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OUR FILE No. 158693 /RCS

YOUR FILE No. 1701

December 1, 2020

**EMAIL TO: [laura.friend@nrcb.ca](mailto:laura.friend@nrcb.ca)**

Natural Resources Conservation Board  
1900, 250 - 5 Street SW  
Calgary Alberta Canada T2P 0R4

**Attention: Laura Friend, Manager, Board Reviews**

Dear Ms. Friend:

**Re: Alberta Transportation Springbank Off-Stream Reservoir Project  
NRCB Application No. 1701  
Additional Pre-Hearing Submissions of SR1 Concerned Landowners Group (SCLG) re  
Fish Impacts Expert**

We act for the SR1 Concerned Landowners Group ("SCLG"). As indicated in paragraph 55 of the SCLG's Prehearing Submissions (Exhibit PHC-14), the SCLG intended to retain an expert on Fish Impacts. The SCLG has retained Allan Locke, B.Sc., P.Biol. in that regard. We attach a budget from Mr. Locke to complete his expert report as well as a copy of his CV.

The following is a revised Table to replace the one found at PDF pg.18 of SCLG's Prehearing Submissions marked as Exhibit PHC-14.

No.	Area	Expert/Lawyer	Budget	GST	Total
A.	Water Management	Dr. Fennell	\$21,000.00	\$1,050.00	\$22,050.00
B.	Biodiversity	Mr. Wallis	\$29,430.00	\$1,471.50	\$30,901.50
C.	Dam Design & Risk Assessment	Austen Engineering	\$106,151.00	\$5,307.55	\$111,458.55
D.	Air quality and dust	Dr. Zelt	\$12,000.00	\$600.00	\$12,600.00
E.	Fish Impacts	Allan Locke	\$18,900.00	\$945.00	\$19,845.00
F.	Noxious Weeds	Dr. Osko	\$34,800.00	\$1,740.00	\$36,540.00
H.	Legal Counsel	Ackroyd LLP	\$204,650.00	\$10,232.50	\$214,882.50
		<b>Total</b>	<b>\$426,931.00</b>	<b>\$21,346.55</b>	<b>\$448,277.55</b>

Should you have any questions, we would be pleased to address them.

Yours truly,

**ACKROYD LLP**

*Original signed by*

RICHARD C. SECORD

RCS/sl

Enclosures

## **Expert consultant**

Name of expert consultant being retained:

**Allan Locke, B.Sc., P.Biol.**

What specific areas of this issue is the expert consultant responsible for?

Environmental flows, aquatic ecology, impact of sedimentation to the aquatic ecosystem (sediment in both the reservoir and on the Elbow River downstream of the release point from the reservoir) and to the loss of fish to the diversion canal.

Describe the specific activities the expert consultant will be performing by way of the following categories:

Prehearing review, consultation and conduct literature review: < 50 > hours

Completing expert report: < 20 > hours

Anticipated expert fees: < 70 > hours x \$< 270 > = \$ 18,900

## **Allan Locke**

106 – 550 Rainbow Drive  
PO Box 1335  
Kaslo, British Columbia, V0G 1M0  
Canada  
Mobile: 403.801.1355  
Email: aghlocke@mail.com

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### **EMPLOYMENT**

#### *President, Locke and Associates, 2013 to Present*

Provide:

- A complete range of aquatic habitat assessment services related to the construction, inspection, reclamation, or monitoring of roads, pipelines, and well sites.
- Aquatic environment expertise for optimal pipeline routing.
- Expertise to develop local water management plans to assist obtaining water for Temporary Diversion Licenses (TDLs) and Term Licenses.
- Services that will help to ensure compliance with the requirements of both federal and provincial aquatic environmental protection measures as part of an environmental assessment or the development of an Aquatic Environment Protection Plan.
- Environment flow expertise to governments, industry and NGOs.

#### *Provincial Environment Flows Specialist, Government of Alberta, 1998 to 2013*

As the Provincial Environmental Flows Specialist, responsible to lead, develop and implement the provincial Environmental Flows program. Duties include:

- Develop and set policy options and scientific standards for the Environmental Flows Program.
- Provide leadership and specialized knowledge to align and coordinate the Environmental Flows Program with the Fish and Wildlife Division mandate, Water Management Planning and the Land Use Framework.
- Develop unique and cost effective Environmental Flow tools to protect fish and wildlife resources, e.g., province-wide guidelines and classification assessment methods.
- Develop and implement site-specific Environmental Flow studies in basin wide water management planning initiatives.
- Develop Fisheries Management Objectives in context of carrying out Environmental Flow assessments.
- Provide leadership in applying Structured Decision Making processes to represent the Fish and Wildlife Division's interests in economic versus environmental values trade-off analysis in multi-stakeholder negotiations.
- Liaise with stakeholder groups (e.g., the Alberta Water Council, Watershed Planning and Advisory Councils), the general public, industry and other provincial and federal jurisdictions on Environmental Flow matters.
- Carry out research and practical application programs in collaboration with Universities, Alberta Innovates – Energy and Environment Solutions – Water Resources, NSERC (HydroNet) and the federal government.
- Represent the Fish and Wildlife Division on the Instream Flow Council.

In addition to Environmental Flow responsibilities,

- Represent the Fish and Wildlife Management Division on the Federal / Provincial Fish Passage Technical Review Committee.

#### *Fisheries Habitat Protection Biologist, Government of Alberta, 1981 to 1998*

- Design and implement the Instream Flow Needs (IFN) program for the Province of Alberta.
- Chair the Alberta Fishways Working Group.
- Develop a series of Fisheries Habitat Protection Guidelines for the Province of Alberta.
- Assess the need for the creation of new, or modification of existing, referral systems.
- Co-ordinate Service assessment and establish conditions of approval for land use activities including: a) the exploration, development and reclamation of mineral resources (oil and gas industry, coal, oilsands, and sand and gravel), b) linear disturbances, c) water resource projects (dams, irrigation headworks), and d) timber harvesting.

- Provide expertise to regional staff in reviewing specific applications that are beyond their expertise or have provincial ramifications.
- Review Environmental Impact Assessments for development proposals.
- Be the Service representative on, intra- and inter-departmental and inter-governmental committees as required.
- Be the Service representative in setting provincial water quality objectives for the protection of fish and freshwater aquatic life.
- Develop and co-ordinate the Habitat Prosecution Training Course for Fish and Wildlife Service enforcement and biological staff.
- Pursuant to the habitat and pollution control sections of the Fisheries Act, set up regional Special Environmental Investigation Units to conduct environmental investigations and prosecutions.
- Prepare and administer budgets for the Aquatic Habitat Protection programs.

*Conservation Authority Biologist, South Lake Simcoe Conservation Authority, 1981*

- Design and implement environmental studies.
- Review official Plans of Development.
- Carry out environmental assessments for projects that are undertaken by the Authority.
- Provide technical advice to other staff members and the public.
- Carry out liaison with federal, provincial, and private agencies.

*Conservation Authority Project Biologist, South Lake Simcoe Conservation Authority, 1979 to 1981*

- Carry out resource inventory studies within the watershed.
- Hire and supervise staff to carry out stream surveys and cold-water assessments.
- Carry out environmental assessments, co-ordinate and supervise cold-water stream rehabilitation projects for brook trout.
- Carry out liaison with federal, provincial, and private agencies.
- Set terms of reference for environmental studies that are to be undertaken by private consultants on behalf of the Authority.
- Provide biological expertise to the Planning Department.
- Act as assistant to the Senior Biologist.

*Policy Assessment Biologist, Government of Ontario, 1978 to 1979*

- Carry out the administration of the boating restriction regulations for the Province.
- Co-ordinate Provincial involvement in the Federal Marina Policy Assistance Program and other small craft harbour developments.

*Fisheries Biologist, Government of Ontario, 1977*

- Research the biological, physical and chemical data of the lakes in the Bruce Peninsula.
- Co-author a book with F.P. Maher and Dr. H. H. Harvey (University of Toronto) for general public use entitled "The Lakes of the Bruce Peninsula".

*Wildlife Biologist, North Grey Conservation Authority, 1975 to 1976*

- Gather data on waterfowl production in the Rankin Wildlife Management Area.
- Maintain a bird and herptile inventory checklist for the Rankin Wildlife Management Area.
- Implement a live trapping program for small mammals using approved wildlife management techniques.
- Collect data on the spring migration of all species of waterfowl in the Rankin Wildlife Management Area.

**PROFESSIONAL ORGANIZATIONS**

Instream Flow Council (President 2004 – 2006)

Professional Biologist, P.Biol., Alberta Society of Professional Biologists

Registered Professional Biologist, R.P.Bio., British Columbia College of Applied Biology

## **EDUCATION**

Hon. B.Sc., Zoology, University of Guelph, 1976

## **OTHER EDUCATION**

- "Great Plains Fisheries Workshop" - Lethbridge, AB, February 1982.
- "Fisheries Act Workshop" - AFWD, Edmonton, AB, June 1983.
- "IFIM Field Techniques for Stream Habitat Assessment Course" - USFWS/CSU, Columbia, MO, July 1983.
- "Instream Flow Needs Workshop" - C. Howard/BC Env., Victoria, BC, March 1984.
- "Canadian Water Resources Association Conference" - CWRA, Vancouver, BC, May 1984.
- "National Conference on the Enforcement of Environmental Law" - Edmonton, AB, May 1984.
- "Consulting Skills Course" - ENR, Edmonton, AB, June 1984.
- "Water Safety and Small Vessels Course" - AFWD, Hinton, AB, June 1984.
- "IFIM Computer Based Physical Habitat Simulation System Course" - USFWS/CSU, Ft. Collins, CO, July 1984.
- "Applied Aquatic Workshop" - U of A/ENR, Edmonton, AB, February 1985.
- "Small Hydro Fisheries Conference" - AFS, Denver, CO, May 1985.
- "IFIM Stream Habitat Analysis as Applied to Water Management Course" - USFWS/CSU, Portland, OR, July 1985.
- "International Regulated Stream Symposium" - Edmonton, AB, August 1985.
- "IFIM SI Curve Development Workshop" - USFWS/CSU, Ft. Collins, CO, July 1986.
- "Firearms Course (Rifle, pistol, and shotgun)" - AFWD, Hinton, AB, July 1986.
- "Forestry/Wildlife Mitigation Workshop" - ENR, Hinton, AB, September 1986.
- "IFIM Advanced Hydraulics Course" - USFWS/CSU, Ft. Collins, CO, July 1988.
- "Sediment Issues Workshop" - Env. Can., Calgary, AB, September 1988.
- "Fish Hatchery Management Course" - AFWD, Calgary, AB, November 1988.
- "Dredging: Environmental Considerations Workshop" - Env. Can., Edmonton, AB, March 1989.
- "Rivers: Flowing to the Future Symposium" - Calgary, AB, May 1989.
- "Geophysical Activities on Lakes" - CPA/FLW, Rocky Mountain House, AB, May 1989.
- "Pulp and Paper: Environmental Concerns Conference" - Edmonton, AB, July 1989.
- "Dissolved Oxygen Objectives for Fish Workshop" - AE, Edmonton, AB, December 1989.
- "Water Conservation Workshop" - Edmonton, AB, March 1990.
- "IFIM Microcomputer Based Physical Habitat Simulation System Course" - USFWS/CSU, Logan, UT, July 1990.

- "Fish and Wildlife Guardian Course" - AFWD, Edmonton, AB, May 1991.
- "Water Quality Criteria for Fish Workshop" - AFWD, Calgary, AB, June 1991.
- "Alberta Irrigation Projects Association Conference" - Lethbridge, AB, November 1991.
- "Red Deer River Water Quality Workshop" - AE, Calgary, AB, December 1991.
- "Instream Flow Needs Workshop" - AFWD/AE, Edmonton, AB, April 1992.
- "Canadian Water Resources Conference - Is BC's Water for Sale?" -CWRA, Vancouver, BC, May 1992.
- "Alberta Water Resources Commission IFN Workshop" - Drumheller, AB, October 1992.
- "Water Quality Modelling Workshop" - AFWD, Edmonton, AB, January 1993.
- "Northern Rivers Basin Study - Water Quality Modelling Workshop" - Saskatoon, SK, March 1993.
- "NR561 - Habitat Evaluation Procedures Course" - USFWS, Hinton, AB, April 1993.
- "Canadian Water Resources Association Annual Conference" - CWRA, Banff, AB, June 1993.
- "Cows and Fish: Range Management Workshop" - AFWD, Blairmore, AB, August 1993.
- "Powerful Presentations Workshop" - AEP, Edmonton, AB, September 1993.
- "IFIM Workshop" - DFO, Winnipeg, MB, February 1994.
- "Videography Remote Sensing Workshop" - AEP, Calgary, AB, March 1994.
- "Partners: South Saskatchewan River Basin Workshop" - Saskatoon, SK, March 1994.
- "Bull Trout Conference" - BTTF/AFS, Calgary, AB, May 1994.
- "Pipeline Stream Crossing Workshop" - CAPP/DFO, Banff, AB, November 1994.
- "2-D Hydraulic Modelling Workshop" - DFO/U of A, Edmonton, AB, March 1995.
- "GPS Course" - Lethbridge Community College, Lethbridge, AB, May 1995.
- Alberta Irrigation Projects Association Annual Meeting" – Lethbridge, AB, November 1995.
- "Ecohydraulics 2000 – 2<sup>nd</sup> Int. Sym. on Habitat Hydraulics" – IAHR, Quebec City, PQ, – June 1996.
- "Advanced Fisheries Management Course" – FMD/LCC, Lethbridge, AB, June 1996.
- "2-D Hydraulic Modelling Workshop" - DFO/U of A, Edmonton, AB, January 1997.
- "Great Plains Fishery Workers Association Annual Meeting" – Bozeman, MT, February 1997.
- "Klamath River Basin IFN Methodology Assessment Workshop" - Redmond, WA, April 1997
- "2-D Hydraulic Modelling Workshop" - DFO/U of A, Cochrane, AB, February 1998.
- "Instream Flow Council Biennial Meeting" – IFC - Denver, CO, March 1998.
- "Bull Trout Management Workshop" – University of Calgary / AENV, Calgary, AB, April 1998.
- "Prairie Fish Habitat Management Workshop" – DFO/AB/SK/MN/ON, Hecla Island, MB, June 1998.

- "Hydropeaking Workshop" – AENV/TAU – Calgary, AB, June 1998.
- "Kananaskis River – Hydropeaking Workshop" – AENV/DFO/TAU/WSMG - Cochrane, AB, January 1999.
- "IFN Classification Workshop" – AENV/R2 Resource Consultants – Calgary, AB, March 1999.
- "Hydropower IFN Workshop" – BCMELP/DFO/BC Hydro – Vancouver, BC, June 1999.
- "3<sup>rd</sup> International Symposium on Ecohydraulics" – IAHR – Salt Lake City, UT, July 1999.
- "2D Hydraulic Modelling Workshop" – AENV/DFO/BC/SK/MN/ON – Edmonton, AB, March 2000.
- "Instream Flow Council Biennial Meeting" – IFC – Higgins Lake, MI, May 2000.
- "Habitat Suitability Criteria Workshop" – Bellingham, WA, October 2000.
- "Instream Flow Workshop" – DFO/Provinces – Burlington, ON, November 2000.
- "Habitat Suitability Criteria Workshop" – ASRD/DFO – Cochrane, AN, July 2001.
- "River 2-D Workshop" – USGS/UoA/ASRD – Ft. Collins, CO, October 2001.
- "Ice Safety Course" – ASRD – Pigeon Lake, AB, January 2002.
- "River 2-D Workshop" – USGS/IFC/ASRD – Shepherdstown, WV, March 2002.
- "Stream Crossing Workshop" – DFO/CAPP – Banff, AB, March 2002.
- "Instream Flow Council Biennial Meeting" – Crossnore, NC, May 2002.
- "River 2-D Workshop" – USGS/Oregon/IFC/ASRD – Portland, OR, July 2002.
- "River Ice Processes Workshop" – CEMA – Calgary, AB, December 2003.
- "Instream Flow Council Biennial Meeting" – Blue Mountain Lake, NY, June 2004.
- "Habitat Suitability Criteria Workshop" – CEMA – Edmonton, AB, December 2004.
- "Alberta's Environment Conference" - AENV - Edmonton, AB, April 2005.
- "Biology of Hawaiian Streams and Estuaries" - Hawaii DAR - Hilo, HI, April 2005.
- "Athabasca River IFN Workshop" - CEMA - Ft. McMurray, AB, May 2005.
- "South Saskatchewan River Basin Workshop" - AENV - Calgary, AB, May 2005.
- "Athabasca River HSC Workshop" - CEMA - Ft. McMurray, AB, September 2005.
- "Instream Flow Council HSC Workshop" - IFC - Cheyenne, WY, November 2005.
- "Instream Flow Needs Meso-Habitat Metric Determination Workshop" - CEMA - Ft. McMurray, AB, December 2005.
- "International Instream Flow Program Initiative Meeting" - IFC - Wickenburg, AZ, March 2006.
- "Prairie Provinces Board IFN Workshop" - PPWB - Calgary, AB, March 2006.
- "Instream Flow Council Biennial Meeting" - IFC - Parksville, BC, April 2006.
- "River 2D Modelling Course" - ASRD/UoA/USGS - Edmonton, AB, December 2006.



- "Fisheries Index Workshop" - ASRD - Nisku, AB, March 2007.
- "Athabasca River Canadian Science Advisory Secretariat Workshop" - CSAS/DFO - Winnipeg, MB, March 2007.
- "Athabasca River Monitoring Program Workshop" - CEMA - Calgary, AB, March 2007.
- "National DFO IFN Workshop" - DFO - Montreal, PQ, June 2007.
- "Resource Conflict Course" - ASRD - Hinton, AB, September 2007.
- "International Instream Flow Program Initiative Workshop" - IFC - Denver, CO, October 2007.
- "DFO Instream Flow Needs Workshop" - DFO - Calgary, AB, October 2007.
- "Athabasca River Research Needs Workshop" - DFO - Calgary, AB, October 2007.
- "National Sciences and Engineering Research Council of Canada Workshop" - NSERC - Ottawa, ON, November 2007.
- "River 2D Modelling Course" - OMNR/ASRD/USGS - Timmons, ON, March 2008.
- "Athabasca River Watershed Planning and Advisory Council Workshop" - AENV - Sherwood Park, AB, April 2008.
- "Flow 2008 Conference" – Instream Flow Council - San Antonio, TX, October 2008.
- "Water Allocation Transfer System Workshop" - AWRI/AWC - Calgary, AB, March 2009.
- "Athabasca River HSC Workshop" - ASRD/CEMA - Calgary, AB, April 2009.
- "Federal Parliamentary Committee Hearing on Water and the Oil Sands" - Federal Parliamentary Committee - Calgary, AB, May 2009.
- "Athabasca River Canadian Science Advisory Secretariat Workshop" - CSAS/DFO - Calgary, AB, June 2010.
- "Bow River Project Workshop" – Alberta WaterSMART – Calgary, AB, August 2010.
- "Bow River Project OASIS Modelling Workshop" – Alberta WaterSMART – Calgary, AB, September 2010.
- "Environmental Law Seminar" – University of Calgary – Calgary, AB, September 2010.
- "Bow River Project Environmental Assessment Modelling Workshop" – Alberta WaterSMART – Calgary, AB, October 2010.
- "Canadian Science-Policy Framework to Protect and Restore Environmental Flows Workshop" – WWF Canada – Ottawa, ON, November 2010.
- "Milk River Habitat Suitability Criteria Workshop" – MRWCC – Lethbridge, AB December 2010.
- "Development of a Water Exchange Research Workshop" – Alberta Innovates – Calgary, AB, February 2011.
- "Alberta Peace River Morphological and Habitat Changes Due to Regulation Workshop" – AENV, Edmonton, AB, March 2011.
- "FLOW 2011 Conference" - Instream Flow Council – Nashville, TN, May 2011.
- "Bow River Basin Science Seminar" – BRBC – Calgary, AB, May 2011.
- "Environmental Flows and BC's Proposed Water Sustainability Act Workshop" - WWF-Canada/ BC Ministry of Environment and the Ministry of Forests, Lands and Natural Resource Operations - Vancouver, BC, November 2011.

- "Canadian Science Advisory Secretariat Instream Flow Needs National Workshop" – CSAS/DFO – Montreal, QC, March 2012.
- "FLOW 2015 Conference" – Instream Flow Council – Portland, OR, April 2015.
- "Environmental Flows and Healthy Watersheds: Towards Protection in Canada and BC" – POLIS Webinar – October 2015.

### **OTHER SKILLS OR EXPERIENCE:**

- Member of the Quality Assurance / Quality Control IFN Methods Sub-Committee of the Instream Flow Council.
- Knowledge and practical experience with 1) Environmental Flow methods including the Instream Flow Incremental Methodology, 2) Habitat Evaluation Procedures, and 3) Water Quality Modelling.
- Extensive experience with microcomputers, commercial software and Environmental Flow related software including the PHABSIM and WINHABSIM models and the River 2D hydrodynamic model.
- Working knowledge of hydrological principles and hydraulic models.
- Technical referee for the Journal "Rivers".
- Guest lecturer for the course: Civil Engineering 502 - Impact Assessment for Engineers at the University of Alberta
- Served as President of the Instream Flow Council (2004-2006).
- Assistant instructor for River 2D Hydrodynamic Modelling courses.
- Co-author of the book "Instream Flows for Riverine Resource Stewardship - Revised Edition" published by the Instream Flow Council.
- Project co-ordinator and lead author for the book "Integrated Approaches to Riverine Resource Stewardship - Case Studies, Science, Law, People, and Policy" published by the Instream Flow Council.
- International peer reviewer of instream flow needs studies.

### **REPORTS**

- Hughes, G., and A.G.H. Locke. 1975. Waterfowl Production in the Rankin Resources Management Unit. North Grey and Sauble Valley Conservation Authority. Owen Sound, Ontario. 55pp.
- Hughes, G., and A.G.H. Locke. 1976. Waterfowl Production in the Rankin Resources Management Unit. North Grey and Sauble Valley Conservation Authority. Owen Sound, Ontario. 78pp.
- Harvey, H.H., A.G.H. Locke, and F.P. Maher. 1978. The Lakes of the Bruce Peninsula. Fisheries Branch, Division of Fish and Wildlife, Ministry of Natural Resources. Toronto, Ontario.
- Locke, A.G.H. 1979. Waterfowl Production Study on the Beaverton River and Uxbridge Brook, Regional Municipality of Durham, Ontario. South Lake Simcoe Conservation Authority. Newmarket, Ontario. 71pp.
- Locke, A.G.H. 1980. Wetlands - Recommendations and Policies: Report in response to "Wetlands in Southern Ontario: Conservation Authority Actions and Attitudes". South Lake Simcoe Conservation Authority. Newmarket, Ontario. 14pp.

- Locke, A.G.H. 1980. Environmental Impact of Highway De-Icing Salts. South Lake Simcoe Conservation Authority. Newmarket, Ontario. 30pp.
- Locke, A.G.H. 1980. Coldwater Stream Assessment of Vivian Creek. South Lake Simcoe Conservation Authority. Newmarket, Ontario. 26pp.
- Locke, A.G.H. 1981. Erosion and Water Management Study - Uxbridge Township. South Lake Simcoe Conservation Authority. Newmarket, Ontario. 73pp.
- Locke, A.G.H., and D. Rimmer. 1984. Lovett River Fisheries and Fisheries Habitat Assessment. Alberta Energy and Natural Resources. Edmonton, Alberta. 42pp.
- Fisher, G.L., A.G.H. Locke, and B.C. Northey. 1985. Stream Crossing Guidelines for Industry. Alberta Energy and Natural Resources. ENR Technical Report Number: T/80. Edmonton, Alberta. 52pp.
- Locke, A.G.H. 1985. Administration and use of the Habitat-Related Sections of the Federal Fisheries Act in Alberta: Workshop Proceedings. Alberta Energy and Natural Resources. Edmonton, Alberta. 134pp.
- Locke, A.G.H. 1986. IFIM - Microhabitat Criteria Development: Data Pooling Considerations. IN: Proceedings of a Workshop on the Development and Evaluation of Habitat Suitability Criteria. K. Bovee and J.R. Zuboy, Eds. U.S. Fish and Wildlife Service. Biological Rep. 88(11). pp. 31-54.
- Locke, A.G.H., and D. Snider. 1987. Stream Crossing Guidelines for Alberta Transportation Projects. Alberta Forestry, Lands, and Wildlife, Alberta Transportation. Edmonton, Alberta. 22pp.
- Locke, A.G.H. 1987. Microhabitat Utilization and Preference Curve Development for Rainbow Trout Fry in four creeks in southwestern Alberta. Alberta Forestry, Lands, and Wildlife. Pub. No.: T/143. Edmonton, Alberta. 52pp.
- Locke, A.G.H. 1987. Highwood River - Instream Flow Needs for Fish: The Position of the Fish and Wildlife Division. Alberta Forestry, Lands, and Wildlife. Edmonton, Alberta. 25pp.
- Locke, A.G.H. 1988. Oldman River Dam - Operational Planning Phase II: Minimum Flow Values for Fish and Modelling Run Evaluations. Alberta Forestry, Lands, and Wildlife. Edmonton, Alberta. 13pp.
- Locke, A.G.H. 1988. Sheep River Instream Flow Needs Study. Alberta Forestry, Lands, and Wildlife. Pub. No.: T/162. Edmonton, Alberta. 143pp.
- Locke, A.G.H. 1989. The Sampling of Water, Soils, and Collection of Biological Samples to Analyze Suspected Pollutants. Alberta Forestry, Lands, and Wildlife. Edmonton, Alberta. 26pp.
- Locke, A.G.H. 1989. Sediment Issues - Concerns of the Fish and Wildlife Division. IN: Proceedings of the Alberta Sediment Issues Workshop: September 27-28, 1988, Calgary, Alberta. T.R. Yuzyk and N.F.R. Chapin, eds. Environment Canada. Calgary, Alberta. pp. 98-105.
- Locke, A.G.H. 1989. Instream Flow Requirements for Fish in the Highwood River. Alberta Forestry, Lands, and Wildlife. Pub. No.: T/211. Edmonton, Alberta. 100pp.
- Locke, A.G.H. 1991. Minimum Instream Flow Values for Fish and Proposed Water Balance Modelling Evaluation Criteria for the Peace River in Alberta. Alberta Fish and Wildlife Division. Edmonton, Alberta. 27pp.
- Katopodis, K., A.G.H. Locke, and D. Snider. 1992. Fish Passage Culvert Guidelines. Alberta Forestry, Lands, and Wildlife, Alberta Transportation, and Department of Fisheries and Oceans. Edmonton, Alberta.
- Locke, A.G.H. 1994. The Highwood River: Instream Flow Needs for Fish and Flow Scenario Evaluations. Alberta Fish and Wildlife Services. Pub. No.: T/280. ISBN: 0-7732-0920-4. Edmonton, Alberta. 108pp.
- Locke, A.G.H. 1996. Recommending Variable Flow Values for Fish. IN: Proceedings of the Ecohydraulics 2000 – 2<sup>nd</sup> International Symposium on Habitat Hydraulics June 1996, Quebec City, Quebec. Leclerc M., Capra H., Valentin S., Boudreault A. and Y. Cote, eds. Institut National de la Recherche Scientifique. Quebec, 1996. pp. 559-570.

- Waddle, T., Ghanem, A., Steffler, P., Katopodis, C. and A.G.H. Locke. 1996. Comparison of One and Two-Dimensional Hydrodynamic Models for a Small Habitat Stream. Addendum to IN: Proceedings of the Ecohydraulics 2000 – 2<sup>nd</sup> International Symposium on Habitat Hydraulics June 1996, Quebec City, Quebec. Leclerc M., Capra H., Valentin S., Boudreault A. and Y. Cote, eds. Institut National de la Recherche Scientifique. Quebec, 1996.
- Locke, A.G.H. 2000. Instream Flow Needs in Alberta – The Good, the Bad, and the Ugly. IN: Proceedings of the 1998 Prairie Fish Habitat Management Workshop. – Can. MS. Rep. Fish. Aquatic. Sci. 2522: ix +155p. Chang-Kue, K.T.J., ed.
- Waddle, T.J., P. Steffler, A. Ghanem, C. Katopodis, and A. Locke. 2000. Comparison of one and two-dimensional open channel flow models for a small habitat stream. *Rivers* 7(3): 205-220.
- Clipperton, G.K., R.F. Courtney, T.S. Hardin, A.G.H. Locke, and G.L. Walder. 2002. Highwood River instream flow needs technical working group final report. Alberta Transportation, Edmonton.
- Annear, T.C., I. Chisholm, H. Beecher, A. Locke, and 12 other authors. 2002. Instream flows for riverine resource stewardship. Published by the Instream Flow Council, Cheyenne, WY. 411pp.
- Clipperton, G.K., C.W. Koning, A.G.H. Locke, J.M. Mahoney, and B. Quazi. 2003. Instream Flow Needs Determinations for the South Saskatchewan River Basin, Alberta, Canada. Alberta Environment and Alberta Sustainable Resource Development, Pub No. T/719, Calgary, Alberta. 271pp. + App.
- Annear, T.C., I. Chisholm, H. Beecher, A. Locke, and 12 other authors. 2004. Instream flows for riverine resource stewardship, Revised Edition. Published by the Instream Flow Council, Cheyenne, WY. 268pp.
- Locke, A. 2007. A Template for Conducting Ecosystem-Based Instream Flow Needs Studies. IN: Proceedings of the Symposium on the Biology of Hawaiian Streams and Estuaries - April 2005, Hilo, Hawaii. Evenhuis, N.L. and J.M. Fitzsimons, eds. Bishop Museum Bulletin in Cultural and Environmental Studies 3, Bishop Museum Press, Honolulu, 2007. 334pp.
- Cichra, C.E., C.N. Dahm, A. Locke, D.T. Shaw and M. Stewart. 2007. A Review of "Proposed Minimum Flows and Levels for the Upper Segment of the Hillsborough River, from Crystal Springs to Morris Bridge, and Crystal Springs". Prepared for the Ecological Evaluation Section, Resource Conservation and Development Department, Southwest Florida Water Management District. 37pp.
- Cichra, C.E., C.N. Dahm and A. Locke. 2007. A Review of "Proposed Minimum Flows and Levels for the Upper Segment of the Braden River, from Linger Lodge to Lorraine Road". Prepared for the Ecological Evaluation Section, Resource Conservation and Development Department, Southwest Florida Water Management District. 25pp.
- Locke, A., C. Stalnaker, S. Zellmer, K. Williams, H. Beecher, T. Richards, C. Robertson, A. Wald, A. Paul and T. Annear. 2008. Integrated Approaches to Riverine Resource Management: Case Studies, Science, Law, People, and Policy. Instream Flow Council, Cheyenne, WY. 430pp.
- Paul, A. and A. Locke. 2009. Evaluation Criteria for Flow Alterations in the Lower Athabasca River – Abundance and Diversity of Mesohabitat. Prepared for the Instream Flow Needs Technical Task Group of the Surface Water Working Group, CEMA.
- Paul, A. and A. Locke. 2009. Evaluation Criteria for Flow Alterations in the Lower Athabasca River – Fish Habitat. Prepared for the Instream Flow Needs Technical Task Group of the Surface Water Working Group, CEMA.
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