GUIDELINES FOR THE REM 699 RESEARCH PROJECT

Prepared by
REM Graduate Studies Committee
and REM Student Representatives

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Introduction

The objective of the School of Resource and Environmental Management is to train graduate students in a variety of strategies for and techniques of natural resource and environmental management in an interdisciplinary setting, to develop their understanding of the dynamics of the resource base, and to expose them to the social implications of resource decisions. To meet this objective, students take an integrated sequence of courses in complementary fields, pursue further elective courses in their area of specialization, and carry out a research project (REM 699) on a topic involving more than one discipline. The purpose of this document is to provide guidelines to help both students and faculty members ensure that 699 research projects are completed successfully, within a reasonable time, and with a rigorous standard of quality.

What is a REM 699 Research Project?

Purpose

The purpose of a REM 699 research project is to enable students to pursue a research topic in depth while at the same time developing certain skills that will be useful to them in their future employment in the various areas of resource and environmental management. Those skills range from general to specific. General skills include the abilities to: 1) conceptualize and formulate a manageable research problem, 2) organize the required steps, 3) integrate and synthesize concepts and findings of other researchers, 4) collect and analyze data, 5) evaluate the strength of evidence or conclusions, and 6) communicate effectively both in writing and orally. Students can also improve their abilities in specific skills such as benefit/cost analysis, simulation modeling, designing social surveys, decision analysis, statistics, risk assessment, conflict resolution, strategic planning, and others. As elaborated upon below, students should emphasize their development of these general and specific skills in order to prepare them for a wide range of career opportunities.

Nature of the 699

The final product of a REM 699 research project is a high quality written report on a resource management or environmental problem. In order to bring the results to the attention of a wider audience, it is desirable that this report be in a format that is immediately publishable in a reputable journal. The research project is undertaken under the guidance of the student's Simon Fraser University supervisory committee, which in some cases can include professionals from agencies or firms with resource management responsibilities. The project will include some original research, which means it must include one or more of the following: collection of
primary data, a new type of analysis of existing data, development or testing of a new method or tool of analysis, or a novel synthesis of existing literature that makes new advances in the area of research.

The focus of the research project will be on some biological, economic, planning, policy, or other single-discipline aspect of an environmental or resource management problem but it must also include at least one interdisciplinary aspect of the issue that is being investigated. For instance, a largely economic analysis could include legal implications, or a fisheries management topic could include estimating economic impacts. The suitability of interdisciplinary components of a project will be determined by the supervisory committee.

The research project must incorporate knowledge gained through courses in the REM Program, and where applicable, experience derived from summer work or similar practical training. Information presented in the written 699 research report may incorporate term papers or components thereof from REM courses but such sections of the 699 must be modified well beyond individual course requirements.

Scope of the 699

The topics of 699 research reports will vary widely, as will the types of analyses included. As a result, it is difficult to narrowly prescribe limits of acceptability. The most important criterion for acceptability is that it be of high quality, regardless of the nature of the 699. The problem must be clearly formulated, the analysis must be rigorous, results must be clearly presented, and the implications for resource management must be clearly articulated. The 699 topic should be chosen carefully so that it deals with a well-defined, focused problem that permits rigorous analysis in two semesters of full-time research. Students should get help from their supervisor and supervisory committee to focus on a topic (see "Choosing a Topic" below). Their experience will help students narrow down overly ambitious ideas or expand upon oversimplified ones. As well, students should look at the list of good examples of research projects in Appendix 1 to gain an understanding of the proper scope of 699s. This list is found in the "Information Relevant to REM 699 Research" binder kept in the REM common room. Use these examples as your guide; others not listed may have been overly ambitious or otherwise not suitable as guides for future 699s.

Students often ask how a 699 research project differs from a Master's thesis, as would normally be produced in a traditional, single-discipline department. Because of the larger number of courses required for the MRM degree than a standard Master's, we cannot expect that the 699 project will be as extensive as a standard Master's thesis. The 699 should therefore be more limited in scope than a thesis. However, 699 projects and theses should not be distinguished on the basis of quality; both should be high. Instead, they should be distinguished based on the extent of the tasks. A 699 project will be on a more focused topic and have less
depth of analysis than a traditional thesis. For instance, all researchers make assumptions when carrying out analyses. However, a thesis will rigorously defend more of the assumptions than a 699 project. A 699 project should still state and defend assumptions, but that defense may be based on previous literature rather than on new analyses, as would appear in a thesis.

Finally, because of the wide range of topics in REM 699s, it is not possible to prescribe minimum or maximum page limits for the written document. However, in most cases, a report of approximately 50 to 75 pages of text may be satisfactory to describe a project of appropriate complexity to satisfy the requirements of REM 699. The expected length may vary depending on the subject matter. *Again, quality is considered much more important than length.* To meet this expectation, the topic will have to be well focused from the beginning. The journal in which you intend to publish your 699 results will create further limits on length. While most journals require submitted manuscripts to be even shorter than 50-75 pp., 699s may have details of background data or methods in appendices that will not be submitted to the journal, but which are necessary for the 699.

**How Will Your Research Paper Relate to Future Employment?**

Graduate students frequently assume that the selection of their REM 699 research topic should be directly linked to their desired future professional employment position. For many a 699 would seem to be a natural "building block" in the progression to a professional career in a particular area of interest. While such a strategy can be a useful means of focusing on a research topic, it is not necessarily achievable or essential. Many students at the time of selection of their topic do not know where their career path is leading, or what the specific requirements of their eventual employment will be. In fact, it is often through courses, research assignments, and co-op jobs that many students discover what they are interested in pursuing in the REM 699 research paper. Furthermore some students are overly concerned about being "labeled" as knowledgeable only in the subject area of their 699. However, a quick review of some of the employment positions and research subjects undertaken by REM graduates in the past clearly reveals that while some students obtained employment in fields related to their REM 699 research topic, many became employed in other fields within environmental and resource management. The latter group was successful because their 699 research paper strengthened their skills in organization, analytical research methods, interpretation, and communication. All of these abilities are required in any professional work environment. To that end, the building of these skills should be a primary objective of your 699.
How Do You Carry Out a 699 Research Project?

Temporary Senior Supervisor

Students are initially accepted into the program by an individual faculty member (the temporary supervisor) who becomes the senior supervisor unless an agreement is reached between the student and any other SFU faculty member to transfer this responsibility at a later stage. You should make an appointment with your supervisor in the first week of classes and check in frequently thereafter. Your supervisor can do a number of things for you including:

- discuss with you which courses are best to take, and when, given your research interests;
- sign your course enrollment forms;
- help you identify areas of interest;
- help identify the appropriate faculty for you to meet and involve in your research project;
- help identify other students working in similar areas; and
- review your course grades and general progress.

- suggest funding sources
- Help to scope and plan the 699 research project

Choosing a Topic

Choosing a topic for your 699 can be the most difficult part of the entire process. Often students will spend a year or more searching for that 'perfect' topic which will engage their interest and provide them with sufficient funding. Although it is ideal to work on a subject that you feel excited about, sometimes it may be necessary to take a slightly less exciting topic early and graduate in a timely manner. Some supervisors will direct their students to topics within their own areas of research and others will let you roam the literature for awhile looking for yourself. Some students prefer to identify their own research topics, whereas others prefer to ask their supervisors for lists of options. There are benefits to both ways of approaching the problem of finding a topic but there can be some significant obstacles as well. We have assembled some hints here to help you in your search. Suggestions for supervisors are included below as well. Above all, start these steps early, preferably in your first few weeks at SFU.

1. **Research past 699 topics.** Appendix 1 has a list of selected REM 699 projects, and a complete list is available on the REM website (www.rem.sfu.ca). The actual bound projects can be borrowed from the SFU library if you want to look at them in more detail, and some projects are now on the web site as PDF files. To get some ideas for your 699, read the last chapter of past 699s, where the authors will often identify areas where further research is required or recommended. You may perhaps identify other areas within past 699 projects
that need further work or that can be applied to another subject. Just reading a few 699s will give you a clearer understanding of what is required of your own research.

2. **Investigate faculty research areas.** You can also obtain up to date information about faculty research projects and areas of interest from faculty web pages and their research group web sites (follow the links from their web page on the main REM website). You should make an effort early in your program to identify faculty members with similar interests to yours and arrange meetings with them to discuss possible research areas. Some students change supervisors upon reaching an agreement with a new supervisor. Keep in mind that this is not something that should be taken lightly, so do your research first!

3. **Ask your supervisor for a list of potential 699 projects.** Your supervisor undoubtedly has a number of research topics that he/she thinks are important and appropriate for a 699. Discuss this list and ask for appropriate background reading on topics that intrigue you.

4. **Read the literature.** Ask your supervisor for a list of journals/publications in your subject area and spend some time reading current articles/abstracts. As with old 699s, papers often end with recommendations for further research. You may find yourself inspired by a new topic or conversely, uninspired by one you thought was interesting. As well, read the articles with a critical eye. Question the assumptions, interpretations and conclusions the author(s) made. There may be a need for someone like you to correct and build on previous work.

5. **Investigate research topics with non-academic sources.** Your supervisor should be able to tell you which government agencies, non-governmental organizations, and other groups are doing work in areas that fall within your general area of interest. Often, faculty will already have contacts with people in these organizations, or better yet, there may be a REM graduate working there. Make arrangements to meet some of them or talk on the phone. All agencies are on limited budgets and the idea of having a student work on a research project can be appealing to them, if they can expect that the project will be relevant and completed on time. They might even provide some funding, but don't count on it.

6. **Attend conferences, lectures and 699 oral presentations.** Attending conferences and lectures can not only be a good way of sparking your interest in a subject and learning current information in an area, it is also an excellent way of finding out who is doing what research and making contacts with them. This is called networking and it is a good skill to have. Often students are charged reduced registration fees at conferences or, by
volunteering to help for a few hours, their registration fees are waived. The Dean of Graduate Studies Office administers NSERC travel grant funding which is allocated on a ‘first come, first served’ basis to students who are presenting at conferences in the fields of science and engineering. REM also has a limited amount of funding available to assist students with conference costs, provided the student is presenting research results. Information about this funding is available on the REM website (www.rem.sfu.ca) or from the Graduate Program Assistant.

By attending 699 oral presentations you can learn what past research has been done and what topics could perhaps be built upon. It will also prepare you for what is in store for your own 699 and oral.

7. **Generate your own list of topic areas.** Once you have spent some time looking at previous REM 699 research projects, reading the literature, and talking to your supervisor and outside people, make a list of all the potential topics you have uncovered in your search. Try to define a research question and a brief methodology for each one. Don't try to write a proposal for each one; this list is only to get these ideas on paper. Show the list to your supervisor. She/he may suggest eliminating some of your topics (because they are, for example, ‘too big’ or not feasible) . Your supervisor may also have recommendations for literature to review. It may be that some of your ideas are just not practical for a research project.

8. **Evaluate your personal skills and interests.** Before you narrow the list any further, give some serious thought to the skills you already have and those you want to learn during your 699. This list of skills may have little to do with the actual subject of the 699. For example, are you interested in analyzing data? If so, then choose a topic that allows you to do this. Perhaps it will be a computer model or survey analysis. Perhaps you have done a lot of data analysis already and instead want to branch into policy analysis or a planning topic. One of the beauties of REM is the variety of skills you have the opportunity of applying to your 699, so take advantage of this and branch into a new area. There are several books that can help you define what skills you are good at. One that is very popular is *What Color is Your Parachute?* in the self-help section of bookstores.

**Responsibilities of Supervisors**

Defining a research topic is not solely the responsibility of the student. Both supervisors and students have the same goal: for students to complete a high quality
research project promptly. The following are some tips for supervisors to help their students get through the difficult task of choosing a topic.

1. **Direct the student to the appropriate literature and sources.** Sources for literature are mentioned above and include past 699s, journal articles, outside agencies, and faculty research areas. The supervisor can help the process considerably by providing the student with a list of appropriate publications to look at as well as contacts within government agencies (or NGOs). Remember, that although it may be easier to integrate the student into your own research areas, students benefit from going through the process of finding a topic of their own. A student who is enthused about their topic is more likely to do a good job and finish in a shorter period. However, the reins should be pulled in after a certain period if it looks as though they aren't making headway on their own.

2. **Hold regular lab/research group meetings.** Aside from individual meetings with students, lab meetings with your group of supervised students, research assistants, etc. can be a valuable source of information on potential research areas. Discussions and critiques of current literature, student research, and faculty research projects may generate some interest on the part of students.

**Formation of the Supervisory Committee**

According to the University Graduate General Regulations, a supervisory committee must be formed as soon as possible, and no later than the beginning of the third semester following admission for full-time students (within two calendar years for those studying part-time). Students are admitted to the REM program to work with a particular professor (the ‘temporary’ supervisor). Normally students continue to work with their initial supervisor; however, should their direction or area of research interest change, students may change supervisor. The student and senior supervisor will jointly identify other faculty members or non-academics who could contribute to the committee. (If the committee member(s) are not SFU faculty, a brief current c-v of that proposed committee member must be included when the committee approval paperwork is completed). An Approval of Supervisory Committee form must be submitted, first to your senior supervisor, then to the Chair of the REM graduate studies committee, and then to the Assistant Director of Graduate Studies when the membership of the committee has been decided. This should be done in consultation with the Graduate Program Assistant. Your supervisory committee should be viewed as a group of advisors to help you in your graduate program, and especially to assist you in designing and reviewing the progress of your project. They are responsible for helping you develop a program of study leading to a degree and for reporting on your academic progress. The committee and the student will design the program of studies, which will include the research report and courses.
During the second semester, all students' fall term results will be reviewed by the supervisor to identify potential problems. Students in apparent difficulty will be requested to meet with their supervisor, the chair of the graduate studies committee, and instructors of courses where problems have been experienced. The purpose of the meeting will be to determine the reason for the apparently unsatisfactory first-term performance. It is recognized that students generally go through an adjustment period and the emphasis of this meeting will be on assisting the student.

The same procedure will be followed in the second semester of the second year when the academic performance of all students will be evaluated. Those who fail to maintain a cumulative grade point average (CGPA) of 3.0 will be required to withdraw from the program and the university. The only exception is if the supervisory committee or the director recommends that the student be permitted to continue and if this is approved by the appropriate university committee and the Dean of Graduate Studies. Under no circumstances will a student whose CGPA is below 3.0 be awarded a graduate degree.

Members of the supervisory committee other than your senior supervisor may have various expectations regarding their role on your committee. It is best to get your supervisory committee involved early. At a minimum they should approve the proposal, a detailed description of the methodology and the layout of the 699. As well, they should attend supervisory committee meetings as requested by the supervisor and the student. Members of the supervisory committee other than the senior supervisor are there to provide you with an additional perspective on your research. Sometimes this will be in the form of further expertise in your area of focus; in other cases they will provide expertise in one of the other disciplines that must be included in each 699. All committee members can be both strong allies and good sounding boards.

**Committee Meetings**

You should hold regular meetings with all members of your supervisory committee. While the number of meetings may vary, it is particularly important to hold meetings during the formative stages: to discuss the topic in general, to revise and approve the proposal, and to discuss detailed methodologies, sources of data, etc. After data collection, you should again meet with the full committee to review the proposed structure of the report, analysis, and results. At a minimum, you must have a meeting with your full supervisory committee at least once per year. Some tips for successful meetings include:

- Distribute an agenda before the meeting that covers what the meeting is about and any decisions that need to be made.
- Note the priority for each agenda item.
- Keep minutes of the meeting or a summary of the decisions made and circulate those to all committee members after the meeting.
• Ensure you get your committee members' undivided attention — if faculty are distracted by phone calls or interruptions from students, book another room (e.g., the REM seminar room) for the meeting.

**Reporting on student progress**
The University Graduate General Regulations require that “at least once each year, the supervisory committee will report on the student’s progress. The report will be sent, in writing, to the graduate program committee with a copy to the student.” These meetings should be scheduled at the end of the spring semester. The Graduate Program Assistant will send out Progress Report Forms during the semester, and when you have received this form, you should schedule a committee meeting to discuss your progress.

**Developing a Proposal**
A detailed research proposal should be developed during your first year (second year for part-time students) with the assistance of faculty, government agencies, or private-sector professionals. Use the opportunity provided in REM 801 to learn about the appropriate format and process for developing a proposal. In addition, take advantage of the flexibility in REM courses to start exploring different topics or to channel aspects of your work towards your 699. Develop a table of contents for your 699 with approximate page limits for each section. This will help your committee understand the layout of your 699 more clearly, help you identify sections upon which to work, and help prevent you from structuring a topic too large to handle. Revise this draft table of contents as your work proceeds.

**Approval of the Research Proposal**
An “Approval of Research Proposal” form must be signed by the student's senior supervisor and the supervisory committee prior to the start of data collection. Your proposal, which must be attached to this form, should contain a methodology and an outline of the paper. This form is due by the end of the fall semester of your second year of enrollment. The proposal serves as a contract between you and your supervisory committee. Like any other contract, if the scope or other aspects of the research work changes, you should amend the written proposal with the agreement of the supervisory committee.

**Developing a Detailed Outline and Workplan**
In order to complete your MRM degree and 699 research on time, it is essential to follow a rigorous time schedule. Appendix 4 gives an example of an administrative timeline, but you should also develop a detailed personal work plan. Most importantly, you should seriously begin to explore potential topics for a 699 project early in your Master’s program. For example, you
should start carrying out the steps outlined in the section "Choosing a Topic" during your first month in the program. In particular, you should draft an initial research proposal by mid-December of your first year. You will generally have 2 to 3 weeks after the end of the first semester and before Christmas. This time should be used productively because if you wait until the end of the second semester to start thinking about a topic and writing a proposal, a good part of the summer semester will be over before you decide on a topic. We know how difficult the first semester can be and how much students look forward to the break, but take that break after you have completed an initial proposal. You can revise the proposal during the spring semester. Ideally you should establish and meet with your supervisory committee as soon as possible but not later than May of your first summer semester. This will enable you to make considerable progress on the 699 by the end of the summer. Remember, being a graduate student is a full-time job, so use your time accordingly.

Approval of the Methodology
Before you proceed with any data collection, your supervisory committee should approve your methodology. In some cases, ethics approval may also be needed (see below). If you deviate from your methodology to account for unforeseen events, you should only do so with the written approval of your supervisory committee. Write down the changes and append them to the proposal that is in your student file.

Approval of Ethics
If your research involves human subjects, DNA or other biohazards, or work with animals, the University requires you to obtain formal written approval. Research with human subjects must be reviewed by the University Research Ethics Committee; research with DNA etc. must be reviewed by the Bio-safety Committee, and research involving animals must be reviewed by the University Animal Care Committee.

While the latter two types of research are less common in REM, many students utilize surveys, interviews, or observations with human subjects as a data collection method. All of these methods require review and approval by the University Research Ethics committee. You should allow several weeks for this review and approval prior to beginning your research. The REM Graduate Program Assistant has Ethics Approval Information and forms.

Conducting the Research
Keep a detailed log of all data collection procedures and data analysis. This log could save valuable time as your 699 progresses. Discuss data storage and computer analysis needs in advance with your supervisor. Specific guidelines for conducting research vary substantially depending on the type of topic, the methods, and your supervisor. Some general tips and ideas
are included below. However, you should consult your senior supervisor to see whether he or she has some additional comments or tips regarding preferences for format, methods, or process.

**Guidelines for Research**

In research we frequently work with large data sets. In the course of statistical analysis, those data sets are usually manipulated to clean up errors, missing data points, etc. Often, several different versions of your data and your analyses emerge as you proceed. In order to facilitate the writing stage, it is essential to carefully document every step as you go. We have found that documentation, which takes only a few minutes, can save long hours some months or years later when you are writing up and trying to reconstruct exactly what you did at each earlier step. No matter how clear your steps are now, six months from now you will have forgotten the specifics of your procedures, and why you took certain steps one way and not another. Documentation of data manipulation is essential in all projects, theses, and publications. You should give enough information so that the reader can replicate your results given the same starting data. To facilitate this documentation process, here are some rough guidelines that have proven useful. The main themes of these guidelines are: **DOCUMENT, ORGANIZE, AND DOUBLE-CHECK.**

- Document the source of each block of data
  - If applicable, record the name and address of each individual from whom data were collected, the date, and any conditions on the use of the data or authorship. Note that most people involved in management of natural resources are quite busy and hard to reach from May - August. Don't wait until that period to get information from them--plan ahead!
  - Keep copies of all correspondence concerning data because you frequently (about 50% of the time) have to follow up on initial requests in order to get any response.
  - If applicable, note the complete bibliographic citation of the reference from which data were drawn, including table and page number for easy reference.
  - Put these items right into comment lines in the computer data file.

- Keep a detailed **bound notebook or a 3-ring binder** describing each step you take in revision or analysis of the data, the methods you use, the assumptions you make and their justification, etc.

- **Put the full date (including the year) and time on every piece of paper or computer data file.** You will not believe the number of times you need to know which is the most recent version of your ideas, data, or analysis.
• It is most efficient to put some type of documentation in your computer files, whether the file contains computer programs or data. For instance, usually note on the first comment line the date of the last update of the file. Next, describe where the data in this file came from, what the columns of numbers mean and their units (if it isn't clear from labels already). A spreadsheet such as Excel can be used to store and plot data, record comments, etc. So can sophisticated statistical packages such as SPSS.

• Double check EVERYTHING as you go through an analysis, right from the first step of entry of numerical data. Also, be on the lookout for unusual data points such as ones that are too high or too low, or that are identical to others. Check to see why those unusual values are there. About 90% of the time such unusual cases are a result of errors.

• Print hard copies and keep back up copies of "final" data files on a second disk; and store them in different, safe locations.

• If you are new to SFU, sign up at Computing Services during the second week of classes in any semester for non-credit 2-hour courses on Microsoft Word and Excel. Also watch while your fellow graduate students are working on the computers; this is probably the fastest way to learn.

• It is better to solve all data and methodological problems early; you don't want to have to go back and do everything over again. Carefully check all assumptions of your methods. And don't get "itchy" computer fingers. Too many students rush into analyses before carefully thinking about, a) what question they are trying to answer, b) which method will best answer that question, and c) is the analysis they plan to do REALLY necessary? Without thinking carefully about these points, you could waste a lot of time.

• Several students in the past have recommended that each section of your 699 research project should be written up in detail (close to final form) as you complete the analysis. Assumptions and bounding decisions are still fresh in your mind then and the process of writing may expose new analyses that need to be done. Ask whether your supervisory committee members will look at your project or thesis as each section is completed; you are more likely to get a rapid response than by giving them the whole document at once. However, some faculty prefer to see the entire document to see the context for each section.

• Finally, many students have ignored this advice, much to their (and their supervisors') later frustration. Believe us, it does make a huge difference.
Writing the Research Report

Before beginning to write your 699 research project, you should consult with your senior supervisor and other supervisory committee members regarding the appropriate scope, depth, focus, and format. Since format varies substantially from discipline to discipline, ask your senior supervisor to suggest a few completed 699s that you could use as examples. This consultation should occur periodically during the writing stage. When seeking feedback on drafts of the project, students should consult with their supervisory committee members in advance to determine what to expect regarding the length of time that they will require to review drafts. Students should give faculty sufficient time (usually at least 2 weeks) for review. At certain times of the year (e.g., near deadlines for turning in grades or grant proposals) faculty may require longer to review the document. You should expect that it will take at least three or four drafts of your complete document before it meets your committee's approval. This means that once the first complete draft of the 699 is submitted, it typically takes one complete semester to go through the review process and finalize the document. Even the very best students in REM have faced that time frame.

Get a book on thesis writing (see attached list) and also a copy of the Regulations and Guidelines for the Preparation of Theses, Extended Essays, and Projects published by the W.A.C. Bennett Library. The SFU Thesis Guidelines are available on the web: www.lib.sfu.ca/kiosk/cruz/reg-gyds.htm. In addition, some faculty have written their own tip sheets discussing their preferences for style and approach. Check with your supervisor early to obtain a copy of these.

Always spell check and proof read your documents before you turn them in for review. If you have difficulties with writing or organizing, ask a classmate for help, obtain assistance from the SFU Writing Centre, or find an editor. Don't expect your supervisor to act as your editor. If your document is full of errors, unclear, or too long, your supervisor may simply turn it back to you asking for a redraft before it is reviewed in detail.

Many faculty prefer you to return a copy of the previous draft with their comments on it with your new draft. This will facilitate the review process by refreshing your supervisor's memory about previous concerns and allowing the supervisor to focus on your improvements. Ask your supervisory committee members what they prefer in this regard.

The Library Assistant for Theses (4th Floor Library - phone 4747) should see your work as early as possible to advise you about acceptable format, etc. Students often spend a great deal of time formatting their tables, figures and text for their committee only to find out that they have to reformat them to meet university standards. The Library Assistant for Theses is generally busy toward the end of each semester when theses are due, so it is better to visit early.
required element of format for a 699 is the title page and approval page. See the examples in Appendix 3 and follow the format exactly.

SFU Academic Computing Services has created an SFU Thesis template in MS Word with all of the required formats pre-set. Information about the template can be obtained from http://www.sfu.ca/acs/howtos/t/t-6.htm. This URL also has the ftp sites from which you can download the template. From time to time, ACS also conducts tutorials on the use of this template. Check the ‘ACS tutorials listings at: http://www.sfu.ca/acs/tutorials/index.htm.

Oral Presentation

You are required to pass an oral presentation of your 699 research. To set the date for the oral, you must receive written approval from your committee that the project is ready for presentation, as well as written confirmation from your committee of the date and time of the presentation. You should complete an “Approval for REM 699 Oral Presentation form” and submit it to your supervisory committee for approval. You can obtain these signatures in person or by fax or e-mail. Students should not expect their committee members to approve the scheduling of their presentation until they have reviewed several drafts of the complete 699 document. Once you have this approval, see the graduate program assistant. Make sure that you have decided the date, time and the title of your research project. The graduate program assistant will prepare a seminar notice and advertise it in various departments on campus and in the SFU News. The graduate program assistant will also prepare a Recommendation for the Award of Degree and a Results of Thesis Defence Form to be signed at the 699 presentation. Be sure to check with your supervisory committee about when they want to receive the final, pre-oral draft. You should typically give them at least one week to review this.

The student and supervisor should select a chairperson to introduce the speaker, facilitate the question period following the formal presentation and ensure that the presentation is within the prescribed time limit. The chair may be a senior level REM student or a faculty member. The research project can in some cases be presented orally in a REM class or during a REM Seminar period to permit students, faculty, and the wider community to hear the presentation. Students will normally be given approximately 20 minutes to describe their project followed by a 20 to 30-minute question period. The oral may be held prior to the final research editing if the project is substantially completed. The format of the presentation should be discussed in advance with the supervisor, and students should have a well-prepared and rehearsed talk.

You should ensure that whoever chairs your 699 oral presentation has a copy of the "Guidelines for the Conduct of Oral Presentations" and that you review this together in advance. Also make sure in advance that the chair or your supervisor has the following documents at the oral presentation: "Results of REM 699 Presentation" form, six copies of your project approval page, and the Recommendation for Award of Degree. Upon completion of your oral
presentation, your supervisory committee will sign the approval pages, the Recommendation for the Award of Degree and the evaluation portion of the "Results of REM 699 Oral Presentation" indicating whether the oral presentation was satisfactory or unsatisfactory. In the latter case you must repeat your oral at a later date in order to be eligible for your degree. We have had some "unsatisfactory" grades in orals in the past, so prepare thoroughly.

Final Approvals

After the oral presentation you will undoubtedly have a number of changes to make to your written 699 project. These may range from cosmetic to more substantive changes including additional analysis. If you have followed the steps above and redrafted your document several times in response to all of your supervisory committee's comments, the changes will probably not be time consuming. Make sure you have a clear understanding from your supervisory committee of what is required. Revisions must be reviewed and approved by all committee members unless the committee has made alternative arrangements. Once your Supervisor is satisfied with your final revisions the supervisor will sign the memo to the Library Thesis Assistant, stating that all revisions have been completed and the project is ready for binding. Be sure to allow plenty of time to obtain these signatures before the end of the semester especially if you have committee members who are off campus. Keep in mind the deadline for submissions of theses and projects, which is generally about the middle of the last month of each semester.

When you are ready to submit your project to the library, see the Graduate Program Assistant to obtain the following paperwork which is to be submitted to the library with your project:

- A memo to the Library Thesis Assistant from the senior supervisor confirming that all corrections and revisions have been completed and the project is now ready for submission to the Library
- Two "Partial Copyright License" forms
- A National Library Publication Rights form
- The signed Approval pages which are to be inserted into each copy of your project
- A journal voucher to cover the cost of binding your copy, the school’s copy, and your senior supervisor’s copy

For a complete list of the tasks that need to be done before graduation, ask the graduate program assistant for a copy of “So you Want to Present your 699 Research Project”, and the “Graduation Check List”.
Publishing Your Research

Graduate research is expected to be of a quality suitable for publication in a refereed publication. In consultation with your senior supervisor, you should identify the best journal for publishing your research. You should agree on deadlines and responsibilities for writing and who will pay the costs of preparing and publishing your work. In addition, your senior supervisor may suggest that your research be presented at conferences or published in other locations. In your plans for completing the 699, you should include time to produce a manuscript for publication.

A 699 is the product of its author, assisted by guidance from the supervisory committee. In general, publications recognize the relative contributions of various people to the research through the order of the authors for major contributions and statements in the acknowledgment section for very minor input. As such, it is common but not mandatory that your supervisor is a co-author (second or lower author) on publications, poster presentations, or talks that result from your 699 work. If agencies or organizations have been involved in funding or supervising the research, you should have an agreement with them in advance regarding your rights to publish the information and how their contribution should be acknowledged. Ask your senior supervisor for advice on the appropriate protocol in this regard.

Remember

- Take responsibility for managing your 699 and your supervisory committee.
- Meet regularly with your supervisor.
- Hold frequent meetings with your entire supervisory committee.
- Document and amend any changes to your 699 proposal in the scope or methods involved, as they occur.

How Do You Fund Your Research Project?

Inadequate funding is a constraint faced by some REM graduate students. Such inadequately funded students usually take longer than average to complete their REM 699 research project and MRM degree. A student should be able to complete the degree requirements in 4 semesters of full-time study plus two semesters for the research project. Faculty and students should work together to improve the chances that students will have sufficient financial support for their REM program. The following are suggestions for faculty and students concerning this funding issue as it relates to finishing the MRM degree on time. The suggestions are arranged in chronological order.

Prior to Application
Faculty who meet with prospective applicants to REM should tell them about potential funding sources and advise them of the deadlines for major scholarships such as NSERC (for Master’s and Ph.D. students in science and engineering), NSERC Industrial Postgraduate Scholarships, SSHRC Fellowships (for Ph.D. students in the social sciences and humanities), and GREAT Awards (from the Science Council of BC for science students). Many of the major funding agencies have application deadlines well in advance of the first semester of study; these are listed in one of the handouts in REM's application package. For example, all applicants with high grades and who are going to do research in a natural science field should be encouraged to apply for a scholarship from the Natural Sciences and Engineering Research Council of Canada (NSERC). The NSERC application deadline is 11 months before the beginning of classes, and 4 months before REM's deadline for an application. Other agencies may have early deadlines as well. There are also "entrance" scholarships that students should apply for when they apply to enter the program, but only if they meet the terms of reference. The SSHRC also has funding available for Ph.D. students in the social sciences.

At the Time of Entrance to REM

At the time that a new student enters REM, the faculty supervisor should discuss with the student the long-term funding strategy for the student's Master’s program. REM students are advised to seek funding for their second year in graduate school from non-REM sources such as scholarships, GREAT grants, co-op jobs, etc. There are only a limited number of Teaching Assistantships and a few Graduate Fellowships available. It is especially important for students to plan for their second year early in their first semester because of the scholarship application deadlines. Such planning will help you avoid taking a leave of absence to work in an unrelated job in order to earn an income to pay for your continued studies. Such unrelated jobs prolong students’ completion times considerably. Students should be encouraged to identify a 699 topic early in their first 2 semesters in REM to enable them to apply for appropriate funding in time to have that funding in place for the first summer semester, which will greatly increase the chance that the student will finish the degree in 2 years.

Sources of Funding During the Period of Enrollment in REM

There are several types of financial support for students. A student may obtain funds from more than one of these sources.

1. Scholarships: Both internal SFU and external scholarships are listed in the Dean of Graduate Studies' Graduate Awards Database, which can be accessed from the website: [www.sfu.ca/dean-gradstudies/](http://www.sfu.ca/dean-gradstudies/). Click on ‘Awards’ and then you can search by deadline date, department, award name or key word.
Internal SFU scholarships and fellowships are also listed in the SFU calendar. These include Graduate Fellowships, Faculty of Applied Science Graduate Fellowships, the Steele Scholarship, the Vancity Environmental Scholarship, the BCAA Transportation Scholarship, the Vancouver a.m. Tourism Scholarship, the Abbott Fretwell Scholarship in Fisheries Research, etc.

2. Non-scholarship funds: three sources
   a) In this category, the most ideal arrangement is for a student to be funded as a Research Assistant through a faculty member's research grant or contract. However, there is no guarantee of such an arrangement for three reasons. First, research grants and contracts held by faculty may or may not have financial support included for students. Second, even if they do, grants held currently by faculty may have been applied for up to 4 years before the arrival of the new REM student who wants support. Therefore, the topic of the grant or contract may not match the student's interests. Finally, faculty obtain funding from outside agencies tied to particular subject areas and they are generally not able to fund students working on unrelated topics. Therefore, the first step is to determine whether your potential topic fits into your supervisor's grant or contract.

   b) Students may obtain funding from sources independent of their supervisor's funding. A research contract can be obtained from a suitable government or non-government agency, which will fund a particular research project. Some agencies can provide "in-kind" support in addition to dollars. For instance, they may provide students with the use of a field station, equipment, database, or computer model. In the past, students have obtained support from municipal, regional, provincial, and federal governments via such research contracts. A special type of contract that REM students have been awarded is a GREAT (Graduate Research in Engineering and Technology) award, whereby a cooperating agency or private company contributes funds to support a particular research topic. The terms of reference and deadline for this award are listed in the Graduate Awards Guide.

   c) A formal Co-op semester can be arranged, if approved by the senior supervisor. The student works for a semester with some agency (private or government) in order to obtain on-the-job experience in their field of interest. Please note that students are not guaranteed co-op placements.

Alumni
Graduates of REM are an important source of funding under categories a, b, and c above. Faculty as well as students should contact these alumni to determine their agency's research needs and availability of funds or co-op positions.

Advantages and Disadvantages of Different Sources of Funding

1. Scholarships are ideal because the funding is not necessarily tied to anyone else's research topic. They are especially good for students who work independently and have their own strong ideas for their 699 topic.

2. A student who is funded as a Research Assistant through a faculty member's research grant or contract has two advantages. There is a clear vision of the research topic from the start and the faculty supervisor is also able to make a substantive contribution to the research. In addition, the faculty supervisor has a vested interest in making sure the research is done well. The more integrated the student's 699 project is into the supervisor’s research program, the more likely the student is to finish his or her project and degree on time, with a high quality, publishable product. However, for some students, there is a disadvantage to this arrangement. Some students prefer to design their own research topic, or they may have a specific interest that does not fit into the topic for which their supervisor has funding.

3. In the case where a student's 699 research topic does not fit into their supervisor's funding and where the student does not have a scholarship, a research contract can be sought. REM alumni and other people that REM faculty know in a potential sponsoring agency are a good source of initial contacts. However, there are many potential problems with research contracts that may slow down the completion of the 699.
   a) Contracts usually take considerable time and effort to negotiate, both on the part of the supervisor and student. Uncertain budgets for government agencies usually mean delays in approval.
   b) Contracts are usually not very flexible if the student wants to change the topic, scope, or completion deadline. This is because funding agencies usually have their own research agendas and budgeting process into which the student must fit.
   c) Some agencies require students to write time-consuming quarterly progress and final reports. Deadlines for these reports will not necessarily coincide well with the student's progress or course workload.
   d) A frequent problem with contracts has been the delay in obtaining data, computer programs, or other information promised to the student by the agency. The student's research needs will probably not be the top priority for the agency, even
though the student may have a contractual deadline. The only solution to this time delay is to plan well ahead (e.g. request data during the spring term that will be required in the summer).

e) Personnel in agencies often change jobs, and this may mean that a student loses the main support and contact person, which will create further delays.

4. Co-op jobs can be a good source of funding, experience, and time to work on a 699. Under ideal circumstances, the job description can be negotiated so that the 699 research is conducted at the same time as the job. A written report for the agency can become at least one section of the written 699. While the 699 may not be completely finished when the co-op work term is over, past experience shows that students who have been able to set up their 699 as part of a co-op job are usually able to make considerable progress on the research project. In contrast, it will be disadvantageous if the work in a co-op job cannot be tied to a 699 project. In that case, the main advantage of the co-op will be work experience in an agency.

Taking a Job or Contract Before Completing the Program

Because of their high level of training and knowledge, some REM students are offered good positions before they complete their MRM program. Others are inclined to take full-time contract work to support themselves. This situation usually arises after they have completed their courses but before the 699 research project has been completed. The temptation to take such jobs or contracts is great because funding problems are solved and students usually think that they can finish their research project by working on it during evenings and weekends.

Unfortunately, students who accept jobs or contracts with the idea of completing their REM research project part time, during evenings and weekends, generally prolong their completion time considerably (it often takes several years) and this causes a great deal of frustration on the part of both the senior supervisor and the student. For instance, periods of 6 to 12 months often elapse between stages of the 699 analysis or between drafts of the written document. In such situations, it is difficult for either the supervisor or the student to keep a close focus on the research topic and produce a high quality result. There are exceptions to this scenario but that is exactly what they are -- exceptions! Be forewarned -- every student in this situation thinks that (s)he will be the exception!

Therefore, before a student who has not yet completed the degree requirements takes a job or contract, the student and supervisor should carefully evaluate the costs and benefits. The advantages of work experience, funding, and contacts should be weighed against the potential delay in completion of the 699 and the degree (or even the possibility that the student will never complete the program). If a degree is important in the future to justify a student's promotion to
higher positions, then this issue must be faced directly. Finally, although availability of jobs and contracts will vary somewhat with economic conditions, the areas in which students are being trained in REM should be in demand for sustained periods. In that case, they should persevere and finish the degree while registered full-time at SFU. If all of the advice in the rest of this document on 699s has been followed, then the on-time completion of the 699 should be relatively straightforward.
How Do You Overcome Challenges?

An ideal 699 has several ingredients (Fig.1). Lengthy completion times may reflect the absence of one or more of these ingredients. Accordingly, one challenging but beneficial aspect of the 699 process is learning how to implement these elements. Experience gained in this process will be of value in the long term because these elements are essential to almost every professional endeavour.

The challenges and solutions noted below are listed in an order that more or less corresponds to the ingredients presented in Fig.1. However, any given categorization of these challenges and their solutions is somewhat arbitrary because they are highly inter-related. Note that some challenges are most likely to occur at a particular stage in the 699 process, whereas other challenges are not specific to any stage. Moreover, different people encounter different challenges, and find different solutions.

![Diagram of essential elements of an ideal 699 process]

FIG. 1. ESSENTIAL ELEMENTS OF AN IDEAL 699
1. **Purpose and Goals of a 699 Research Project**

   **Challenges**
   - Students may work inefficiently because they don't have clear, explicit goals or objectives (i.e., they don't know what they hope to accomplish by doing a 699).
   - Students don't know what is required for a 699 (with respect to time or effort required) because this may not have been adequately specified and there has been marked variation in length and depth among the hundreds of previously completed research projects.
   - Students may hesitate before beginning a particular 699 research project or may change topic or supervisor because they are concerned that the 699 experience will restrict subsequent professional opportunities.

   **Potential Solutions**
   - Students should take time to think about what they hopes to get out of the 699: what skills, knowledge, professional contacts etc.
   - Together, students and faculty must clearly articulate departmental standards for 699s.
   - Students and faculty must set explicit, mutually agreeable goals, remembering that this is "just" a 699.
   - Refer to the sample list of graduates' 699 topics and current positions to alleviate the concern that expertise in a particular subject area will unduly restrict career prospects.
   - Read some of the “good” examples of completed 699 projects in your field of interest to assess expectations concerning the scope of the project.

2. **Strategy**

   **Challenges**
   - Students may not want to initiate a 699 project until they have sampled many different disciplines through course work.
   - Students don't know how to break the 699 into a series of relatively small tasks or objectives (these tasks may be clearer in hindsight, but often are not at the outset).
   - Students may be paralyzed by their own, or their supervisor's, overly ambitious expectations with respect to scope, detail, or quality of work.
   - Students may take less than a full course load (planning to work on the 699 project), but courses take precedence because they involve more obvious tasks and finite deadlines.
Potential Solutions

- Students and faculty should make lists of potential thesis topics (students could be required to develop a list of several alternatives - rather than to find one "ideal" topic; supervisors could list a variety of topics of interest to them).
- Clarify the 699 process and encourage progress, by laying out the sequence of steps in the process, tasks entailed in each step, methods to accomplish each task, solutions to common hurdles, typical timelines for each task, costs and benefits of exceeding established timelines, etc.
- Students and committee must devise explicit, mutually agreeable objectives (identify tasks and corresponding short and long term timelines).
- Increase continuity of 699 research, perhaps by setting finite deadlines when the student is not constrained by coursework and supervisors can make the 699 project a higher priority (the concern is not so much when the 699 is initiated, as how rapidly progress is made once the process is started).

3. Interaction

Challenges

- Lack of communication between student and supervisor(s) may necessitate unilateral decisions that are not ultimately acceptable to all parties (thus work must be redone, extended, or delayed, schedules must be rearranged and trust may be compromised).
- Time available for working on a 699 may not coincide; for faculty summer may be a term for personal research, whereas for students summer is the term that time is available to focus on the 699.
- Students take longer to confront and solve conceptual, logistical, or technical hurdles when working alone.

Potential Solution

- Formalize the working relationship between the student and supervisor(s) by spelling out responsibilities, preferred approaches, standards and rules of thumb for both student and faculty, also identify important stages requiring meetings and common approval; n.b., some of these expectations can be generalized, whereas others will depend on who is involved.
- Clarify roles of all members of supervisory committee.
- Encourage students to learn from one another and to use others as sources of early feedback on written documents or ideas.
- Formalize interaction among students - e.g., develop system of peer support to reduce supervisors' workload and increase students' sense of belonging.
• Establish a contact system (e.g., pair upper year and incoming students to increase the sense of community, and to help deal with a barrage of questions and concerns from a few select individuals).

4. **Technical Skills**

   **Challenges**
   
   • Students may not have some technical skills that are required to conduct 699 research; this may occur more frequently in REM than in other departments because students are (appropriately) attempting research in fields other than their undergraduate specialization.
   
   • Supervisors may not have experience in topics of interest to certain students, and thus they have difficulty maintaining interest and involvement.
   
   • A student may feel unqualified but yet compelled to conduct research on a topic of interest to the supervisor.
   
   • Supervisors may feel unqualified but compelled to oversee research on a topic of interest to the student.

   **Potential solution**
   
   • Acknowledge that completion time in this department may necessarily be longer than in other departments due to course load, the magnitude of contemporary 699s/theses, and the time required to acquire skills in a new discipline.
   
   • Acknowledge that REM may not be able to offer guidance in as many topic areas as there are students. Promote guidance from individuals in other departments or agencies; in the past we have had senior supervisors and committee members from other SFU departments.

5. **Commitment**

   **Challenges**
   
   • Students may be intimidated by a 699.
   
   • Students may be demoralized and overwhelmed (too little encouragement, too little constructive feedback, unrealistic expectations, dwindling self-confidence, dwindling or non-existent finances, no sense of progress, lack of welcome, a sense that they should have graduated already but don't know how to attack a 699 project). Thus, students may try to avoid their supervisor, the department, or work on their 699s.
   
   • Students may lose interest in topic if they feel that the topic is no longer relevant or current.
   
   • Students may not want to finish quickly because they are not sure what comes after graduation and they would rather be labeled "student" than "unemployed" until they have clearer futures.
Potential solution

- Encourage a sense of community by ensuring that students feel welcome as long as they are working on their degrees, not just while they are doing course work; to this end, ensure that all students are invited to department functions and that active students who work frequently on campus are permitted to share office space.
- Foster synergism and a sense of community among students by encouraging them to work together. One additional element is to create the expectation that at the end of course work, one to two terms should be spent "exclusively" on completing 699s.
- Increase feedback by ensuring formal evaluation of student's progress by supervisor and a bilateral review of the experience.

6. Opportunity

Challenges

- Students' and faculty's time may be over-committed, both within and beyond the department (students: course work, work undertaken to support themselves financially; faculty: teaching, research, other students, consulting).
- Students' or faculty's time may be excessively fragmented, either in the short or long term; discontinuity leads to inefficiency (due to inability to focus and concentrate, repeatedly incurring "startup costs," never gathering momentum from a sense of progress).
- Students may have to depend on agencies or events beyond their control (e.g., they may require information, service or funding from someone who is working with different timelines or priorities).
- Students may make false starts: selected topics may be scooped or funding may fall through.
- Students may be compelled to devote time and energy to supporting themselves financially and thus cannot work on 699.

Potential solution

- Demonstrate respect for people's (lack of) time by making the best possible use of their effort and attention (know the purpose of each meeting, prepare a ranked list of agenda items for each meeting, focus on answering questions or solving problems that need to be addressed, provide as much notice to one another as possible, recognize the constraints imposed by lack of funding and additional responsibilities).
- Identify which projects entail external dependencies and avoid them or devise feasible back-up plans.

7. Concluding Remarks

In conclusion, it is important to realize that lengthy completion times may also occur by design. For example, students may not want to finish quickly because they like what
they're doing. Alternately, rapid completion of the 699 may not be the top priority for some students or faculty because they are pursuing important alternatives that contribute to their education and professional experience but do not directly contribute to the 699.

**Advice from Students**

- Keep in mind that your 699 is a project of scope equivalent to the effort of two regular REM courses (10 credit hours). You and your supervisor should discuss/negotiate the scope of the proposed project and the expected timeline. You should aim for about a 50-75 page final report. Start early.

- Plan the 699 process. Plan on doing any research or field work during the first summer and write-up your project during the second summer. This means that planning for the 699 should start, at the latest, in the spring of the 1st year. Keep in mind deadlines for proposal submissions. You may consider securing a contract for your 699 work so that you can do the field work and earn some money for the next year. (Editor’s note: there are pros and cons to contracts – see page 22 for a discussion of these). Start early.

Suggested priorities with the 699 should be (in this order):
  a. Start early
  b. Learn something new in the process.
  c. Practice some of the new skills and thinking you've learned in REM
     Tackle something interesting and new - use the 699 as an opportunity to expand your horizons
  d. See what's on the resource management horizon: if possible match your 699 work to an emerging topic--it may lead to future work opportunities
  e. Don't try and solve the world's problems with your 699. You have a lifetime ahead to do that (and someone may deem it worthy to pay you to do that too!).
  f. Invest the time early in the process to thoroughly plan your 699, including writing an outline of your final report. This gives you a plan for all the steps you need to take and where the difficulties may lie. Then tackle the plan piece by piece. If you think of the 699 as this imposing monolithic life's work, it will hard to start. By the way, start early.

- Remember it's a project, not a thesis. Keeping the 699 in perspective as a project makes it easier to start early.

- Finally, to avoid unnecessarily extending your time in the program, and to reduce the risk of not finishing within 5 years, start early.

- Difficulties with your committee:

  Potential Challenge: The lack of explicit communication between you and your committee on the specific details of your 699 process. For example:
The duration of an ‘acceptable’ timeframe for the review of 699 components. Is it two weeks, a month, or three months?

Expectations of the review process. Can you reasonably expect that your work will receive a thorough read through and that you will receive constructive criticism relating to your work? Or will you have papers returned with no written comments?

Possible solutions:

- Read the “Supervision” section of the Graduate Studies Handbook. This section was written to explicitly deal with student-supervisor issues. It is clearly written and informative.

- Create social capital - talk to your supervisor. Get to know their personality so that you have a context for their behavior. Decide whether you like each other on a personal level before working with them on a 699 project. Then understand that your 699 is not as important to them as it is to you.

- Create a social contract. Write out your expectations of them. Ask them to write out their expectations of you. For example, you may expect that if you give them reasonable notice, that you will receive feedback on your work within a month. Discuss your expectations of each other.

- Write out your (you and your committee or supervisor’s) goals for the 699 process. What deadlines will you shoot for? What will you do when you are lost? To whom do you address specific questions? For example, a REM supervisor may be able to answer administrative questions, but an adjunct may not.
Appendix 1
A Selected List of ‘Good’ Examples of Completed MRM 699 Projects

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<td>Growth Management in Community Tourism Planning</td>
<td>Williams</td>
</tr>
<tr>
<td>Wong, C.</td>
<td>Memories of Natural Disturbances in Ponderosa Pine - Douglas-Fir Age Structure, Southwestern British Columbia</td>
<td>Lertzman</td>
</tr>
</tbody>
</table>
APPENDIX 2

Tips on Writing Theses, Research Projects, and Papers for Journals

These tips are meant to save everyone time. Please read and remember them.

1. By far the most important element of any thesis, REM project, or paper in the natural sciences is a clear, unambiguous statement of hypotheses to be tested. The management implication of these hypotheses should be made clear.

2. Try to keep the main text of the thesis or REM project to some simple, straightforward examples, and put the lengthy details of sensitivity analyses in appendices. The paper submitted to the journal will then be just the main text and will refer to your thesis for details.

3. If you have two or more separate publishable sections, your thesis or project should contain sections as if they were submitted to the journal as stand-alone papers. In other words, each section should have Introduction, Methods, Results, and Discussion subsections. Your thesis should then have a General Introduction, which ties those separate published sections together, and a General Discussion, which synthesizes results. So an example thesis format would be:

Chapter 1. General Introduction
Chapter 2. Title of paper #1
  Introduction
  Methods
  Results
  Discussion

Chapter 3. Title of paper #2
  Introduction
  Methods
  Results
  Discussion

Chapter 4. General Discussion

Chapter 5. Appendices etc.

4. Only do and write up those analyses that reveal something new or that add significantly to the literature. A rehash of old material is not acceptable in a journal paper, research project, or a thesis. Also avoid doing every analysis that comes to mind that might possibly be done with your data.

5. Please PROOFREAD everything before giving any of your writing to anybody. Nothing makes people angrier than to read over material that has not been proofread. The same goes for not following advice on writing that was given by the faculty member on the previous draft.
6. When someone suggests a change in your manuscript, please let them know if (and why) you did not change it. Don't just forget about it. They often do not bother to write down an explanation for the suggested change because it would take a paragraph.

7. Don't be disappointed when your first draft or two comes back covered with red ink. Unless you have lots of writing experience, a lot of changes are usually necessary. However, you will rapidly learn to improve your writing as you revise your drafts. Think hard about your revisions; please don't rely on your supervisor to do them for you. Give drafts to fellow students first; you will be amazed how much you can learn from one another.

8. A short-term solution to writing problems is to make an appointment at the SFU Writing Clinic, Dept. of English. They will help restructure a particular example of your writing.

**Style**

9. Simplify wherever possible without creating loss of clarity.

10. Use topic sentences (first sentence of the paragraph that tells what the paragraph is about).

11. Fuzzy, ambiguous writing implies fuzzy, ambiguous thinking to the reader, so be clear and precise!

12. "Between" refers to comparison between two items, "among" is for comparisons among 3 or more items.

**Format of Text**

13. Closely follow format of headings, etc. Conform to SFU library's or journal's requirements exactly.

14. Do not italicize or boldface parts of your MS; the journal editor will do that. The only exception might be symbols for parameters which are single letters used in text, e.g., the "A" in "we found a was an insensitive parameter."
Tables and Figures

15. Standardize headings so that a sub-section in the Methods section has the same wording as the corresponding sub-section in the Results section.

16. All numbers that are less than 1.0 should be preceded by a zero, e.g. 0.83. This insures the editor that no digit has been omitted. This applies to numbers in Figures, tables, and texts. Editors always mark this revision, so to minimize costly revisions to Figures and tables, you should do this part correctly the first time.

17. Some very complicated tables may be more quickly typed by a regular typewriter than put on the word processor.

18. Standardize formats among tables so that readers waste as little time as possible figuring them out.

19. Don't waste time drawing up figures in color (if you have access to such fancy equipment). They will have to be done in black and white for the final copy anyway.

Writing up Computer Models

20. A clear statement of hypotheses to be tested is just as important in modelling 699 projects and papers as in a regular field data paper.

21. Relegate to appendices as much of the details on methods and results as possible.

22. Put the main results (those that are most robust to sensitivity analyses) into the paper and 699 projects with a few very clear examples.

23. Sensitivity analyses should be very sharply focused on their effect on the main results, such as the rank order of several alternative management actions. The main results are usually insensitive to some things, and very sensitive to others. Explore the limits of your model results to show under what conditions or assumptions your main results would change (e.g. "Simulations show that it would take 2 times as many sockeye as presently exist to reverse our conclusion about the value of pulsed lake fertilization").

24. The remainder of results and sensitivity analyses should be relegated to appendices in the 699 or thesis (and paper if not omitted from the latter). This is to permit clear presentation of results to 95% of the readers, while enabling the remaining 5% who are interested to dig into the details. This need for simplicity in the main text cannot be overemphasized!
### Miscellaneous

25. Please pass on any other tips that you have picked up, so that they can be added to this list.

### Books that are Helpful

Strongly recommended books (some are more appropriate for your needs than others):

<table>
<thead>
<tr>
<th>Problem</th>
<th>Books to Read</th>
</tr>
</thead>
</table>
Notes On Writing Papers And Theses

Ken Lertzman, School of Resource and Environmental Management, Simon Fraser University

Many class papers and theses share a common set of problems in their early drafts. I began these notes because I found that I was making essentially the same comments on many student papers. I discovered that graduate students often find it difficult to identify problems in their writing and frequently lack tools to deal with them effectively. Few students, it seems, have received much instruction in the strategies and tactics for effective scientific writing. My notes grew into a document that I give to students as a part of course packages and to students whose theses I read. The suggestions I make here are based primarily on my written comments on major papers and theses over the last six years but also reflect common problems in manuscripts I receive for review.

1. **Know your audience and write for that specific audience.** Scientific and technical writing can almost never be “general purpose”; it must be written for a specific audience. For the kinds of writing I address here, that audience will generally be the community of ecologists who read a particular journal or study a particular subject. For class papers, this community is represented by your professor. In all cases, you must adopt the style and level of writing that is appropriate for your audience. Stylistic conventions and acceptable jargon can vary tremendously from one field to another, and to some extent, from one journal to another. If you are unfamiliar with the conventions of a field, study them as they are manifested in a selection of highly regarded papers and in the “Instructions for Authors” for key journals.

2. **Your supervisor/professor is not here to teach you basic grammar and spelling.** The more time and emotional energy she or he spends on correcting basic English usage, the less remains for issues of content or fine-tuning. You are responsible for mastering the basics of the language; save your supervisor’s time for more substantive issues. A few glitches and non-parallel tenses will slip through your own careful editing, but there is no excuse for frequent ungrammatical sentences. Similarly, with word processors and spell-checkers having become standard writing tools, typos or other spelling errors should be very rare. Use a spelling checker before submitting anything for anyone else's reading.

   If you find you are about to submit a paper which you know contains poor writing, consider why you are doing so. If there is a writing problem with which you are having a hard time (for instance organizing the structure of an argument in its most effective form), it is legitimate to submit this for someone else's review with the problem highlighted as a focused request for assistance. Otherwise, submitting a piece of writing with known errors or problems means either: 1) you do not consider your writing worth improving, 2) you do not respect the reader enough to present writing that is as good as you can make it, or 3) you are incapable of improving the writing. At some point, every thesis is as good as its writer can make it without outside review. That is the time to give it to your supervisor.

3. **Do not turn in a first draft!** Ever! Most people’s first drafts are terrible. I wouldn't make anyone else suffer through mine. Don't make others suffer through yours. I’ve read early drafts of papers by eminent ecologists whose final products are jewels of English construction. Their first drafts are terrible too. "Good writing is rewriting" and you should make a serious effort at editing, rewriting, and fine-tuning before you give the manuscript to anyone else to read. There are few things more frustrating to read than a paper in which you know there are pearls of wisdom, but where those pearls are hidden by sloppy and ambiguous writing. The chapters of my Ph.D. thesis had been through 3-5 drafts before anyone on my advisory committee ever saw them. If you need to put a piece of writing away for a few days before you can approach it dispassionately enough to rework it, do so.

   It takes much longer to read poor writing than good writing. It is a waste of an advisor's or editor's time to read material that is not yet ready to be presented - and it is disrespectful to
expect them to do so. When an advisor receives a thesis in which the writing is poorly
developed, expect them to go through enough of it to demonstrate the kinds of changes required,
and then return it with the rest unread.

Consider forming a mutual editing team with other students to review each other’s work.
Publication quality scientific writing is usually a product of the research community rather than
the sole efforts of the author(s); reviewers and editors make a big difference to the vast majority
of published papers. You should become accustomed both to reviewing other people’s work and
to having your own reviewed.

4. Get and use style books. All aspiring ecologists should have a library of books which
support their technical communication. Distinguish between those which are primarily manuals
of accepted rules, those which address how to create a draft (e.g. disconnecting the creative from
the critical voice, etc.), and those which focus on rewriting. I recommend Williams (1990) as a
manual for rewriting. Williams focuses on how to turn a draft into a finished product.

5. Avoid passive constructions wherever possible. The rule that you must avoid personal
pronouns is antiquated and has been rejected by most scientific journals. If you collected the
data using Smerdyakoff's Bicranial Olfactory Apparatus, then there is nothing wrong with saying
"I collected the data using Smerdyakoff's Bicranial Olfactory Apparatus." Where it would be
repetitive to use personal pronouns ("I did this. I did that. I did the other thing."), or where it
makes the sentence more awkward to use the active voice, you may occasionally, cautiously use
the passive voice.

6. Avoid abusing word forms. Use words in the form which conveys your meaning as clearly
and simply as possible. A variety of writing problems arise from using verbs and adjectives as
nouns. Such word forms are called nominalizations (Williams 1990). Consider the sentence
“The low rate of encounters was a reflection of the reduction in population density.” The verbs
“to reflect” and “to reduce” are used as nouns and the sentence is more turgid and less direct than
when they are used as verbs: “The low rate of encounters reflects a reduced population density.”.
Some nominalizations are both useful and effective, as in “taxation without representation.”
Williams (1990) has an excellent discussion of useless and useful nominalizations.

Creating awkward phrases where nouns and verbs are used as adjectives or adverbs is
another common problem leading to awkward and wooden writing. In his delightful critique,
Hildebrand (1981) called nouns used this way “adjectival nouns.” Such constructions are almost
invariably clumsy and unclear. For instance, though shorter, "the Chilko Lake park proposal" is
not as good as "the proposal for a park at Chilko Lake". The first form illustrates both a
nominalization (“proposal” as noun versus verb) and adjectival nouns (“Chilko Lake” and “park”
as adjectives modifying “proposal” rather than nouns). Table 1 provides examples of adjectival
nouns culled from papers and theses I read during one month. It is distressingly easy to find
awkward strings of adjectival nouns in published papers, where they are common in titles.
Phrases built with one adjectival noun or verb are often useful (e.g. “hair pin”, “gut contents”,
“sampling unit”), but those with more are usually awkward, rarely necessary, and generally
replaced easily (e.g. “beaver gut contents”, “researcher defined sampling units”).

7. Do not use more words where fewer will do. Do not use long words where short ones will
do. Do not use jargon where regular language will do. Do not use special words to make your
writing seem more technical, scientific, or academic when the message is more clearly presented
otherwise.

8. Use an outline to organize your ideas and writing. When you first start a writing project,
make an outline of the major headings. List the key ideas to be covered under each heading.
Organize your thinking and the logic of your arguments at this level, not when you are trying to
write complete, grammatical, and elegant sentences. Separate out the three tasks of: 1) figuring
out what you want to say, 2) planning the order and logic of your arguments, and 3) crafting
the exact language in which you will express your ideas.
Many people find it useful when making an outline to attach page lengths and time lines to each sub-section. For instance, section 2.4 may be "Evidence for differential use of canopy gaps by Clethrionomys." To this you might append: "3 more days analysis, 4 days writing; 10 pages." Such time estimates are usually inaccurate, but the process of establishing them is quite useful.

It is very easy to write and expand outlines with word processors. When starting a writing project, I create a file in which I first develop an outline as described above. I save a copy of the outline separately and then commence the writing by expanding the outline section-by-section. I usually get ideas for later sections while writing earlier ones and can easily page down and write myself notes under later section headings. This is especially useful for filling out the structure of a Discussion while writing the Results (for instance, "When discussing the removal experiment, don't forget to contrast Karamozov's 1982 paper - his Table 3 - with the astonishing results in Figure 7.") By the time I get to writing the Discussion, the outline has usually been fleshed out substantially and most of the topic sentences are present in note form.

9. Think about the structure of paragraphs. Poorly structured paragraphs are one of the most common problems I find in graduate student writing. Though most graduate students can write reasonable sentences, a surprising number have difficulty organizing sentences into effective paragraphs. A paragraph should begin with a topic sentence that sets the stage clearly for what will follow. One of my most frequent comments on student papers is that the contents of a paragraph do not reflect the topic sentence. Make topic sentences short and direct. Build the paragraph from the ideas introduced in your topic sentence and make the flow of individual sentences follow a logical sequence.

Many writers try to finish each paragraph with a sentence that forms a bridge to the next paragraph. Paying attention to continuity between paragraphs is a good idea. However, such sentences are often better as a topic sentence for the following paragraph than a concluding sentence of the current one. It is nice to conclude a paragraph by recapitulating its main points and anticipating what follows, but you should avoid statements of conclusion or introduction which contain no new information or ideas.

Strive for parallelism in structure at all times. When you present a list of ideas that you will then explore further ("Three hypotheses may account for these results: hypothesis 1, hypothesis 2, hypothesis 3."), make sure that you then address the ideas in the same sequence and format in which you have presented them initially. It is both confusing and frustrating to read a list presented as "1, 2, 3, 4" and then find the topics dealt with "1, 4, 3, 2."

Think about how the structure of your paragraphs will appear to the reader who is reading them for the first time. She should not have to read the text more than once to understand it. Carefully lead the reader along so that the structure of your argument as a whole is clear, as well as where the current text fits in it.

Paragraphs containing only one or two sentences are rarely good paragraphs because they can’t develop ideas adequately. Two-sentence paragraphs usually represent either misplaced pieces of other paragraphs or fragments of ideas which should be removed or expanded.

Choppiness both within and among paragraphs often results from the ease with which we can cut and paste text on the computer. Ideas which were written separately but belong together can be moved easily. Unfortunately, they often still read as if they were written separately. This is a great way to restructure a draft. However, you must read over such text for continuity before submitting it to others for review.

It is difficult to read for continuity on the computer screen because you can see so little text in front of you at any given moment. It is also more difficult to flip over several pages to scan for repetition, parallel structure, etc. To do a really good job of proofing a paper, most writers find it necessary to read hard copy at some point during the writing/rewriting process. Print all but final drafts on paper which has been used previously on one side.
10. Pay attention to tenses. Problems of inappropriate or inconsistent tenses are common in student writing. What you, or others, did in the past should be stated in the past tense (e.g. “I collected these data ...”). Events or objects which continue to happen or exist can be described in the present tense (e.g. “In this paper I examine ...”; “The data reject the hypothesis that ...”). Events which will take place in the future can be in the future tense. Whatever tense you choose, be consistent. Be careful in using “might”, “may”, and “would” (as in “this might indicate that ...”). They are frequently used as ways of weaseling out of making a clear statement.

11. Captions shouldn’t merely name a table or figure, they should explain how to read it. A caption should contain sufficient information that a reader can understand a table or figure, in most cases, without reference to the text. While very simple tables and figures may require only a title for clarity, and exceptionally complex ones may require reference to the text for explanation, these circumstances should be rare. Captions are often most effective when they briefly summarize the main result presented in the table or figure (for example see the caption for Table 1). Don’t leave caption writing to the end of the project; write captions when you organize your Results section and it will help you write the text.

12. When citing a reference, focus on the ideas not the authors. Unless the person who reported a result is an important point in a statement, literature citations should be parenthetical, rather than in the body of the sentence. For instance, in most cases, it is preferable to write a sentence of the form “Though mean growth rates in Idaho were < 10 cm per year (Table 2), growth rates of > 80 cm are common in populations in Alberta (Marx 1982)” rather than “Though mean growth rates in Idaho were < 10 cm per year (Table 2), Marx (1982) found growth rates of > 80 cm to be common in populations in Alberta.” Sometimes the identity of the writer is important to the meaning of a statement, in which case emphasis on the citation is appropriate (e.g. “While Jones (1986) rejected this hypothesis, Meany’s (1990) reanalysis of his data failed to do so.”).

13. Show us don't tell us. Rather than telling the reader that a result is interesting or significant, show them how it is interesting or significant. For instance, rather than “The large difference in mean size between population C and population D is particularly interesting.”, write “While the mean size generally varies among populations by only a few cm, the mean size in populations C and D differed by 25 cm. Two hypotheses could account for this, ...” Rather than describing a result, show the reader what they need to know to come to their own conclusion about the result.

14. Write about your results, not your tables, figures, and statistics. Confusing and disjointed Results sections often arise from the writer not having a clear idea of the story they intend to tell. The frequent consequence of this is a Results section consisting of a long, seemingly unrelated sequence of tables and figures. We often go through a lengthy and convoluted process in understanding the content of a data set; your paper needn’t document all the twists and turns of that process. Expect that you will produce many more figures and perform many more statistical tests than will be included in the final written product. When preparing to write your results, decide on the elements of the story you wish to tell, then choose the subset of tests, figures, and tables that most effectively and concisely conveys your message. Organize this subset of tables and figures in a logical sequence, then write your story around them.

Novice writers of scientific papers frequently pay too little attention to discussing the content of tables and figures. They sometimes merely present a list of references to them (e.g. “Table 1 shows this result, Table 2 shows that result, Figure 1 shows the other result.”). When writing Results sections you should use the tables and figures to illustrate points in the text, rather than making them the subject of your text. Rather than writing “Figure 4 shows the relationship between the numbers of species A and species B”, write “The abundances of species A and B were inversely related (Figure 4).” Distinguish between your scientific results and the methodological tools used to support and present those results.
15. **Focus on ecological hypotheses, not statistical hypotheses.** Most graduate students have learned the importance of having and testing clear hypotheses. Unfortunately, many focus their writing on statistical hypotheses, not ecological hypotheses. Statistical hypotheses are generally a trivial consequence of standard statistical inference, such as the null hypothesis of no difference between two populations. They rarely have inherent ecological significance and are meaningful only in the context of the specific test being performed. Focus your writing on the ecological hypotheses underlying your research (e.g. that species A is influenced by processes X and Y in a specific way, resulting in different growth rates in habitats S and T), not the statistical null hypotheses required to test specific predictions of those ecological hypotheses (e.g. there is no difference in growth rates among populations of species A in habitats S and T).

16. **Develop a strategy for your Discussion.** Many novice paper writers begin their Discussion section with a statement about problems with their methods or the items in their results about which they feel most insecure. Unless these really are the most important thing about your research (in which case you have problems), save them for later. Begin a Discussion with a short restatement of the most important points from your Results. Start with what you can say clearly based on what you did, not what you can’t say or what you didn’t do. Use this statement to set up the ideas you want to focus on in interpreting your results and relating them to the literature. Use sub-headings which structure the discussion around these ideas.

17. **Introductions and conclusions are the hardest parts -- plan on spending a lot of time on them.** Many technical writers prefer to write their introductions last because it is so difficult to craft that balance of general context and specific focus which a good introduction requires. Often it is easier to achieve this after you have already worked through writing the entire paper or thesis. If you need to write the introduction first to set the stage for your own thinking, resist the temptation to perfect it. By the time you have finished the rest of the paper it will likely need substantial modification. The same concerns apply to conclusions, abstracts, and summaries. These components of the paper are all that many people will read and you must get your message across in as direct, crisp, and enticing a manner as possible. Plan on taking your time and giving these components several more drafts than the rest of the paper.

18. **Break up large projects into small pieces and work on the pieces.** Don’t write a thesis; write chapters or papers. Many thesis writers have a hard time starting to write because they are intimidated by the huge project looming ahead of them. As a result, their first few month’s efforts are often awkward and disjointed, as well as sparse. The thesis should be separated into small discrete sections, ideally distinct publishable papers. The overall organization of ideas should be done during the planning stage so that when you work on individual sections you can concentrate on them.

   Don’t wait until you think you’ve completed all your analyses to start writing. “Parallel processing” of writing one chapter while you complete the analyses for others and make presentation quality figures is a good strategy for avoiding writer’s burn-out. Writing and analysis for any given chapter or paper is often an iterative process. Writing the results section of a paper is often the best way to discover the analyses and figures that still need to be done.

19. **Make your writing flow and resonate.** Probably the most frustrating and useful review I have received was from my masters advisor Lee Gass on a draft of a paper from my M.Sc. thesis. He said that all the key points were there and that the writing was clear, but it didn't "flow and resonate." He sent me back to rework it and, eventually, the published product did "flow and resonate" (at least we thought so). Once or twice a year I come across a paper that is written so well it is a joy to read. If the content is as good as the writing, the experience of reading it can shape my thinking for some time thereafter. Papers which are written so well they "flow and resonate" are much more likely to influence your readers than the equivalent message presented in a form which is merely clear. When you find a paper that succeeds in this, study carefully how the authors constructed their arguments and used language; try to identify what makes the paper work so well.
20. **Use word processors effectively and back up your work religiously.** Computers have improved tremendously the ease with which we can edit, shuffle, rewrite, and spell-check a paper. To do this efficiently requires investing time in learning about your tools. You needn’t learn how to use all the more exotic features of your word processor, but learn the options that are available and how to find out the details when you need them. Minimally, be familiar with basic requirements for document formatting (character and paragraph formatting, how to make lists with hanging indents, page organization, etc.) and basic operating system requirements (copying and saving files, doing directory searches). The same comments apply to the use of statistical packages, graphics programs, and spreadsheets: it is often possible to get the job done with little finesse in manipulating your software, but you will usually do a better job more efficiently after some investment in technical skills.

Almost everyone seems to require their own personal disaster to convince them of the need for backing up important files regularly. The frequency of “lost file” based excuses for late papers is remarkable. I save files to my hard drive frequently during working sessions and at the end of each session I make a back-up copy of any file that I would mind losing. The working memory of your computer is transitory and easily purged of its contents. Individual hard and floppy disks are little better as permanent storage forms. Redundant copies dispersed in space and time are your main hope for avoiding disasters. When you have invested a lot in a writing project (such as a thesis that is nearing completion), keep at least one recent backup copy at home and one at school at all times - in addition your working copy on a hard drive. Keep sample hard copies of recent drafts until you complete the project.

21. **Take editorial comments seriously.** It may be clear from an editor’s comments that they didn’t understand the point you were making. If so, that is a clear indication that you need to improve your writing. Here is an example of my comments on an early draft of a thesis. These are among the most frequent recommendations I make.

"This section offers enormous opportunities for improvement. The text is choppy, both at the sentence-to-sentence level and the paragraph-to-paragraph level. Many different points are mixed together in a sequence that often follows no logical flow. You should:

1. Create a list of the main points that you want to make here.
2. Organize them in point form in a logical sequence in which each one builds on what comes previously. Then restructure your text so it follows this sequence.
3. Write topic sentences that state the key issue for each point succinctly and without jargon.
4. Flesh out each paragraph with a carefully constructed sequence of sentences that builds the argument you want to make.
5. Make sure there is adequate conceptual "glue" between paragraphs and major sections. Lead the reader along so there are no surprising jumps in subject. The reader should anticipate your next subject before you get there."

**Acknowledgements**
I would like to thank the many students who inspired and gave feedback on these notes. I hope their pleasure in good writing justifies the pain of getting there. Thanks also to Lee Gass for his continuing inspiration in the use of language.

**Literature Cited**

Table 1. Examples of adjectival nouns and verbs from graduate student papers read in December 1994. Each can be changed easily to a form which is clearer and more active (e.g. “suspended
sediment increases” -------> “increases in suspended sediments”). Rewriting these is a useful exercise for students.

suspended sediment increases
maximum three-week nitrogen concentrations
water supply concern
streamwater DOC concentrations
DOC soil solution concentrations
appropriate waterbody buffering system
maximum floodplain extent
fire severity gradient
fisher habitat use
the most energy favorable den location
researcher defined stands
above ground coarse woody debris
previously designated special habitats for particular species
time and information constraints
the first construction attempt
different width linkages
riparian linkage boundaries
biogeoclimatic subzone and watershed forest interior objectives
old growth retention and forest interior Forest Ecosystem Network objectives
the compositional dynamics focused perspective of traditional gap studies

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APPENDIX 3

Example of Title and Approval Pages for a 699 Project

THE IMPACT OF RURAL SUBDIVISION ON AGRICULTURAL LAND PROTECTION: THE COUNTY OF LETHBRIDGE, ALBERTA

by

Samuel Arnold Wirzba
B.A. University of Lethbridge 1984

RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF RESOURCE MANAGEMENT in the School of Resource and Environmental Management Report No. 48

© Samuel Arnold Wirzba 1987

SIMON FRASER UNIVERSITY
April 1987

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APPROVAL

Name: Samuel Arnold Wirzba

Degree: Master of Resource Management
in the School of Resource and Environmental Management

Report No. 48

Title of Research Project: The Impact of Rural Subdivision on
Agricultural Land Protection: The County
of Lethbridge

Examining Committee:

______________________________
Senior Supervisor: J. C. Day
Professor
School of Resource and
Environmental Management
Simon Fraser University

______________________________
Committee Member: Michael M'Gonigle
Assistant Professor
School of Resource and
Environmental Management
Simon Fraser University

Date Approved: _______________________________
APPENDIX 4

MRM Administrative Tasks Timeline

<table>
<thead>
<tr>
<th>Task</th>
<th>Deadline</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approval of Supervisory Committee</td>
<td>3rd Semester in Program</td>
<td>Inform Graduate Program Assistant, in writing, of committee members. If any committee members are not SFU faculty, obtain a CV</td>
</tr>
<tr>
<td>Approval of Research Proposal</td>
<td>Prior to beginning work – ideally in your second semester in the program</td>
<td>Prepare a Research Proposal, obtain the approval of your full committee for the proposal. Committee should sign the approval form (available from the Graduate Program Assistant).</td>
</tr>
<tr>
<td>Approval of Ethics, if required</td>
<td>At least six weeks prior to commencing research</td>
<td>Obtain an ‘Ethics Approval’ package from the Graduate Program Assistant and follow the instructions.</td>
</tr>
<tr>
<td>Ongoing Progress Reports</td>
<td>At least once each year, spring semester</td>
<td>Schedule a meeting with your committee, and submit the blank “Progress Report” for their input/signature.</td>
</tr>
<tr>
<td>Change of Committee Approval</td>
<td>If committee changes</td>
<td>Inform Graduate Program Assistant, in writing of Committee members. If any committee members are not SFU faculty, obtain a CV</td>
</tr>
<tr>
<td>Application to Graduate</td>
<td>When you register For your final semester</td>
<td>Apply online to graduate, or check your graduation status online.</td>
</tr>
<tr>
<td>Approval for REM 699 Oral Presentation</td>
<td>When the 699 is completed and ready for presentation</td>
<td>Contact Graduate Program Assistant for information/checklist. This should be done 3 weeks before you intend to present.</td>
</tr>
<tr>
<td>Oral Presentation</td>
<td>When scheduled</td>
<td>All paperwork will be signed and returned to the Graduate Program Assistant to hold for permission from senior supervisor to release.</td>
</tr>
<tr>
<td>Submission of Project to Library</td>
<td>When final revisions have been completed</td>
<td>Bring 6 copies of your project to the office. Insert Approval Pages and pick up all of the paperwork for the library. One copy stays with the Graduate Program Assistant.</td>
</tr>
</tbody>
</table>
APPENDIX 5

So You Want to Present your 699?
(Steps for setting up a PhD Dissertation are not identical, and the PhD deadlines are considerably earlier)

These are the steps required in setting up your 699 oral presentation and submitting your project to the library. Please contact the Graduate Program Assistant if you have any questions.

- Please confirm that the supervisory committee on record with REM is correct. If it is not, inform the Graduate Program Assistant of the changes to the committee. If any committee members are not SFU faculty, request a CV to be sent to the Graduate Program Assistant (e-mail attachment or fax to 604-291-4968).

- Obtain a project number from the Graduate Program Assistant once you have submitted your exact title. The project number must appear in your final copies that are submitted to the library.

- In order to schedule your REM 699 presentation all of the following information is required:
  - The exact title of your project (this title will appear on your degree and in all official university records.)
  - The presentation date and time that have been agreed to by your committee members
  - The room location in which the presentation will be conducted (normally that is determined in consultation with your supervisory committee (in case they prefer a room at Harbour Centre, and with the Graduate Program Assistant (for room availability on campus).

- Please get confirmation from your committee members that they are available on the day and at the time you arrange. This may be by signature on the form, or by e-mail or fax, indicating that the date and time are definitely confirmed by all members. Once you have this confirmation, contact your Graduate Program Assistant about booking a room. If you require equipment such as a computer or LCD projector, contact Audio Visual at 604-291-4828 or ask at the REM general office. If they don't have one, contact Laurence Lee at 604 291-5777.

- Give the Graduate Program Assistant the name of the Chair for your presentation, so that the chair can be given the “Guidelines for the Conduct of Oral Presentations”.

- Take a copy of your project to the Thesis Assistant, Library, Special Collections, for approval of your thesis format (prior to your presentation). It is advisable that you do this as early in the process as possible, and definitely before you print the final six copies for binding (five are hard bound and REM has one spiral bound). The Thesis Assistant’s phone number is 604 291-4747. The formatting guidelines are now available on the Web: http://www.lib.sfu.ca/researchhelp/writing/thesesinfo.html

- If you did not apply to graduate when you registered for your final semester please do so online.

- Six copies of the thesis Approval Page must be available for your committee to sign at your presentation. Be sure to:
  - check that the title (i.e. Professor, Associate Professor, Director of, etc.) for each committee member is correct. For SFU faculty, this information is available in the SFU calendar (which is available on-line at the SFU website.)
Please provide a copy of your approval page to the Graduate Program Assistant at least 1 week prior to the 699 Presentation so that it can be checked— it is a hassle to re-do them later.

Note that for Master's students, the correct name of the degree is Master of Resource Management. The title on your approval pages is the exact title of the research project, so be sure that it is correct.

After the Presentation, but prior to submitting the final version of the project to the library, check with the Graduate Program Assistant to ensure that all paperwork is correct and complete.

Please make sure that all of your fees are paid in full by the time you submit your project to the library.

When you have completed your final revisions, please print 6 copies of your project, put them in letter size folders with your last name and first initial on each folder, and bring them to the office of the Graduate Program Assistant, where you will insert the signed approval pages and pick up all of the other paperwork that is required by the library:. Five copies of the project will go to the library, REM will have one spiral bound. The other forms you will need in order to submit to the library are:

- the memo from your supervisor stating that the revisions have been completed
- Partial Copyright Licenc: 1 original, signed and dated, plus 2 of the "no signature" version
- National Library form (to be signed by you) for the National Library of Canada.
- 2 copies of the Approval page (not signed)
- A journal voucher which will cover the cost of binding your thesis. REM pays for the binding of 3 copies - one for you, one for your supervisor, and one for the REM thesis library. Please let us know if you want more than 1 copy, you must pay for any additional copies (the cost is $16.00). There are also private binderies that will bind additional copies.

REM would like to have an electronic copy of your thesis for our new electronic archive. If you are willing to provide one, please do so - either on a zip disk, cd-rom or by e-mail attachment.

If you are willing to have your project published on the REM website (as a locked PDF file), send us an electronic copy of your project, confirming that it can go up on the web site. Current and future students will be grateful.