



IAN TENHAAF, P.ENG.

PRINCIPLE ENGINEER
ASSET MANAGEMENT SPECIALIST

PROFILE

Mr. Tenhaaf is recognized as an expert in Atlantic Canada for integrating engineering and asset management to create sustainable infrastructure solutions. With eight years of experience across public, research, and private sectors, he has focused on enhancing community resilience through practical infrastructure and strategic planning. His work aims to equip communities with the tools to navigate challenges and seize opportunities, fostering long-term sustainability amid an uncertain future.

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PROJECT EXPERIENCE

CLIMATE-READY ASSET MANAGEMENT PLANNING IN INDIGENOUS COMMUNITIES

FEDERATION OF CANADIAN MUNICIPALITIES, ATLANTIC: ONGOING

As an AIM Network service provider, I support the Climate-Ready Asset Management Planning in Indigenous Communities initiative, a collaborative effort with the Nunatsiavut Government to integrate climate resilience into infrastructure planning for Inuit communities in Newfoundland and Labrador. Funded under, FCM's Local Leadership for Climate Adaptation, this project is designed to align with Indigenous governance structures and traditional knowledge while strengthening local capacity to manage climate risks.

Working alongside Indigenous leaders, municipal staff, and technical experts, I help adapt existing asset management tools to reflect Inuit values and service delivery needs. This includes facilitating risk assessments, developing climate-ready capital plans, and ensuring decision-making processes are guided by the Etuaptmuk (Two-Eyed Seeing) approach, which blends Indigenous and Western knowledge. By collaborating with organizations such as CLIMAtlantic and Stride Projects, we are ensuring that infrastructure investments align with long-term community resilience and self-determination, helping Inuit Community Governments prioritize and manage resources effectively.

EQUITABLE CLIMATE ADAPTATION FOR MUNICIPAL SERVICES AND INFRASTRUCTURE

FEDERATION OF CANADIAN MUNICIPALITIES, ATLANTIC: ONGOING

As an AIM Network service provider, I contribute to the Equitable Climate Adaptation for Municipal Services and Infrastructure initiative, a collaborative effort to support municipalities in integrating climate adaptation and equity considerations into long-term service planning. Funded under, FCM's Local Leadership for Climate Adaptation, this project is uniquely designed in partnership with non-profits, consultants, and academic institutions, including the Transition Bridges Project, New Brunswick Environmental Network, We6 Planning Group, Caprivian Strip equity consultants, and Saint Mary's University's TransCoastal Adaptations Centre.

My role focuses on providing technical guidance for municipalities to incorporate climate resilience and social equity into asset management strategies. This includes developing training workshops, facilitating risk assessments, and supporting municipalities in scoping adaptation projects with a strong financial and equity lens. By working alongside specialists in planning, social justice, and environmental advocacy, I help municipalities navigate complex decision-making processes that balance infrastructure priorities with community needs. This partnership-driven

approach ensures that climate adaptation efforts are practical, inclusive, and financially sustainable for Atlantic Canadian communities.

RESILIENCY THROUGH LONG-TERM SERVICE DELIVERY PLANNING

NATURAL RESOURCES CANADA, ATLANTIC: ONGOING

As an Asset Management Specialist with AIM Network, I play a key role in the Climate-Resilient Coastal Communities Program (2023–2028), a multidisciplinary initiative that brings together municipalities and non-profits to integrate climate adaptation into long-term service delivery planning. Funder under NRCAN's Climate-Resilient Coastal Communities Program, this project is uniquely collaborative, leveraging expertise from organizations such as Transition Bridges Project, New Brunswick Environmental Network (NBEN), Saint Mary's University TransCoastal Adaptations Centre, and We6 Planning Group. Together, we support municipalities in identifying infrastructure vulnerabilities, conducting climate risk assessments, and developing sustainable capital planning strategies.

My role includes overseeing climate vulnerability assessments, incorporating lifecycle costs into municipal capital plans, and advising on financial strategies that align adaptation efforts with municipal budget constraints. Through close collaboration with planning, environmental, and mediation specialists, I help municipalities navigate complex decisions, balancing adaptation investments with existing infrastructure priorities. This partnership-driven approach ensures that local governments benefit from a diverse range of expertise, making adaptation planning more inclusive, actionable, and financially viable for coastal communities.

VILLAGE ASSET MANAGEMENT AND CAPACITY STUDY

COUNTY OF KINGS, NS: ONGOING

As an AIM Network service provider, I support the Village Asset Management and Capacity Study, a project aimed at supporting the 7 villages in the County of Kings, align with regional infrastructure planning to foster long-term infrastructure sustainability. This initiative focuses on regional cooperation, capital planning, and financing strategies to ensure equitable, cost-effective service provision.

Working closely with municipal and village representatives, I provide technical guidance on asset inventory development, condition assessments, risk analysis, and capital financing strategies. The project integrates asset management principles with financial modeling to develop a sustainable funding framework that considers population growth, infrastructure demands, and service level expectations. By incorporating regional collaboration and public engagement, this study supports a forward-thinking approach to intermunicipal service delivery, ensuring long-term resilience and efficiency in local governance.

ASSET MANAGEMENT PROGRAM

TOWN OF COW HEAD, NL: ONGOING

As an AIM Network service provider, developed an asset management program for the Town of Cow Head. This included; data collection, policy development, level of service assessments, risk assessments, and capital planning.

ASSET MANAGEMENT PROGRAM

TOWN OF BURNT ISLANDS, NL: ONGOING

As an AIM Network service provider, developed an asset management program for the Town of Burnt Islands. This included; data collection, policy development, level of service assessments, risk assessments, capital planning, and public engagement materials.

ORGANIZATIONAL STRATEGIC DOCUMENTS

CITY OF MONCTON, NB: 2024

As an AIM Network service provider, Contributed to the Moncton Strategic Documents initiative, supporting the integration of asset management principles into infrastructure planning and service delivery across all departments. Developed an Asset Management Strategy, including a roadmap, key performance indicators, and a five-year capital priorities report. Conducted Level of Service Assessments to define customer and technical service expectations. Assisted in operationalizing asset management by developing risk and condition assessment policies, strategic operating procedures, and recommendations for service integration. Ensured a structured, sustainable framework for long-term municipal decision-making.

ASSET MANAGEMENT PROGRAM

TOWN OF DRAYTON VALLEY, AB: 2024

As an AIM Network service provider, developed an asset management program for the Town of Drayton Valley. This included; data collection, policy development, level of service assessments, risk assessments, PSD City Wide Integration, and capital planning.

ASSET MANAGEMENT PROGRAM

CUMBERLAND COUNTY, NS: 2023-2024

As an AIM Network service provider, developed an asset management program for the County of Cumberland. This included; data collection, policy development, level of service assessments, risk assessments, capital planning, and public engagement materials.

FLOOD RISK ASSESSMENT & ADAPTATION CONCEPTS

TOWN OF ANNAPOLIS ROYAL, NS: 2023

As an AIM Network service provider, contributed to the Annapolis Royal Flood Risk Assessment and Adaptation Concepts, supporting the Town in evaluating climate adaptation strategies to mitigate coastal flood risk. This project utilized a PIEVC (Public Infrastructure Engineering Vulnerability Committee) risk assessment, integrating risk-based decision-making, cost-benefit analysis, and adaptation pathways to help the municipality balance infrastructure protection with financial sustainability.

Assisted in assessing flood risk scenarios using projections from the Intergovernmental Panel on Climate Change (IPCC) AR6, evaluating options such as seawalls, storm barriers, and shoreline restoration. The assessment was fully integrated with the Town's asset management program, analyzing the financial impact of climate adaptation on the sustainability of other municipal assets and services. Provided technical guidance on capital financing strategies, asset management integration, and emergency planning to ensure practical, long-term resilience solutions. The project also featured a highly successful public engagement process, with strong community participation across multiple events, ensuring adaptation measures aligned with local priorities and long-term municipal planning.

ASSET RETIREMENT OBLIGATIONS

VARIOUS, NS: 2023

As an AIM Network service provider, supported municipalities in aligning with Public Sector Accounting Board (PSAB) standards for Asset Retirement Obligations (AROs), ensuring compliance while integrating projected retirement costs into long-term asset management financing plans. Assisted in identifying, quantifying, and forecasting ARO liabilities, helping municipalities incorporate these costs into capital planning and financial strategies.

Worked closely with municipal staff to develop practical approaches for tracking, budgeting, and mitigating financial risks associated with asset decommissioning. Ensured that ARO considerations were embedded within broader asset management frameworks, allowing municipalities to make informed, proactive financial decisions while maintaining service sustainability.

PROVINCIAL ASSET MANAGEMENT TOOLKIT UPDATES

DEPARTMENT OF MUNICIPAL AFFAIRS, NL: 2022

As an AIM Network service provider, supported updates to the Provincial Asset Management Toolkit comprising of a excel-based database for fleet, facility, fixed, and linear infrastructure including cost-estimates, risk management and capital reporting tools. Focusing on updates to the series of guidance documentation to educate municipal staff on the basic Asset Management principles and how they are incorporated in the software. The Toolkit must provide value to communities such as St. John's with large population of over 100,000 while being approachable to small communities of under 100 people with only part-time staff

COUNTY AMALGAMATION "CLEAR THE DECK"

CUMBERLAND COUNTY, NS: 2022

Cumberland County amalgamated Springhill (2015), and Parrsboro (2016). After amalgamation there was a lack of consistent service delivery and policy in the county. Responsible for the creation of isochrone maps to evaluate public works facilities service areas to determine redundancies and gaps.

MAMP DIRECT FUNDING

FEDERATION OF CANADIAN MUNICIPALITIES, ATLANTIC: 2022-2024

As an AIM Network service provider, supported municipalities across Atlantic Canada in developing and enhancing their Asset Management Programs through the Municipal Asset Management Program (MAMP), delivered by the Federation of Canadian Municipalities. This work involved developing or updating asset management programs and delivering training to municipal staff, helping them build capacity to maintain and utilize asset management systems effectively.

The scope typically included data collection, policy development, level of service assessments, risk assessments, capital planning, and public engagement strategies. Municipalities served included the Towns of Clare, Kentville, Oxford, Annapolis Royal, New Glasgow, Digby, Stellarton, Berwick, Rose Blanche, Ilse Aux Morts, Massey Drive, Pasadena, Trepassey, Jackson's Arm, and Tracadie-Sheila, and Trinity Bay North; the Districts of Shelburne, Digby, and Yarmouth,; as well as Kings County, Annapolis County, and the Municipality of New-Wes-Valley.

MAMP COURSE DEVELOPMENT

FEDERATION OF CANADIAN MUNICIPALITIES, ATLANTIC: 2022-2024

Acting as an AIM Network service provider through the Municipal Asset Management Program (MAMP), delivered by the Federation of Canadian Municipalities and funded by the Government of Canada, I supported the development of asynchronous training modules to build asset management capacity across Atlantic Canada. These courses cover key topics, including Policy and Roadmaps, Levels of Service, Risk Management, Data Management, and Capital Planning, providing municipalities with practical tools to strengthen their asset management practices.

MAMP CLIMATE SUMMITS

FEDERATION OF CANADIAN MUNICIPALITIES, ATLANTIC: 2022-2024

Acting as an AIM Network service provider through the Municipal Asset Management Program (MAMP), delivered by the Federation of Canadian Municipalities and funded by the Government of Canada, supported the coordination of five cohorts across Atlantic Canada to engage municipalities and the public on climate risks affecting their communities. Performed multiple PIEVC High-Level Risk Screenings to assess and prioritize climate risks, helping municipalities build a strong foundation for securing future grant funding for implementation.

HYDROTECHNICAL ASSESSMENTS – SK

DEPARTMENT OF NATIONAL DEFENCE, SK: 2023

Sub-contracted by EastPoint Engineering Ltd, for the hydrotechnical assessments and channel realignment for bridge and culvert crossings on Department of National Defense land, including projects at Wood's Bridge, Johnson's Creek, and Flagpole Trail. Utilized GIS for catchment analysis, stream gauge transpositions for hydraulic calculations, and HEC-RAS 2D or HY-8 for hydraulic design. Designed structures with considerations for fish passage and climate change.

OFFSETTING HYDROLOGICAL ASSESSMENTS – NS

MCCALLUM ENVIRONMENTAL LTD., NS: 2023

Sub-contracted by McCallum Environmental Ltd. to conduct hydrological assessments for mine land compensation projects at Gay's River, Cove Road, and Gulley Brook. Reports provided the basis for earthworks design to restore pre-development flow patterns and re-naturalization of retired agricultural lands. Designs included main channel restoration, pond creation, and fish passage to meet mining offsetting requirements.

GO EXPANSION PROJECTS – ON CORRIDOR

METRO LINX, ON: 2020 – 2022

While employed with Hatch Ltd., served as the lead project coordinator and designer for the drainage team during the bid phase of 114 km of track realignment, double tracking, and new station construction in the Greater Toronto Area. Runoff management was designed to achieve net-zero impact, maintain existing flow paths, and minimize service interruptions within a constrained right-of-way featuring multiple at-grade crossings, overpasses, and underpasses. Large portions of the corridor fell within floodplains and protected watersheds. Ranked #1 on ReNew Canada's Top 100 Projects for 2021.

PATTULLO BRIDGE REPLACEMENT

TRANSPORTATION INVESTMENT CORPORATION, BC: 2020 – 2022

While employed with Hatch, was responsible for urban stormwater design for new 4-lane Pattullo bridge and interchange re-alignment within the City of New Westminster and Surrey. The site consisted of complex highway interchanges, bridge deck, multi-use path, including tunnels and overpasses are included in the design. The bridge is designed to have 4-lanes with Multi-use paths (MUPs) on opening day and allow for future expansion to 6-lanes with MUP using a cantilevered design. Ranked 45th on ReNew Canada's Top 100 projects for 2021.

WASTEWATER TREATMENT PLANT ROOF ASSET MANAGEMENT PLAN

CITY OF WINNIPEG, MB: 2020 – 2022

While employed with Hatch, acted as the Asset Management specialist, focusing on existing information review and preliminary development of a data-base to create an Asset Management Program in alignment with City Policies and project needs. Performed a detailed reviewing of Capital project cost estimation by performing a historical bid review of local and regional work, RSMeans, and local trusted suppliers/contractors.

ASSET MANAGEMENT STANDARD OPERATING PROCEDURE,

WINDSOR-WEST HANTS, NS: 2020

While employed with Hatch, Project coordinator responsible for development of Standard-Operating-Procedure in alignment with the Province of Nova Scotia's Infrastructure Registry and the Town's Asset Management Roadmap to provide capacity building towards self-sufficient Asset Management within the Town.

CULVERT REPLACEMENT PROGRAM, NS:

ONTARIO NORTHLAND RAIL, ON: 2020

While employed with Hatch, was responsible for the analysis, design and tendering services for five culverts remotely located in northern Ontario. Designs limited the shutdown period of the rail to mitigate impacts to operations by slip-lining or pipe-jacking. Outlet pools for fish passage were designed and installed at multiple crossings.

PROVINCIAL ASSET MANAGEMENT TOOLKIT:

DEPARTMENT OF MUNICIPAL AFFAIRS, NL: 2019 – 2021

Mr. Tenhaaf was the Project Coordinator and Lead Software Developer for development of Provincial Asset Management Toolkit comprising of a excel-based database for fleet, facility, fixed, and linear infrastructure including cost-estimates, risk management and capital reporting tools. He also produced series of guidance documentation to educate municipal staff on the basic Asset Management principles and how they are incorporated in the software.

TŁCHQ ALL SEASON ROAD,

GOVERNMENT OF NORTHWEST TERRITORIES: 2019 - 2021

While employed with Hatch Ltd., acted as the lead project coordinator and junior engineer for the drainage team on a 97 km all-season gravel highway connecting Yellowknife to the Indigenous community of Whatì. The road replaced an unreliable ice road, addressing long-term climate change risks such as increased precipitation, permafrost degradation, forest fire exposure, and culvert settlement. Designed 133 culverts to ensure a 75-year useful life, accommodating fish passage and extreme environmental conditions. Limited historical gauge and elevation data added complexity to hydrotechnical modeling. Winner of the Gold Project Development Award (2019 National Awards for Innovation and Excellence in Public-Private Partnerships) and ranked #97 on ReNew Canada's Top 100 Projects for 2021.

ASSET MANAGEMENT SERVICES:

TOWN OF STRATFORD, PE: 2019 - 2020

While employed with Hatch, was the Project Manager responsible for providing infrastructure data processing, risk management analysis and financial reporting for all Town services to be utilized by Town staff for long term capital planning. I held a workshop with multiple members of Town staff to review the results of the project and methodology to provide capacity building within the organization.

TRACK TWINNING

CANADIAN PACIFIC RAILWAY, SK & AB: 2019-2021

While employed with Hatch, was responsible for the analysis and design of culverts at numerous project sites remotely located in Saskatchewan and Alberta. Designs limited the shutdown period of the rail to mitigate impacts to operations by slip-lining, pipe-jacking, or culvert extensions to support the twinning of tracks. Crossings were designed to ensure there was an acceptable capacity for the design storm and that project works did not negatively impact existing drainage patterns.

TRACK TWINNING AND EXTENSIONS

CANADIAN NATIONAL RAIL, BC: 2018-2020

While employed with Hatch, was responsible for the analysis and design of culverts at numerous project sites remotely located in British Columbia. Designs limited the shutdown period of the rail to mitigate impacts to operations by slip-lining, pipe-jacking, or culvert extensions to support the twinning of tracks. Crossings were designed to ensure there was an acceptable capacity for the design storm and that project works did not negatively impact existing drainage patterns.

CCTV RISK MAPPING

TOWN OF SHELBURNE & TOWN OF LOCKEPORT, NS: 2018 - 2019

While employed with Hatch, Project Manager responsible for leading discussions with Town staff in defining consequence of failure to their storm water infrastructure. Risk was assigned to their infrastructure based on subjective condition assessments relating to the age of infrastructure and expected degradation curve according to their material. Developed risk management tools and heat maps for the existing Provincial asset management toolkit analyzing risk tolerance and the effect of long-term capital planning. High risk assets were selected for CCTV investigation to reduce the cost of inspection. Prepared tender documents for the work, performed bid analysis and a recommendation for award. I managed the contractor in the field and performed quality control on the data submitted. The infrastructure database and capital planning were updated to reflect the more accurate condition assessments.

ROSELY ROAD BRIDGE REPLACEMENT

HALIFAX WATER, NS: 2018-2019

While employed with Hatch, responsible for the hydraulic design of a single span concrete bridge utilizing HEC-RAS 2D.

BAYSIDE TRAVEL CENTER,

PAQ'TNKEK MI'KMAW NATION, NS: 2017 – 2019

While employed with Hatch, provided project support for construction of 16,000 ft² multi-business development along Nova Scotia Highway 104 owned and operated by Paq'tnkek Mi'kmaw Nation. Assisted in the preparation of site grading tender and performed sight surveys utilizing RTK GPS survey equipment for design and quantities.

DATA COLLECTION PILOT

DEPARTMENT OF MUNICIPAL AFFAIRS, NS: 2017 - 19

While employed with Hatch, responsible for the development of an opensource excel based Asset Management data collection and reporting Tool integrated with GIS using visual basic and excel functions to automatically generate state of infrastructure condition and asset summary reports. The Tool, now adapted as the AIMCap Inventory Tool, was intended to follow ISO 55000 and guidelines set by Infrastructure Canada and FCM to provide effective long-term planning resources for small to medium-sized municipalities with a low barrier to entry to allow wide reaching adoption.

Created a Standard Operating Procedure and Visual Non-intrusive Condition Assessment Guide in addition to the Tool. The condition assessment guide was developed in consultation with relevant subject matter experts within Hatch for municipal infrastructure and facilities. Additional roles on the project included quality control of infrastructure data submitted by sub-consultants, software demonstrations to the client, determining expected useful life, unit prices and degradation curves of all infrastructure managed within the software.

This second phase of the pilot program focused on working with neighboring communities who share responsibility for multiple pieces of infrastructure and have separately managed infrastructure that is dependent on the others.

WATER LOSS CONTROL PROGRAM

TOWN OF PORTUGAL COVE-ST. PHILIPS, NL: 2017 - 2018

While employed with Hatch, responsible for the development of water loss control program. The program outlined recommendations on risk-based inspection programs, inspection methods, customer metering, zone metering, implementation of new PRVs and booster pumps. To inform the report, a water model for the Township's full network was created within Bentley Water Gems calibrated through pressure readings at PRVs and various hydrants.

VOLUNTEER EXPERIENCE

AIM NETWORK TECHNICAL COMMITTEE

CHAIR: 2025 - PRESENT

Holds a volunteer position on the AIM Network Technical Committee as Chair, overseeing the management, development, and strategic direction of AIM Network's suite of asset management tools used by municipalities across Canada. Responsibilities include version control, release management, bug tracking, and ensuring tool accessibility. Facilitates collaboration among municipal staff, consultants, and technical experts to identify practitioner needs, prioritize improvements, and pursue funding opportunities for tool development. Works to retain knowledge from completed projects, remove barriers to tool adoption, and integrate best practices into municipal asset management workflows.

AIM NETWORK CONFERENCE PLANNING COMMITTEE

TECHNICAL CHAIR: 2017 - PRESENT

Holds a volunteer position on the AIM Network Conference Planning Committee as Chair of the technical planning committee. He is responsible for developing a robust conference program providing beneficial knowledge to take home for municipalities of all sizes and stages of the asset management process.