that an attempt was made to seek the most authoritative source on a subject? Are hearsay and opinions clearly distinguished from facts in the report and given proper weight?
4. Is there a clear purpose related to the project for all data and information presented in the main body of the report and the appendices?

5. Was the collection of data and information sensitive to the assigned tract of land? Are extrapolations of information from other areas carefully explained in terms of similarities and differences compared to the assigned tract?
6. Does collection, use, and discussion of data and information show good knowledge of forest resources and related subject matters?

#### Writing Quality

1. Is the report well-edited and cohesive? Is there a common thread throughout--does it flow?
2. Is it neat, easy to read?
3. Is discussion crisp, to-the-point - is there a purpose for everything in the report?
4. Is referencing of data and information clear and consistent throughout the main body and appendices?
5. Are tables, figures, and charts well-labeled and clearly presented? (NOTE: Tables, figures, and charts should "stand on their own" as much as possible without cross-referencing the text.)
6. Are all tables, figures, charts, and appendix materials referred to in the text? (NOTE: This is a good way to spot materials that don't need to be in the report as well as finding things you forgot to reference.)
7. Are good examples used to emphasize points?
8. Does the paper exhibit good grammar and spelling?

## GRADING CRITERIA FOR ORAL PRESENTATIONS

Grading is necessarily subjective but is based on the following considerations.

### CONTENT

Are owner objectives presented and discussed?

- Is it clear how accomplishment of objectives is to be measured?
- Are any critical constraints presented and discussed?

Is analysis presented in a concise manner but in sufficient detail so that the listener can follow and judge its quality?

- Are critical assumptions indicated and discussed?
- Are critical judgments by analysts indicated and discussed?

Is material presented in a logical fashion so that the listener can understand how conclusions follow from analysis?

Is it clear how analysis relates to objectives?

Are conclusions and recommendations clearly presented?

### FORM

Does presentation follow logical order and flow smoothly?

Did all team members participate?

Were visual aids clear, useful?

Were questions thoughtfully considered and answered?

Was time limit (45 minutes) observed?

## TEAM MEMBER EVALUATIONS DUE AT END OF ORAL PRESENTATION

### FOR 459 TIME SCHEDULE

| MONTH           | M                    | Tu<br>(Lecture 1100)<br>PVY 104  | W   | Th<br>(Lecture 1100)<br>PVY 104   | F<br>(Lab 1300)<br>PVY 242   | WEEK |
|-----------------|----------------------|--|---|---|--|------|
| MARCH/<br>APRIL | 31                   | 1 <b>Introduction Analytical Planning Process (begun)</b><br>First pass at team selection. | 2<br>Initial teams posted outside PVY 201 | 3 Finalize teams.<br><b>Analytical Planning (concluded)</b><br>Organizing teams.            | 4 <b>Objectives: Meet with Decision-Makers from Forest IN LAB PVY242</b> | 1    |
|                 | 7                    | 8 <b>Survey Identifying Objectives WORK PLAN DUE</b>                                       | 9   | 10 <b>Soils and long-term productivity (Prof. Boyle)</b>                                    | 11   | 2    |
|                 | 14                   | 15 <b>Discussion of objectives: Dean Salwasser</b>   | 16  | 17 <b>Watershed and Hydrology (Prof. Skaugset)</b><br><b>OBJECTIVES DUE PVY 201 BY 1700</b> | 18 <b>Field Trip to North Zone</b><br><b>STUDENT DRIVERS NEEDED</b>      | 3    |
|                 | 21                   | 22 <b>Activity scheduling</b>  | 23  | 24 <b>Recreation (Prof. Rosenberger)</b><br><b>METHODS OF ANALYSIS DUE</b>                  | 25 <b>IPR # 1</b><br>Sign-up for times                                   | 4    |
| APRIL/<br>MAY   | 28                   | 29   | 30  | 1 <b>Silviculture and timber management (Prof. Bailey)</b>                                  | 2  | 5    |
|                 | 5                    | 6  | 7   | 8   | 9 <b>Final Report Outline Due by 1700 PVY 201</b>                        | 6    |
|                 | 12                   | 13   | 14  | 15  | 16 <b>IPR # 2</b> Sign-up for times                                      | 7    |
|                 | 19                   | 20   | 21  | 22 <b>FIRST DRAFT WRITTEN REPORT DUE BY 1700 PVY 201</b>                                    | 23   | 8    |
| MAY /<br>JUNE   | 26                   | 27   | 28  | 29 <b>PICK UP FIRST DRAFT WRITTEN REPORT 0900 PVY 201</b>                                   | 30   | 9    |
|                 | 2                    | 3  | 4   | 5   | 6 <b>FINAL DRAFT WRITTEN REPORTS DUE BY 1700 PVY 201</b>                 | 10   |
| FINALS<br>WEEK  | 9<br>ORAL<br>REPORTS | 10<br>ORAL<br>REPORTS  | 11<br>ORAL<br>REPORTS                     | 12<br>ORAL<br>REPORTS   | 13<br>ORAL<br>REPORTS  | 11   |

28 March 2008

### **FOR 459: General Problem Description for the North Zone Study**

The North Zone comprises the Dunn Forest portion of the McDonald-Dunn Research Forest, covering some 4,000 acres of primarily younger stands of Douglas-fir. The McDonald-Dunn Forest Plan identifies two major management directions for the North Zone (excerpted from [http://www.cof.orst.edu/cf/forests/mcdonald/plan/files/mcdunn\\_plan.pdf](http://www.cof.orst.edu/cf/forests/mcdonald/plan/files/mcdunn_plan.pdf) see this document for full details):

**Theme #1: Short Rotation Wood Production with High Return on Investment.**  
Establishes and manages Douglas-fir plantations to become financially competitive with intensively managed plantations of pine and other species in the southeastern United States and elsewhere, maximizing yields of wood products valuable for domestic mills.

**Theme #2: High-quality, Growth maximizing Timber Production.**  
Emphasizes long rotations of even-aged plantations (dominated by Douglas-fir), established, managed, and harvested on rotation cycles that optimize yield of high-quality wood, generally one to several decades longer than for Theme 1.

Theme 1 would dominate in the southeast portion of the tract, while Theme 2 would be the predominant direction in the northwest portion

These descriptions emphasize timber management, but at the same time the College is clearly committed to maintaining and enhancing recreation and visual resources throughout the Forest. To date, however, less has been done to assess the non-timber resources of the North Zone or to propose possible options for enhancing non-timber uses than in the other zones. Indeed it's fair to say that management plans for the North Zone have not been as fully elaborated as for the Central and South Zones, where use conflicts have been more intense and of longer duration.

But Forest managers recognize that the management context of the North Zone is changing. Rural areas north of the Zone, once mostly fields and forest, are being developed and subdivided as Benton County continues to grow. Adair Village to the northwest is experiencing some of the most rapid housing construction growth in Oregon. Hikers and bikers are increasingly mobile and seeking less crowded areas, such as those in the North Zone. At the same time the College's need for revenue from timber harvests on the Zone has grown as other funding sources have declined. As a consequence, Forest managers want to take another look at plans and directions for the Zone. Will subdivision and recreation trends near the North Zone lead to use conflicts of the sort seen in the other Zones? Can future management developments within the Zone be structured to better harmonize research, timber harvest and recreation uses to avoid some of the conflicts encountered in other Zones while still maintaining harvest revenues?

You have been hired as a consultant to help the Forest's managers consider these issues. Your general task is to take a comprehensive view of the North Zone to develop a 50-year management proposal that will balance use and development of both timber and non-timber resources in the near and long-term, within the objectives and constraints for the Forest as articulated in the most recent Forest Plan.

**To be of greatest value to the managers as they make more detailed plans for the future, your plan must include at least the following elements.**

1) Recreation and amenity uses. Your plan should include:

- a) an assessment of future growth in recreation use on the tract, including an analysis of the effects of expansion in neighboring developments and communities,
- b) an assessment of the feasibility of charging for recreational access on the Zone beyond hunting fees,
- c) a proposal for a trail linking the older stands in the southern part of the parcel starting from the 400 road, including recommendations as to primary user type (pedestrian, biker, mixed ped-bike, equestrian, etc.), design, anticipated use and cost estimates, and
- d) an analysis of the development of self-guided nature trails based on roads in the north part of the Zone (the Theme 2 area).

2) Timber uses. Develop a timber management plan consistent with management's objectives for the zone, including (a) analysis of, and recommendations on, silvicultural details (assessment of rotation lengths and other silvicultural treatments, including returns on investments) and (b) projections of harvest flows, cutting patterns, and financial results.

3) Sequestering carbon. Your plan should include: a) an analysis of the future changes in carbon stocks and b) the options for selling "carbon offsets" from the Dunn Forest by modifying management to increase carbon sequestration. Be clear on how, if at all, the Forest can meet requirements of "additionality" and how the College would go about marketing its offsets.

4) Special ecological and vegetation areas. Describe the potential future of special vegetation areas within the North Zone if they receive no treatment or management and what, if any, efforts would be required to maintain these areas in their current condition and what the costs of these efforts would be.