



8888 University Drive, Burnaby, BC  
Canada V5A 1S6

TEL: 778.782.3925  
FAX: 778.782.5876

vpacad@sfu.ca  
www.sfu.ca/vpacademic

**MEMORANDUM**

|                  |   |              |                 |
|------------------|---|--------------|-----------------|
| <b>ATTENTION</b> | Senate  | <b>DATE</b>  | October 8, 2010 |
| <b>FROM</b>      | Jon Driver, Vice-President, Academic and<br>Provost, and Chair, SCUP  | <b>PAGES</b> | 1/2             |
| <b>RE:</b>       | Faculty of Environment: External Review Report of the School of Resource and Environmental<br>Management (SCUP 10-77) |              |                 |

The Senate Committee on University Priorities (SCUP) has reviewed the External Review Report on the School of Resource and Environmental Management, together with responses from the School, the Dean of Environment and input from the Associate Vice President, Academic.

**Motion:**

**That Senate approve the recommendation from the Senate Committee on University Priorities to implement the Action Plan for the School of Resource and Environmental Management that resulted from its External Review.**

Following the site visit the Report of the External Review Team\* for the School of Resource and Environmental Management was submitted in April 2010.

After the Report was received a meeting was held with the Dean of Environment the current and past Directors of the School and the Director of Academic Planning (VPA) to consider the recommendations. The School then prepared an Action Plan based on the Report and these discussions. The Action Plan was then submitted to the Dean on August 26 2010. The Dean has endorsed this Action Plan.

The Review Team members stated that they 'were very impressed with the school and with the commitment and dedication of all' and that the 'primary strength of the School is the high quality faculty and staff' and that the 'Masters (MRM) Program has an excellent reputation for high quality teaching, outstanding graduates and effective professional preparation'.

SCUP recommends to Senate that School of Resource and Environmental Management be advised to pursue the Action Plan.

**Attachments:**

1. Department of School of Resource and Environmental Management External Review - Action Plan
2. External Review Report – April, 2010

**\* External Review Team:**

**Leslie King**, Ph.D., MCIP, Vancouver Island University

**Buzz Holling**, Ph.D. Professor Emeritus, University of Florida

**Peter Harrison**, Ph.D. Director and Stauffer-Dunning Chair in Policy Studies, Queen's University

CC John Pierce, Dean of Environment

Frank Gobas – Director, School of Resource and Environmental Management

# SIMON FRASER UNIVERSITY

## Memorandum

TO: SCUP

FROM: Jon Driver  
Chair, SCUP and  
Vice President, Academic

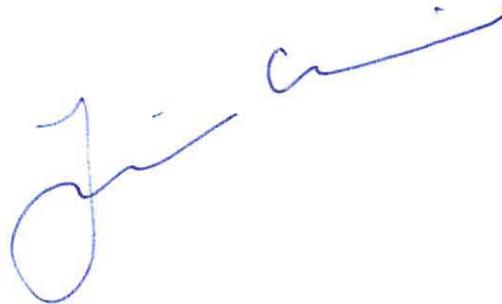
RE: School of Resource and Environmental Mgt    DATE: September 29, 2010

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As per the attached:

**Motion:**

*That SCUP approves and recommends to Senate the implementation of the Action Plan for the School of Resource and Environmental Mgt that resulted from its External Review.*

A handwritten signature in blue ink, appearing to be 'Jon Driver', is written across the page.

## **SFU School of Resource and Environmental Management Review**

Report and Recommendations

April 30, 2010

### **Review Panel:**

Leslie King, Ph.D., MCIP, Vancouver Island University

Buzz Holling, Ph.D. Professor Emeritus, University of Florida

Peter Harrison, Ph.D. Director and Stauffer-Dunning Chair in Policy Studies, Queen's University

Rolf Mathewes, Ph.D. Associate Dean of Science, Simon Fraser University

## **School of Resource and Environmental Management Review**

**Executive Summary:** The review panel conducted a site visit to the SFU School of Resources and Environmental Management in the Faculty of Environment during the week of March 8-13, 2010. After reviewing in advance the extremely thorough and excellent self study and the planning and other documents provided by the University, Faculty and School, we were prepared and made the most of our very intensive visit. We interviewed current (and some graduated) students in the PhD and MRM programs, staff, Faculty members of different ranks, technicians, committee members and many relevant university administrators particularly in the research and graduate studies offices. We attended a class and toured office, classroom, research institute and lab facilities. We are grateful for the opportunity to meet and discuss the school in some depth. We were very impressed with the school and with the commitment and dedication of all we met. As requested, the review panel assessed the strengths, weaknesses, opportunities for change and improvement and quality and effectiveness of the program as summarized below:

### **1. Strengths:**

The primary strength of the School is the high quality faculty and staff. The Masters (MRM) Program has an excellent reputation for high quality teaching, outstanding graduates and effective professional preparation. The panel observed a high degree of collegiality, positive and productive relationships within and outside the school and an environment conducive to excellence in learning, service and scholarship. The School is unique in its successful interdisciplinary, applied, experiential and problem-focused education at the graduate level. Other strengths include a good record of scholarship by all faculty members in the school, as evidenced by publications in a wide variety of academic and professional journals, as well as research grants and funding. Faculty members engage in exemplary service – particularly professional and community service and far-reaching networks of professional colleagues across

the country. Many faculty members are active in academic leadership in Canada through service on government and industry bodies and panels.

Graduates of the school demonstrate the excellent outcomes and the impact the School has had on environmental problem solving in Canada. The school has a great deal of external influence and has a wide array of useful networks of professionals and graduates who fill position of influence in the field and provide ongoing opportunities for current students. As a result, the School has an outstanding reputation in BC and across Canada.

The academic programs in the school are highly relevant and skilfully interdisciplinary.

The MRM boasts high student satisfaction and a near perfect track record in student employment in the field.

The many and varied research institutes cover most of the important environmental and resource issues and are an excellent resource, academic support, and opportunity for research, employment, funding, and thesis topics for students. The school has a highly professional, dedicated and skilful staff who, despite heavy workloads, provides a great deal of support for students and faculty members.

## **2. Weaknesses:**

The school's focus on building on its strengths has resulted in a reliance on one model of professional education for all three levels- undergraduate, Masters and PhD. With the formation of a new Faculty of the Environment, an opportunity has opened to develop a new interdisciplinary focus for an undergraduate program, and a focus for the Ph.D. program that is different from the one in place now. Also, gaps in academic offerings (at the undergraduate level) result in a lack of integrated continuous educational opportunities from first year through to Masters and PhD. Although not necessarily a weakness of the School, which has focused its efforts on high quality graduate Masters programming, the limited and spotty undergraduate programming is a challenge for the University and the new Faculty who could take better advantage of the demand for environmental programs at all levels.

The School has also identified problems with the Ph.D. program that Faculty are now taking steps to resolve. While we believe that the proposed changes will go a long way to resolving problems with the Ph.D., we also believe that more and different improvements could be made to the PhD that will strengthen the School as a whole. There is also an imbalance in the school between the highly popular and over-subscribed Master's program and the PhD program which has low enrolment. While we believe that enrolment in the PhD should not grow too quickly or large, a better balance would be beneficial for research in the school as well as for the reputation and impact of the School and Faculty. It would also contribute to the University's goals of becoming more research intensive and would be part of an effort to increase international visibility and activity. Completion times in the Masters program, with many students completing in three or more years, (the median for the most recent period is 9 semesters or 3 years, so half of the students complete in more than that) and to a lesser extent in the PhD is another weakness that should be addressed.

The goal of the Masters program is to be interdisciplinary. In contrast, the PhD program should assume candidates have sufficient multidisciplinary background, and instead focus on being integrative. That may require only one required integrative course. (That course could be open to all graduate students on the campus, and be run as a workshop, with REM graduate students playing the role of the workshop staff.) No additional courses need be required though they may be assigned as part of the advisory committees' decision. This flexible student-centred approach based on the needs and background of each individual student would allow the student's committee to design a program to reflect the needs, background, and learning style of each student.

While the diversity of research funding in the school is a strength, there also needs to be better funding for both Masters and PhD students which can only occur if faculty (already successful in attracting tri-council funding) develop longer-term research programs that are capable of funding Ph.D. students for the duration of their programs. The development of such long term programs would also be part of an effort to increase international visibility and activity.

Greater association with international projects could facilitate interchange of PhD students with universities in different countries. As an example, the school has recently joined the Resilience Alliance as a node, where interchange is a traditional mode of operation. In particular such interchanges have been welcomed in institutes and universities in Australia, Sweden, South Africa, Indiana, Arizona and Wisconsin.

Another potential weakness is the lack of visibility and prominence of the School in the University, although the creation of the new Faculty and the opportunity for leadership by the School in the development of the Faculty should go a long way to solving that issue. As always, faculty and administrative workload are challenges that threaten the capacity of the School to expand and develop. This will also be exacerbated by the added academic and administrative role of the School in the new Faculty. Another challenge will be cooperation with other units relevant to environment in the university. Since the new Faculty will be unable to incorporate all relevant disciplines and units, it will be important for the new Faculty to reach out to others in the university. With current heavy workloads this will be a challenge. A final weakness is failure to capitalize on the existence of Aboriginal opportunities in the School. Many faculty and students are working with Aboriginal people and the school needs to package and promote these opportunities for innovation in curriculum and research.

### **3. Opportunities for change and or improvement:**

The greatest opportunity for REM is the new Faculty and the opportunity for REM to play a leadership role in its development. This could bring greater visibility and increased participation in the University as a whole. That in turn would lead to new opportunities for partnerships and collaboration across the university and beyond. These partnerships will be crucial for the future development and success of both REM and the new Faculty. It could also lead to potential new faculty members in relevant fields moving to the Faculty from other units in the university. The move of Archaeology into the Faculty is a wonderful opportunity that will add significantly to the academic breadth and quality of the Faculty and help balance the structure of the Faculty. Another opportunity for the School is to build on its strengths in both the undergraduate and PhD programs. We believe that a great opportunity for both the school and the new Faculty is to build on and promote its current Aboriginal content and perspectives in the curriculum, research and service and to attract aboriginal students and staff. In this way, the School and the Faculty could assist the university in the fulfillment of the Aboriginal Strategic Plan. There are few academic areas of more relevance and potential for building aboriginal demand than in the field of environment. This is relevant to the broader opportunity that exists for the School and the Faculty to diversify and internationalize the curriculum and research. Another opportunity and strength is the obvious visible support for REM and the new Faculty from the university and senior administration.

As indicated above, other areas for change or improvement include MRM completion time and the development of the PhD. There is a great opportunity to further develop the PhD. (One possible synergy is with the SFU Ed.D. in Environmental education). If the PhD is expanded there will then be an opportunity to use PhD students in roles currently undertaken by Master's students as support for Faculty research. That in turn, however, will require longer term better funded research programs and increased diversity in funding sources for research.

### **4. Quality and effectiveness:**

There is a great deal of evidence for the high quality and effectiveness of REM. The quality of students in the graduate programs and the high level of satisfaction of current and past students and of employers of graduates are impressive. For example, one employer stated that MRM graduates consistently could hit the ground running with "no assembly nor batteries required"! External engagement is extremely high in the school and many enterprises outside the university including governments, NGOs and the private sector routinely call on faculty members for advice and problem solving. Faculty members are recipients of numerous awards and honours and regularly serve on International, Federal and Provincial expert panels, roundtables, and advisory boards. (including *inter alia*, UN Energy Assessment, National Roundtable on Environment and Economy (Jaccard), Ocean Climate Change and Marine Biodiversity Panel, Royal Society of Canada and DFO Stock Assessment Management Board (Peterman) DFO Stock Assessment Program (COX), Parks Canada Marine Protected Areas

Working Group (Haider) Royal Canadian Geographical Society (Gill), International Institute for Sustainable Cities (Roseland), Historic Sites of American Indians (Welch), Stavros Niarchos Foundation and British Columbia Biodiversity Strategy (Lertzman), Scientific Advisory Board for Contaminated Sites in BC (Gobas), National Advisory Committee, Ocean Management Research Network (Pinkerton) and many others too numerous to mention. They are also consulted by our own and other governments (notably, China) including Mark Jaccard's service as co-Chair of the Task Force on Sustainable Coal and the Task Force on Energy Strategy and Technologies of the China Council for International Cooperation on Environment and Development. Many faculty members work regularly with First Nations and all faculty members are working in areas of great relevance to British Columbia, forestry, fisheries, climate, and land-use planning among Faculty members and students contribute significantly to policy and management in BC and Canada. The development of active research institutes in areas of critical environmental importance (Energy and Materials, Fisheries, Tourism Policy, Forest Ecology, Environment and Development, Climate, Oceans, and Paleo-environments, Coastal Marine Ecology and Conservation, Cooperative Resource Management, Co-management, Parks, Protected Areas and Recreation) is also evidence of effectiveness both for the outside world and for graduate education. Faculty members have received many of the honours available to academics, do an extraordinary amount of external, government and public education, and also are effective in obtaining a broad diversity of research grants. In summary, we found REM to be highly effective in terms of high quality teaching, impressive and satisfied students, research contributions and an astonishing level of service to professional fields and communities.

In the categories of the review we provide below more specific observations and recommendations.

**a) Quality of Teaching** – *(The quality of the unit's teaching programs is high and there are measures in place to ensure their evaluation and revision.)*

Panel members agree that the quality of teaching in REM is extremely high as evidenced by teaching awards, student satisfaction, comments and evaluation, and employer satisfaction with graduates.

The teaching in REM is consistent with and fulfills the goals of the University's academic plan, particularly in the areas of "High Quality Student Experience" and the "University's Role in the Community". The School is well poised to "increase the number of First Nations Students" and to "increase our International, First Nations, and Interdisciplinary exposure" and should certainly take the opportunities that already exist in the School to do that. In the teaching and learning theme, the School is actively engaged in new program development in the Environment and also are experienced and expert in integrated faculty research into curriculum at both the graduate and under-graduate levels. The School is

also contributing to “Research Intensity” through their faculty research, PhD and Masters education and research, through their engagement in collaborative, interdisciplinary research and outstanding knowledge mobilization to a variety of communities. In terms of the University’s Role in the Community”, the School has forged excellent partnerships with First Nations communities and with other communities, government, and non-governmental agencies to solve problems and provide guidance and advice. Student endorsements included in the self study were glowing as were the comments we received while interviewing Masters and PhD students and former students (many of whom are now employers of REM students). The quality of the graduate students (both entering and graduating) is particularly impressive. They are committed, enthusiastic, and laudatory about the graduate programs. The School does a good job of tracking graduates and maintaining connections with employers of graduates. It appears that there is 100 % employment of MRM graduates in the field, primarily in Provincial and Federal Government but also in a variety of other public and private organizations.

The graduate programs appear to be evaluated and revised regularly. The PhD program has recently been revised and the MRM was revised to incorporate the recommendations of the last review. One impressive outcome of the graduate programs is significant publications by students, published in high quality professional and academic journals. The coop program is highly sought after and demand for REM students out-strips supply. MRM students are particularly successful in coop placement and are highly valued. At a “town hall” meeting students particularly praised the accessibility of faculty members, opportunities for meeting one on one and in research groups and the open door policy of faculty members and the Director.

**b) Quality of Research – (Quality of faculty research is high and faculty collaboration and interaction provides a stimulating academic environment.)**

All members of Faculty are active researchers and the School does its part to fulfill the objectives of the strategic research plan. Of course the School’s primary contribution to the fulfillment of the University’s Strategic Research Plan is in the major objectives “facilitating collaborations across disciplinary and institutional boundaries” “recruiting and retaining outstanding students, research fellows and faculty”, encour(aging) effective communication and dissemination of research results” and engage(ing) all our

communities for the benefit of society” and in the research theme area of “Environment, Resources and Conservation”. In that research area, faculty members are actively conducting research in “planning, development, management and sustainability” (Gunton, Williams, Roseland, Lertzman, Rutherford, Haider, Gill) “ecosystems and resources” (Salomon, Gobas, Pinkerton, Lertzman, Peterman, Cox, Cooper), “climate change solutions” (Kohfield, Jaccard, Lertzman), “alternative energy technology” (Jaccard) and “Aboriginal Communities and the environment” (Lertzman, Welch, Pinkerton). Faculty members in the school are also contributing to other research themes including “education for sustainable development”(Knowler), “biodiversity”(Peterman, Lertzman, Salomon, Knowler, Rutherford Lertzman, Salomon, Knowler, Rutherford) urban communities”(Roseland), “public policy” (all) and others.

Faculty members in the school are particularly effective at knowledge dissemination and mobilization in addition to knowledge creation.

This is consistent with the objectives of the School to focus on applied, relevant, and problem focussed research. Researchers in the School are actively engaged in working with stakeholders to solve critical environmental problems of communities and the country. All faculty members engage students in their research and this provides particularly effective learning environments, opportunities and professional development for students. The self study compares School funding levels very favourably with other departments in the field and this is a very significant accomplishment for an interdisciplinary, largely applied area. To support graduate students and in particular, PhD students, however, faculty members will need to build on their successes in developing longer term research programs with consistent multi-year funding for graduate students. The existence of research institutes covering most of the major environmental and resources areas is a great strength of the school and contributes a great deal to the education of graduate students and to faculty development.

- c) **Administration, knowledge dissemination** – *(School members participate in the administration of the unit and take an active role in the dissemination of knowledge.)* This area is again a great strength of the school, particularly the knowledge dissemination and mobilization. Faculty members are doing excellent work in mobilizing knowledge for the benefit of communities and the country. If anything, this could be better advertised so the school could become even better known in this area. For example other than some notable exceptions (Jaccard) much of the knowledge that is disseminated and mobilized benefits partners but may not extend beyond those partners to reach a wider audience of practitioners. Again, the Research Institutes in the school do an excellent job of knowledge mobilization.

In terms of administration, all faculty members serve on the major school committees (Graduate committee and UG committee, Executive Committee) as well as many other committees (18 different committees in addition to the Executive committee (more committees than Faculty members)but will now increasingly be called upon to participate in Faculty as well as University administration and governance. However the external relations and community service activities are particularly great in the School and it is hard to imagine adding any more service burdens to faculty member workloads. Students are seen as an integral part of the School's administration and governance and are consulted regularly and represented on most School committees. The director of the school bears an extremely heavy administrative and communication burden and we believe that to share that burden and to ensure succession, consideration should be given to adding an assistant or associate director position.

**d) Environment** – *the environment is conducive to the attainment of the objectives of the school*

The School provides a remarkably stimulating and welcoming intellectual and social climate. The environment is extremely conducive to attainment of the objectives of the unit. Panel members were very impressed with the collegiality, congeniality and good relationships within and outside the unit. Student–faculty relationships are particularly strong, open and productive. Excellent relationships also exist among faculty members within and outside the Faculty and with service units. The atmosphere is stimulating and inspiring.

While it is always a challenge to encourage and listen to the voices of young faculty in an existing and successful unit, panel members felt that more support for and attention to the new junior faculty could be given and that they should be allowed more influence in the direction of the unit and the Faculty. In hirings, care should be taken to ensure the “fit” of faculty members within this unique school, particularly with regard to the interdisciplinary, problem focus of the School.

**Questions to Consider:**

- a) Strategic Options:** *What are the best strategic options for REM to pursue within the new Faculty of Environment and the University more generally? In particular, how can REM maintain its historical strengths in graduate education and training, and contribute to the development and growth of the faculty's undergraduate programs through strategic alliances and partnerships with other units such as Geography and Environmental Science?*

The panel devoted considerable thought and discussion to these questions and came up with the following recommendations for increasing undergraduate offerings while not risking the outstanding graduate programs. We agree with the general feeling in the School that the priority should remain the high quality inter-disciplinary graduate programs. However, we also agree that faculty members, the new Faculty and the university could benefit a great deal from increased participation of the School in undergraduate teaching. With that in mind, we make the following recommendations for increased participation in undergraduate education. While these recommendations are given as those with the least resource implications, it is clear that even they will require additional faculty resources to implement. Options for increasing REM's undergraduate teaching include:

- i. **Environment One** – we believe the School is in an excellent position to take the lead, in cooperation with the other units of the Faculty, in developing a first year program such as an “Environment One” program modeled on Science One, Arts One, or Tech One, or the Explorations Program at Surrey. The University has experience developing such programs and this should be relatively easy to develop and see through the approval process. The set of first year courses could include the current REM 100 as well as other courses from within and beyond the Faculty.
- ii. **Environmental Science** – we also thought that it would be beneficial to the School, Faculty and University for REM faculty members to participate in the Environmental Science degree rather than developing a separate and probably redundant, REM undergraduate degree/program.
- iii. **Second and 3<sup>rd</sup> year REM Courses:** Although there is a well subscribed first year REM course (REM 100) there is then a gap where few if any environmental courses are offered at the 2<sup>nd</sup> and 3<sup>rd</sup> year level. REM should fill the gap in 2<sup>nd</sup> (no REM courses) and 3<sup>rd</sup> year courses (2 REM courses) by offering more courses at the 2<sup>nd</sup> and 3<sup>rd</sup> year level, possibly as versions of the Masters courses. This would give undergraduate students an opportunity to continue an environmental focus throughout their undergraduate education and would also better prepare students to go on to the Master's Program.
- iv. **Literacy minor:** We agree with the idea that the School could develop an environmental literacy minor (or be involved in offering a Faculty of Environment literacy minor) for students with majors outside the Faculty and School, for example for Business and Education students. This could also provide an “environmental literacy across the curriculum” opportunity for the University as a whole.
- v. **Specialty courses at 3<sup>rd</sup> and 4<sup>th</sup> year:** The School could contribute more than the current (~5) specialty environmental courses to senior level undergraduates. These could be joint masters and senior undergraduate courses (many in existence for the MRM) but

care would need to be taken to ensure that this does not lead to overcrowding and dilution of the experience for either group.

**b) Research strength:** *Assess the research strength of REM and evaluate the strategic plan for new faculty positions, including the trade-offs between supporting existing strengths and adding new areas.* (See above) The research strength of REM is very high and for its size, the School contributes strongly to the research and scholarly reputation of the University. The School also fulfills the objectives of the University's Strategic Research Plan, not just in the area of Environment, Resources and Conservation but in a number of other areas and objectives as well including research dissemination and mobilization and collaborations across disciplinary and institutional boundaries. (see above) Faculty research currently covers a broad range of environmental areas and no real gaps come to mind. Clustering and supporting strength in areas such as First Nations environment and resource issues should be a top priority. Other new areas should only be pursued as a result of faculty strength, or clusters of strength, in the area (as a result of new hirings, for example.) We agree with the School's analysis of needs for new areas and positions as presented in the self-study. We might however, present them in a different order of priority, with First Nations resources, sustainability and environment as the top priority. We also recognise the critical importance of supporting and reinforcing the Energy and Materials Sustainability group led by Mark Jaccard. We agree also with the need for new Faculty strength and positions in Conservation Science and especially the focus on Terrestrial Wildlife Ecology to balance the strength in Marine and Coastal ecology. The school lists its next highest priorities as Ecosystem based management and no one could quarrel with that, and Food politics Security and Sustainability which we believe will have increasing salience in the coming decades. Finally, Environmental Design is also an important area for growth particularly with the popularity and demand for the Planning stream and the very welcome and exciting addition of Mark Roseland to the School. This would probably be the most difficult to implement and could require significant strength and resources.

**c) Growth management:** how can REM best address issues of managing growth in the graduate program in relation to limited resources (class sizes, student support, space etc.) The graduate programs are excellent and immense contributions to the University and the society. There is pressure for growth, particularly in the new Planning stream of the MRM. Some classes are reaching or exceeding limits for high quality interaction and more work

could be done to stagger course offerings or offer more than one section of the more heavily subscribed courses. (This of course has resource implications but we believe this is critical for maintaining the quality of the MRM.) We believe that some growth is possible, in both the Masters and the PhD program but the costs of unlimited growth will be high in reduced quality, diminished experience for the students and faculty burn out. Therefore we believe that the MRM should not grow significantly and that the School should retain the high entrance requirements. In order to serve more students with that high quality experience, however, we strongly believe that the Masters students must complete in a more timely manner. The primary responsibility here will be for faculty members to strenuously limit the scope of the Masters projects and do a better job of narrowing the scope of these projects. (We do favour flexibility on an individual student basis, rather than developing streams such as a course work (professional) and a thesis (academic) stream.) We realize that efforts to limit the scope of the project may fly in the face of the pride the school takes in the high and publishable quality of student work and the support that these student projects provide for faculty research. We believe that high quality, publishable work can still be done with a narrower scope. [note that we really try NOT to advertise is as a 2 year program and attempt to give an accurate assessment of completion times]—While faculty members in the School are generally scrupulous about not promising two year completion, many current students reported that if the Master’s program were advertised as a three year program they would not have come. (It is difficult to imagine how 14 courses, 2 full years of taking those courses, and a major project could be completed in two years.) Since most comparable programs are at most two years, completion times of more than that pose an obstacle to recruitment of outstanding students who are eager to join the workforce. If faculty research could shift to more dependence on PhD dissertations rather in addition to Masters student projects, it would be of benefit to everyone. Thus we recommend that all faculty take on PhD students to grow the PhD to about 7-10 students per year, depending of course on the existence of longer term research programs and projects, increased funding for PhD students and willing faculty members for supervisory roles. This will be more readily accomplished by reducing the time spent by PhD students on the course work and comprehensive examination process and enabling students to begin their research sooner, thus enabling students to work earlier with faculty members on research projects.

- d) **Assess current Masters program curriculum** – As above, we conclude that the Masters program curriculum is outstanding and is a source of satisfaction to both faculty and students.

*Should the development of a PhD program be a high priority in view of the need for growth and the challenges of cross-disciplinarity at the PhD level?*

Yes. We believe there is an important role for the PhD program and that it can remain a problem focused, inter-disciplinary program but one not modeled precisely on the

professional focus of the Masters program but more research based and preparation for an academic as well as a professional career. While remaining inter-disciplinary the program should and does, encourage and prepare students for more in-depth work in a topic area.

- e) **REM faculty and students** play an important role provincially, nationally and internationally in having input to **decision-making and policy** about resources and the environment from which both REM and SFU benefit. *The demand for such contributions is increasing at the same time as REM's Resources are being stretched internally. What is the **appropriate strategic balance**?*

All of the many and varied external activities of REM faculty members contribute directly to the teaching and research mandates of the School. While other universities agonize about how to incorporate research into teaching and what to do about service, REM is a model for integrating and building on the synergy among research teaching and service.

As indicated above, we observe that REM faculty members willingly take on a very heavy role in advising governments and non-governmental organizations and providing policy guidance. As a result, their influence is great, they contribute significantly to the profile and reputation of the University and they also provide unparalleled opportunities for experiential learning for students. This work is also a source of and stimulus for research opportunities and funding. There is no question that this work is extremely time-consuming and is not adequately recognized in the normal reward structures. We recommend that such activity be supported and ways found of rewarding faculty members for their accomplishments in this area. The problem is indeed one of balance and the question of not jeopardizing the teaching and research functions—in spite of the fact that these activities support and contribute to those teaching and research activities. While we do not have a solution to this problem, we believe that the new Faculty is key to addressing the dilemma. All members of the faculty could share the load of these responsibilities and the Faculty as a whole could develop its own workload and reward strategies. Thus the effort would be more widely spread across the Faculty and could become a great strength of the new Faculty. New faculty positions to support faculty engaged in these activities and to backfill the teaching load would also go a long way to alleviating the stresses of the current practice.

**Other areas to be considered:**

1. Programs

*Structure, breadth, orientation and integration of the undergraduate programs including coop*

*Structure, breadth, depth, and course offering schedule of the graduate programs:* One reason for the length and completion times of the graduate programs is the critical need to provide both breadth and depth in the Masters and PhD programs due to their inter-disciplinary nature. That imperative is difficult to avoid and should not be abandoned in the interests of shortening the program. The School does an excellent job of providing both breadth (course work) and depth (project and thesis). Arguably, ways might be found (such as our suggestion for an inter-disciplinary, problem-focused seminar) for providing both breadth and depth more efficiently and within a shortened time frame. (As students increasingly become trained in inter-disciplinary integration, the need for this breadth, particularly at the PHD level may well diminish.)

#### **Graduate student progress and completion and support for graduate students**

As above, completion times are still too long in the Masters program. We considered a two stream structure but decided instead for recommending flexibility on an individual student basis with stricter faculty supervision and scoping of projects. Financial support for Masters students remains an obstacle to recruitment. Funding should be increased for both Masters and PhD students through more long-term research funding.

*Enrolment management issues at the undergraduate and graduate levels including, for the former, majors and service teaching.* There is considerable pressure on the MRM degree, and while some growth is desirable, we believe that the program should not grow too much or the current high quality could be jeopardized. Both the Masters and PhD program could grow incrementally, especially if faculty could be added in the areas identified above, but enrolment should definitely not be allowed to grow limitlessly. In other words, the School should decide on maximum carrying capacity given different resource scenarios and cap as necessary.

## **2. Faculty**

*Size and quality of the faculty complement in relation to the School's responsibilities and workload:* The quality of Faculty is consistently high but the numbers are low for the workloads and the extensive service component of most faculty members. The service component however is critically important for the educational goals of the school and should not be decreased.

*Teaching, research and service contributions of faculty members including the level of external research support.* We observed that teaching, research and service are all at a very high level in

most faculty workloads. This is unusual but is highly relevant and productive in this field. While the level of research funding is relatively high for the field and in comparison with other “environmentally “ related units at SFU, we believe it should be higher and more long term in order to support graduate students and to develop more long term research programs in the school.

### 3. Administration

*Size of the administrative and support staff complement, and the effectiveness of the administration of the School.* We found the administration of the School to be extremely effective with very limited resources. We believe that the Director needs more support and recommend an associate director. The staff is also stretched very thin and has heavy workloads. The School also needs an effective succession planning strategy.

*Adequacy of resources and facilities provided to support teaching and research including library, laboratory, equipment, computing and office space.*

The new space is high quality space but ongoing pressure makes it already inadequate, particularly if the new positions are realized. Library resources are impressive and there is good computing support but capital replacement is a problem. A challenge for the new Faculty is to forge a strong Faculty identity with faculty members and facilities so widely dispersed across the campus and in other locations.

### 4. Connection of the faculty within and outside of the University

*The school’s concept and plan for teaching and research and relationship with the other units within the University:* The School’s plan for the future is realistic and sound. With the creation of the new Faculty, REM is now in limelight and needs to take advantage of their current situation to build even stronger links within the Faculty and also with related units not put into the faculty. These enhanced links would be extremely fruitful for future development of the School and Faculty. An excellent example is Archaeology’s intention to join the Faculty. Other units are also critical such as the centre for urban studies, earth sciences, and the school of policy.

As noted above, relationships between the School and the community are warm and very supportive of the goals of the School. There is potential for increasing national and international connections.

Relationships with alumni are also excellent as we experienced in a very well attended and exciting reception. Many alumni attended and many of those are also employers of REM graduates. The School does a good job of tracking Alumni and in utilizing them for employment, research and coop opportunities. A committee has been formed for Alumni Relations and several new alumni activities are being planned.

##### **5. Future directions**

*The plans of the school are appropriate and manageable.* The plans that REM has developed for the future of the School are appropriate and feasible. The expansion plans for the PhD and for new areas of teaching and research and new faculty positions are very sound and based on realities of this diverse and rapidly changing field. The challenge now will be to align the REM vision with the faculty vision and REM faculty members should take leadership in the collaborative development of that faculty vision.

**Other Issues of Concern:** We noted other areas about which we would like to comment:

- 1. Response to last review:** We noted the effective response of the School to the issues of concern raised in the last review in 2003. Among these were completion times of graduate students which has been addressed but remains an issue and the concern about inadequate sessional faculty teaching core courses which has been addressed to the apparent satisfaction of both students and faculty. Another issue is the demanding and time consuming structure of the PhD. The School has put a great deal of effort into revising that structure but we believe there is yet more to be done (See recommendations below and the discussion of the PhD above.)
- 2. Response to CIP Planning Accreditation:** While the CIP accreditation report was very positive, we are concerned that in their response to the report the School should not attempt to become like every other planning school in the country but should rather maintain its historical and regional strengths in environment, resource, regional planning. An emphasis on Aboriginal planning would be very relevant to that focus.
- 3. New Faculty:** We are very enthusiastic about the new Faculty of the Environment and the opportunities that the development of the faculty holds for REM. Threats also exist of spreading faculty and administrative staff even more thinly than they are now by taking on Faculty roles in addition to their already heavy REM responsibilities. On the other hand, if managed well, the loads could be shared and a strong synergy could be created that would benefit all in the new Faculty.

4. **PhD Program:** The PhD program is unique in Canada (and probably in the rest of the world as well) for its interdisciplinary, research intensive focus. We approve very much of the direction that the revision of the PhD program has taken. We believe however that these changes could be taken even further, and should focus not on interdisciplinary breadth, but on integrative methods, concepts and examples. (See recommendations below.)
5. **Undergraduate Teaching by REM.** We have made some recommendations regarding ways in which REM faculty could be more engaged in undergraduate teaching which would benefit The Faculty, University, and students who are demanding environmental education at all levels from first year to the Ph.D. (See recommendations below with regard to five potential areas in which the School could increase its contribution to undergraduate teaching.)
6. **Aboriginal Focus:** We believe that a wonderful opportunity exists for the School that should not be missed. Many faculty members and students are currently conducting research and forging relationships with First Nations. These efforts should be supported, reinforced, expanded and coordinated in a research and teaching emphasis for the School. This would also assist with recruitment of aboriginal students and faculty. We strongly recommend that a new faculty position should be created in this area and probably a new research institute or group as well. (See recommendations below.)

**Recommendations** – We have tried to make these recommendations as practical as possible and within the context of resources available as well as consistent with objectives of the school and University.

1. Maintain, protect and support the existing **REM masters program (MRM)** and continue to place priority on it. Address completion time. Consider reinforcing the flexibility of the program that enables students to complete in two years, primarily with course work and a project or to choose to do a more demanding thesis with fewer courses. Completion time remains an issue as does balance with the PhD program.
2. **PhD Program:** While recognising the attention paid and changes made to the PhD program more work could be done to improve and expand the PhD program. This would be in keeping with and would assist the university to fulfill its plan to become more research intensive. The main issues with the PhD program are the demands of the comprehensive examination to develop an understanding of the three areas. This takes considerable time and delays the start of the students PhD research which means it also delays their work with faculty members on

their research. The change to combine the comprehensive examination with the thesis proposal defence is a good one but may not go far enough. One model we discussed during the site visit (now known as the Holling model) is to eliminate core required courses. (Courses would still be available and would be recommended or even required to fill deficiencies in a particular student's background.) The only required course would be an interdisciplinary, problem-focused, year long course which would require students to apply different methods and strategies to a significant environmental issue and to work in groups to address that issue and come up with a plan for its resolution. The seminar would be open to all graduate students but would be taught and organized by the PhD students. Other recommendations are to investigate the potential for developing fewer, but PhD exclusive courses at the PhD level. This of course has resource implications. The model of an interdisciplinary, yet research intensive PhD fills a significant need in the country and beyond and needs to be supported, celebrated and expanded.

3. Secure more long term **funding for graduate students**, especially related to long term research programs.

4. Maintain and continue to make advances in **interdisciplinary, experiential, problem focused** model of education with adaptation to recognize the different needs at the undergraduate, Masters and PhD level.

3. **Undergraduate Education:** Recommended Options for REM's involvement in Undergraduate education in the Faculty of Environment and the University include the following:

i. **Environment One:** REM could effectively lead the development of an "Environment One" Program for first year study modelled after existing first year programs at SFU and other Universities (Dialogue, Arts One, Science One, Tech One.)

ii. **Specialty courses:** Continue to develop senior (3<sup>rd</sup> and 4<sup>th</sup> year) undergraduate courses that could be extra sections of Master's courses, or could allow a limited number of undergraduates into Master's courses or could develop exclusive upper level undergraduate courses as modified version of Master's courses.

iii. **Literacy minor** – Develop a REM Environmental Literacy Minor (or participate in a Faculty of Environment Literacy Minor) for students from other disciplines and faculties at the University. Indications are that there would be a strong demand for this type of minor. This could be done as a general minor or specifically designed for Faculties such as Business and Education. This could also provide an environmental literacy across the curriculum opportunity for the University.

iv. Develop courses to **fill in the gap in 2<sup>nd</sup> and 3<sup>rd</sup> year** offerings in Environmental topics.

v. **Participation in Environmental Science degree** – REM should participate actively in developing and implementing the Environmental Science degree.

4. **Aboriginal focus-** greater emphasis should be placed on Aboriginal perspectives and content in the curriculum and research, and on recruiting aboriginal students, faculty and staff. Current work with First Nations should be coordinated and supported and a research cluster or institute should be developed in this area.

5. **Succession Planning** – We are concerned that the leadership of the school is in jeopardy with the intention of the current director to step down this summer. Support for the Director and succession planning should be a priority.

6. **Leadership role:** The school should play a leadership role in the new faculty particularly in developing relationships between units in the faculty and beyond, and ensuring environmental course opportunities from the first year to the PhD level.

7. **Public Presence:** REM should work to enhance its national and international reputation and to internationalize the curriculum and research. (They need to blow their horn more!) Joining international networks such as the Resilience Alliance and the Study of the Commons and international student exchanges are good ways to begin this process.

8. **CIP recommendations:** REM should focus and build on its planning strengths: environment, resources and regional planning, (as well as First Nations planning) rather than attempting to cover all of the planning ground. REM should avoid becoming more like all the other planning programs in the country. The REM focus is strength and an advantage for student recruitment.

9. **New faculty positions:** Work to add faculty positions in the areas identified in the REM strategic plan with perhaps first priority given to “First Nations resources, sustainability and Environment”.

10. **Recognise and reward external involvement/ professional service**

11. **Diversify and internationalize the School, Curriculum and Scholarship.**

12. **Research:** Promote and support the further development of long term large scale research programs with consistent funding for Highly Qualified personnel – PhD and Masters students.

13. **Junior faculty-** support and encourage Junior Faculty to put their stamp on REM.

14. **Space:** the need remains especially for laboratory and student space.

## EXTERNAL REVIEW – ACTION PLAN

### **Section 1 – To be completed by the Responsible Unit Person e.g. Chair or Director**

|                                 |   |  |  |
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| <b>Unit under review</b><br>REM | <b>Date of Review Site visit</b><br>March 10-12, 2010 | <b>Responsible Unit person,</b><br>Frank Gobas, Director | <b>Faculty Dean</b><br>John Pierce, FENV |
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***Note:** It is not expected that every recommendation made by the Review Team needs to be included here. The major thrusts of the Report should be identified and some consolidation of the recommendations may be possible while other recommendations of lesser importance may be excluded.*

| External Review Recommendation   | Unit's response notes/Comments (if any)   | Action to be taken  | Resource implications (if any) | Expected completion date          |
|--|---|---|--------------------------------|-----------------------------------|
| <p><b>1. Master's Program</b><br/>Maintain existing Master's program and keep it a high priority. Consider <b>greater flexibility</b> with course work or chose a more demanding thesis with fewer courses. <b>Completion times</b> remain an issue and <b>balance with PhD program.</b></p> |   | <p>REM will maintain existing Master's program and the Masters program will remain the flagship of the REM program. During the retreat several options for improving the Masters program were discussed including a (i) Thesis option; (ii) current program with reduced course load; (iii) change of current program to thesis format. REM GSC will consider these two programming options and gather data to present to REM EXEC in the Fall.</p> | None                           | September 2011 for implementation |
| <p><b>2. PhD Program</b><br/>Recent changes may not be enough. <b>Lesson demands of comprehensive exam/coursework.</b> Options : Holling model (no required courses) with problem based</p>  | <p>While we agree with the overall nature of the External Review's concerns about the PhD program, we disagree with some of their specific prescriptions for solutions – and have</p> | <p>To address these concerns REM changed PhD. program requirements last year. REM would like to see the changes through before making significant new changes.</p> <p>PhD Handbook will be revised to provide better guidance to students and faculty about the requirements for the comprehensive exam and thesis proposal defense.</p>  |                                | Sept. 1, 2010                     |

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| coursework, or develop fewer PhD exclusive courses.  | data to back up our perspective. | REM will expand the Ph.D. program by increasing PhD intake to 7-10 students/ yr.<br>We believe that increasing our PhD student population will have a significant impact on the nature of the PhD culture in REM.  |   |  |
| 3. Secure more long term funding for graduate students.  |                                  | REM will look for opportunities to bring in high-end long term funding, through the Hakai Institute, CFI, and others.  |   | On going   |
| 4. Maintain and continue to make advances in interdisciplinary, experiential, problem focused model of education with adaptation to recognize the different needs at the undergraduate, Masters and PhD level. |                                  | REM will maintain and make advances in <b>interdisciplinary, experiential, problem focused</b> model of education with adaptations to recognize the different needs at the undergraduate, Masters and PhD level.<br><br>REM's most important new contribution will be at the undergraduate level. See under undergraduate programming.           |   | On going   |
| 5. Undergraduate Programming: Develop a greater role.<br>- Environment One<br>- Literacy Minor<br>- More u/grad 3 <sup>rd</sup> and 4 <sup>th</sup> yr courses.<br>- Fill in gap in 2 <sup>nd</sup> yr courses |                                  | REM will create new undergraduate courses in current areas (i.e.: ecological economics, law/policy, energy/materials to support the environmental science undergraduate program and the undergraduate curriculum at SFU. New faculty hires will allow for new courses to be developed. TAships from u/grad courses will help fund grad students. | 2 new faculty positions<br>Office space<br>Lab / Research space | On going, and implemented over the next 1-3 years. |

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| <p>- Participate in Env. Science program.</p>  |  | <p>REM plans to develop a REM Minor.</p> <p>REM will develop a larger Undergraduate program committee to work on Undergraduate initiatives (i.e.: REM minor, Environmental Literacy Minor, support of environmental science program).</p> <p>Undergraduate initiatives are considered FENV initiatives rather than REM initiatives</p> <p>REM will support FENV initiatives.</p>   |  |   |
| <p><b>6. Aboriginal focus</b><br/>         - First priority given to "First Nations resources, sustainability and Environment"</p>   |  | <p>New Initiatives include: Hakai, Haida Gwaii</p> <p>REM's current Aboriginal focus needs to be made more prominent and visible. REM will address this through our new website design. Course content is increasing (new course designs) and REM faculty members are currently working on projects with an Aboriginal focus.</p> <p>Hiring a faculty member with an Aboriginal focus remains a high priority for REM.</p> | <p>One new faculty position<br/>         Office space<br/>         Research Space</p>  | <p>Currently, and developing over the next 1-3 years.</p> |
| <p><b>Others:</b><br/>         - Play a leadership role in new faculty.<br/>         - Create a greater public presence.<br/>         - Planning program – build on current strengths.</p> |  | <p>We are playing a leadership role in FENV and are committed to continue this role.<br/>         Our various new initiatives, referred to above, will contribute to improving public presence, long-term, large-scale research programs, and others.</p>  | <p>While this isn't likely to translate into a clear call on SFU resources, all of these activities have a clear cost in the time budgets of individual faculty members – and since time is a zero-sum</p> |   |

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| <p>- Promote and support the further development of long term large scale research programs.</p> |  |  | <p>game, this must be factored in somehow. We are doing more externally at SFU than we ever have before, which means we necessarily are doing less of something else. There are issues of sustainability. Growth of REM's faculty complement associated with implementing new undergraduate initiatives in particular may help alleviate this.</p> |  |
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The above action plan has been considered by the Unit under review and has been discussed and agreed to by the Dean.

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| <p><b>Unit Leader (signed)</b><br/> Name <u>Frank Sobas</u> Title <u>Director REM</u></p> | <p><b>Date</b><br/> <u>August 26, 2010</u></p> |
|---|--|

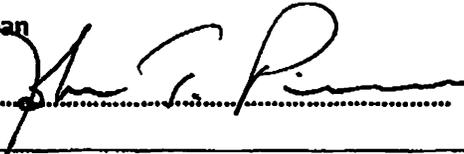
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**REM External Review**

The external review team (ERT) was impressed by the high quality of the teaching and research as well as the outstanding service contributions made by many faculty to the profession and larger community. The majority of the ERT's recommendations should be seen as relatively minor improvements in programming and/or building upon existing strengths. The most important are as follows: improving completion times for graduate students, introducing greater flexibility in the PhD program, expanding the role for REM in undergraduate teaching, (and associated with this a leadership role in new programming for FENV), developing greater opportunities for experiential and problem based learning and promoting a greater emphasis on aboriginal programming. I believe that the majority if not all of these recommendations can be accommodated in a timely matter and that REM is fully committed to doing so. All of that said it must be acknowledge that REM faculty are already fully engaged so that further commitments will come at a cost unless there is some adjustment to their faculty complement. I will work closely with the new Director to try and ensure the completion of these recommendations and in the process to ensure that REM continues to play a leadership role within FENV.

Faculty Dean

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Date



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