

**CUMULATIVE EFFECTS ASSESSMENT ---  
FROM CURRENT FUNDAMENTALS TO FUTURE FOLLOW-UP**

**Proposal for a Training Course at IAIA '08**

**by**

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**SECTION 1 – BASIC INFORMATION**

- (a) Course Title: Cumulative Effects Assessment (CEA) . From Current Fundamentals to Future Follow-Up
- (b) Level: Intermediate/Advanced
- (c) Prerequisites for Participants: Foundation training on EIA or CEA (professional-level short course or University-level specific course or program); and/or minimum of 2 years in

professional experience in planning and conducting EIA or CEA for environmental impact studies. (Note: these prerequisites do not necessarily apply to student participants.)

- (d) Language of Delivery: English
- (e) Duration: 2 days
- (f) Minimum and Maximum Number of Participants: 10 (minimum) to 50 (maximum).
- (g) Name and Contact Details of Trainers:

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**SECTION 2 – COURSE DESCRIPTION –** This intermediate/advanced level course has four purposes: (1) to summarize the state of professional practice regarding the conduct of the fundamental requirements of cumulative effects assessment (CEA) within Environmental Impact Assessment (EIA) processes; (2) to highlight the use of environmental sustainability considerations in determining the significance of cumulative effects; (3) to discuss adaptive management (and monitoring) as follow-up activities in CEAs for large-scale proposals; and (4) to present policy choices and collaboration approaches for the development of regional cumulative effects management initiatives. The premise of this course is that CEA should be an integral part of, and not separate from, both in-country and international EIA processes. The fundamental requirements, while based on the immediate experience of the instructors in Canada and the United States, are focused on international principles that guide the professional practice of EIA and CEA. The material relies on procedures promulgated by the USA and Canada. These procedures and other purposes are addressed by identifying key valued environmental components (VECs), focusing on those for which CEA is appropriate; delineating spatial and temporal boundaries; describing historical baseline conditions and trends; establishing cause-effect linkages between past, present, and future actions and VECs; determining the significance of cumulative effects via the use of environmental sustainability principles; development of follow-up adaptive management programs based on six common elements; and development of mitigation programs. Further, attention will be directed toward practical approaches for management of cumulative effects, including the use of emissions trading, collaborative planning, and appropriate management entities. Practical processes for both preparing and reviewing CEA-

related documents will be emphasized, along with presentations on case studies, and workshop sessions involving interactive groups. Interchange of information and experiences by the participants will be encouraged within all methods of presentation. The anticipated learning outcomes are related to achieving a better understanding of the principles and practices of CEA, and to applying them in study planning and review.

Description of Course Structure and Content: The agenda features segments associated with the above four purposes. Specific topics within the segments include (specific time allocations will be incorporated in the final agenda):

#### Day 1

- Principles, Definitions, and Stepwise Iterative Procedures for Conducting CEA
- Critical Importance of CEA and Challenges in Conducting CEA
- Interactive Workshop on CEA Case Studies Based on Participant Experiences
- CEA for Projects and Regional Strategic Environmental Assessment (SEA) Studies, and the Use of Tiering
- Identification and Analysis of Other Past, Present, and Future Actions
- Scale Issues in CEA
- Methods for Identifying Potential Cumulative Effects and Their Linkages (Connections) to Pertinent VECs
- Interactive Workshop on Determining the Significance of Anticipated Cumulative Effects

#### Day 2

- Case Study on the Analysis of Environmental Sustainability (AES) in CEA
- Interactive Workshop on the Development of Conceptual Models for AES
- Elements of Adaptive Management (Including Monitoring) as a Follow-up Tool for Cumulative Effects Prediction and Management
- Case Study on the Incorporation of Adaptive Management and Monitoring in an Impact Study Related to Elk and Vegetation Management
- Mitigation and Management of Cumulative Effects at the Project and Regional Levels (Including Proponent and Interagency Collaboration, and Descriptions of Management Tools Such as Emissions Trading, Regulatory Approvals, and Creation of Management Entities)
- Interactive Workshop on Cumulative Effects Management Based on Participant Experiences
- Case Study on Regional Cumulative Effects Management

#### OTHER TOPICS

If needed, other blended topics—such as the provision of training materials, explanations of workshop sessions, qualifications of the instructors, and pre-and post-conference communications could be provided.

#### Materials to be Provided

Electronic copies of the following:

Ross, William A., "Cumulative effects assessment: learning from Canadian case studies," ***Impact Assessment and Project Appraisal***, Vol. 16, No. 4, December, 1998, published for the International Association for Impact Assessment by Beech Tree Publishing, Guilford, Surrey, UK.

Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, W. Ross, H. Spaling and D. Stalker, **Cumulative Effects Assessment Practitioners Guide**, Canadian Environmental Assessment Agency, January, 1999.

Therivel R., Ross B. **Cumulative effects assessment: Does scale matter?** (2007) *Environmental Impact Assessment Review*, 27 (5), pp. 365-385.

A course manual containing copies of PowerPoint slides, information on case studies and related reference materials, and workshop materials. In addition, a reference CD will be provided to each participant. The CD will contain several bookmarked documents on CEA practices, methods, and tools; AES; adaptive management; and cumulative effects management; plus links to several key related websites.

#### Pre and Post Conference Communications

Before the conference, Bill Ross will be in electronic communication with participants. The main purpose for this is to solicit information to be used during the course. The secondary purpose is to show responsiveness to any issues participants wish to discuss. Dr. Ross will also offer to continue some form of mentorship for course participants for the year following the course should they have any queries. Dr. Ross will be attending the IAIA08 conference.

Dr. Canter will register for and attend the entire IAIA 08 Conference. Further, registrants or prospective registrants for the course can communicate questions to Dr. Canter via email or telephone. Also, during the Conference, course participants can continue informal discussions with Dr. Canter. Finally, in the post-Conference period, participants can communicate with Dr. Canter via email or telephone.

**WILLIAM A. ROSS**, PhD (Physics) (Stanford, 1970)  
Faculty of Environmental Design,  
The University of Calgary,

#### **ENVIRONMENTAL ASSESSMENT PROJECTS (selected, with focus on cumulative effects)**

- Member of six Canadian Environmental Assessment Panels . including the currently active EnCana Shallow Gas Infill Development Project.
- Develop and offer two to three week training courses on EIA in the Philippines (1990 and 1991); in the Middle East (1994); and in Vietnam (1995 and 1996).
- Develop and offer one week cumulative effects assessment training course at the Banff centre for Management (1997 to 2002 offered annually).
- Environmental Impact Assessment training advisor in Jakarta, Indonesia (Fall, 1992).
- Head of Canadian Mission to the Middle East to determine Environmental Impact Assessment capabilities and needs as part of Multilateral Peace Process (1994).
- Develop and offer cumulative effects assessment workshop (two days) for the Thai Office of Environmental Policy and Planning (1998).
- Member, Independent Environmental Monitoring Agency for BHP Diamond Mine, Northwest Territories, Canada, 1997-present; chair since 2003.
- Cumulative Effects Assessment advisor to the Cheviot EIA panel (1999-2000).
- Founding President Western & Northern Canada Affiliate, International Association for Impact Assessment.

#### **Papers (selected)**

Creasey, R. and W. Ross %The Cheviot mining project: Cumulative effects assessment lessons for professional practice+, in Hanna, K., ed., *Environmental Effect Assessment: Practice and Participation*, Oxford University Press, Oxford 2005.

Ross, W. A., %The Independent Environmental Watchdog: A Canadian Experiment in EIA Follow-up+, In *Assessing Impact: Handbook of EIA and SEA Follow-up*, A. Morrison-Saunders and J. Arts (editors). Earthscan, London, UK. 2004.

- Ross, William A. and Dixon Thompson, "Environmental Impact Assessment" in *Tools for Environmental Management*, Dixon Thompson editor. New Society Publishers, 2002.
- Baxter, Wanda, William Ross and Harry Spaling, "Improving the Practice of Cumulative Effects Assessments in Canada", *Journal of Impact Assessment and Project Appraisal*, Beech Tree Publishing, 2001.
- Ross, William A., "Reflections of an environmental assessment panel member", *Journal of Impact Assessment and Project Appraisal*, Beech Tree Publishing, Vol 18, No 2, June 2000. (winner of best paper in the journal, 2000)
- Spaling, Harry, Jannelle Zwier, William Ross and Roger Creasey, "Managing Regional Cumulative Effects of Oil Sands Development in Alberta, Canada", *Journal of Environmental Assessment, Policy and Management*, Vol 2, No 4, December, 2000.
- Ross, William A., "Cumulative effects assessment: learning from Canadian case studies", *Impact Assessment and Project Appraisal*, Vol. 16, No. 4, December, 1998, published for the International Association for Impact Assessment by Beech Tree Publishing, Guilford, Surrey, UK. (winner of runner up best paper in the journal, 1998)

### **Research and Professional Reports**

- Ross, William A., "Cumulative Effects Assessment: An Evaluation: The Cheviot Coal Mine Project Joint Review", prepared for the Cheviot Coal Mine Project Review Panel, 2000.
- Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, W. Ross, H. Spaling and D. Stalker, *Cumulative Effects Assessment Practitioners Guide*, Canadian Environmental Assessment Agency, January, 1999.

**Dr. Larry Canter** is a Professor Emeritus from the University of Oklahoma (August, 2000), and is now engaged in teaching NEPA-related short courses and consulting on the preparation and review of impact studies; including those related to CEA. He has written six books on EIA and authored over 12 book chapters, over 80 refereed journal articles, over 75 conference papers, and over 150 research reports, including CEA-focused studies. He has written or participated in the writing of over 25 EAs and EISs on projects such as power plants, gas pipelines and compressor stations, flood control dams, waterway navigation systems, military training, and radioactive waste management. Since 1970, he has taught short courses on EIA for several federal agencies, including the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. In addition he has presented short courses, or served as advisor on EIA to institutions in over 20 countries. During the 1990s at the University of Oklahoma, he was the Sun Company Chair of Ground Water Hydrology, George Lynn Cross Research Professor, and Director, Environmental and Ground Water Institute. He received his Ph.D. in environmental health engineering from the University of Texas, M.S. in sanitary engineering from the University of Illinois, and B.E. in civil engineering from Vanderbilt University.

Since 2001, Dr. Canter has consulted on over 12 international and national CEA studies. For example, in 2004, he prepared a CEA report on the eastward expansion of the Craney Island Dredged Material Management Area (CIDMMA) near Norfolk, Virginia. Further, from 2001 to early 2006, he worked on the navigation system investment plan for the mainstem of the Ohio River. A comprehensive CEA study was conducted for the 981-mile river length that has 19 associated locks and dams. Innovative methods used in the study included "reasonably foreseeable future action" (RFFA) matrices, integrated analyses of the environmental sustainability (ES) of the VECs, and the development of ES alternatives for freshwater mussels and riparian habitat. Further, he was involved in the planning and review of the CEA portion of an EIS for the Fishery Management Plans for Squid, Mackerel, and Butterfish in the Mid-Atlantic Region (2005-

2006). Also, he has current assignments for the preparation of CEA sections in a Generic EIS on Uranium Recovery and three EAs for license renewals in the nuclear industry.

In addition, he was the principal author of the May, 2007, NEPA Analysis Guidance Manual for use by the U.S. Army in EIA work related to training ranges, and mission changes. His refereed CEA publications include two book chapters and nine journal articles; in addition, he had made 19 conference presentations on CEA, with the majority being at IAIA meetings.

Since 1997, Dr. Canter has presented 50 short courses or workshops on CEA, with the majority being 3 to 4 days in duration. Course sponsors have included the International Association for Impact Assessment (1999 in Glasgow, Scotland; and 2000 in Hong Kong), several Federal agencies in the USA, and the World Bank. Recent examples include the presentation of seven 3-day CEA courses (between March, 2005, and September 2006) under the sponsorship of the USEPA (four were in Washington and one each in San Francisco, Chicago, and New York). Finally, in June, 2007, he presented the 3-day course for the USFWS at its National Conservation Training Center.