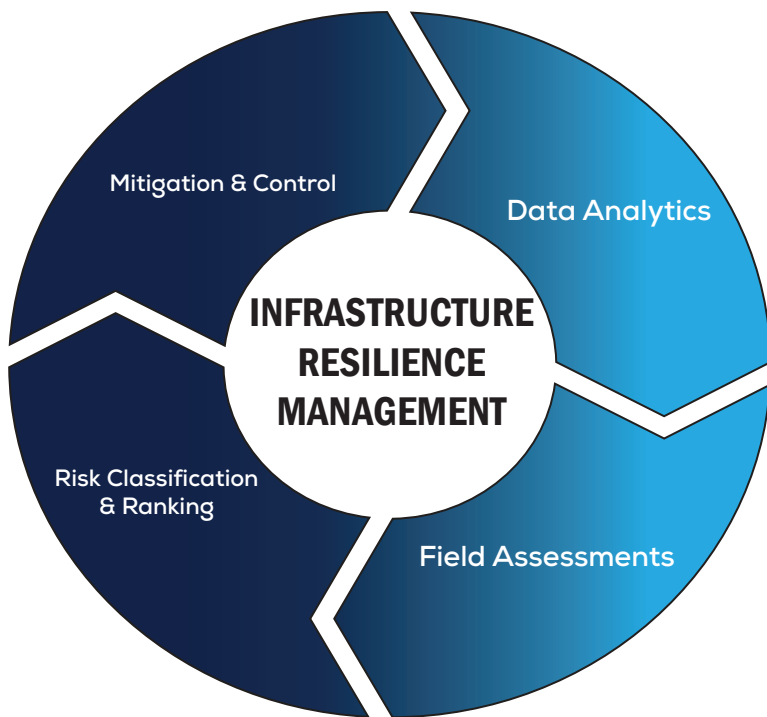


IMPROVING INFRASTRUCTURE RESILIENCE TO CLIMATE CHANGE



VERTEX BENEFITS



- Identification of Pre-failure Features and Conditions to Mitigate Geotechnical Failures
- Ensure Compliance with AER Bulletin 2019-28, BC OGC Compliance Assurance Protocol IMP for Pipelines and CSA Z662-19 Annex N
- Increased Safety by Reduction of Field Visits and Miles Travelled
- Elevated ESG Profile with Digital Reporting Tools
- Data Solutions to Complement Existing Integrity Systems
- Asset Protection through Managed Maintenance
- Reduced Interface Costs of Multi-Disciplinary/Multi-Service Solutions

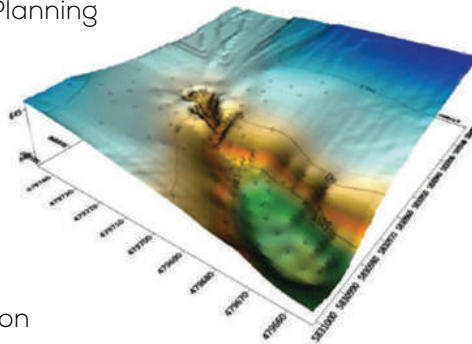
Vertex is a leader in the Infrastructure Resilience space. We support our clients in maximizing their infrastructure resilience to climate change by providing proactive solutions to managing their asset risk. By leveraging our extensive geographical and execution experience, Vertex provides proactive, timely, and responsive solutions to our clients throughout the lifecycle of their assets.

INFRASTRUCTURE RESILIENCE MANAGEMENT



Data Analytics

- Review of Public Data Sources with application of custom algorithm to identify high geohazard risk locations
- Collection and Review of Aerial Survey Data, Satellite Imagery and Lidar Data
- Hazard Execution Strategy: Identification & Quantification
- Cost Estimates and Program Planning



Field Assessments

- Aerial Survey (UAV) Coordination
- Field Data Collection with Engineering Oversight
- Depth of Cover Measurements and Soil Sampling
- Obtain Landowner Access Permission
- Electronic Field Tracking App for Georeferenced Data & Management
- Mappable Metadata Compatible with Client Software

Risk Classification & Ranking

- Review of Public Data Sources with application of custom algorithm to identify high geohazard risk locations
- Collection and Review of Aerial Survey Data, Satellite Imagery and Lidar Data
- Hazard Execution Strategy: Identification & Quantification
- Cost Estimates and Program Planning

Mitigation & Control

- Mitigation Program Design and Support
- Instrumentation Program Design and Execution
- Erosion and Sediment Control Program Design and Execution
- Site Construction Management & Cost Tracking

Detailed Geotechnical Field Investigation

- Subsurface Investigation Programs
- Detailed Investigation Design
- Borehole Site Selection
- Contract & Services Procurement
- Obtained Drilling Permits, TFAs & Road Use Agreements
- Coordinate & Manage Drilling Services
- Soil Stratigraphy Evaluation
- Pipeline Thalweg Measurements
- Groundwater Monitoring
- Laboratory Testing Selection & Analysis
- Project management & Cost Tracking
- Geotechnical Evaluation Reporting & Recommendations