Indigenous Cohort Environmental Training Program Case Study:

“Ridgeline Land & Water Indigenous Cohort Program”

Ridgeline Canada and Northern Lights College

Presenters: Jay Woosaree & Shellie English

Co-Authors: Tyler Heathcote & Brad Shybunka

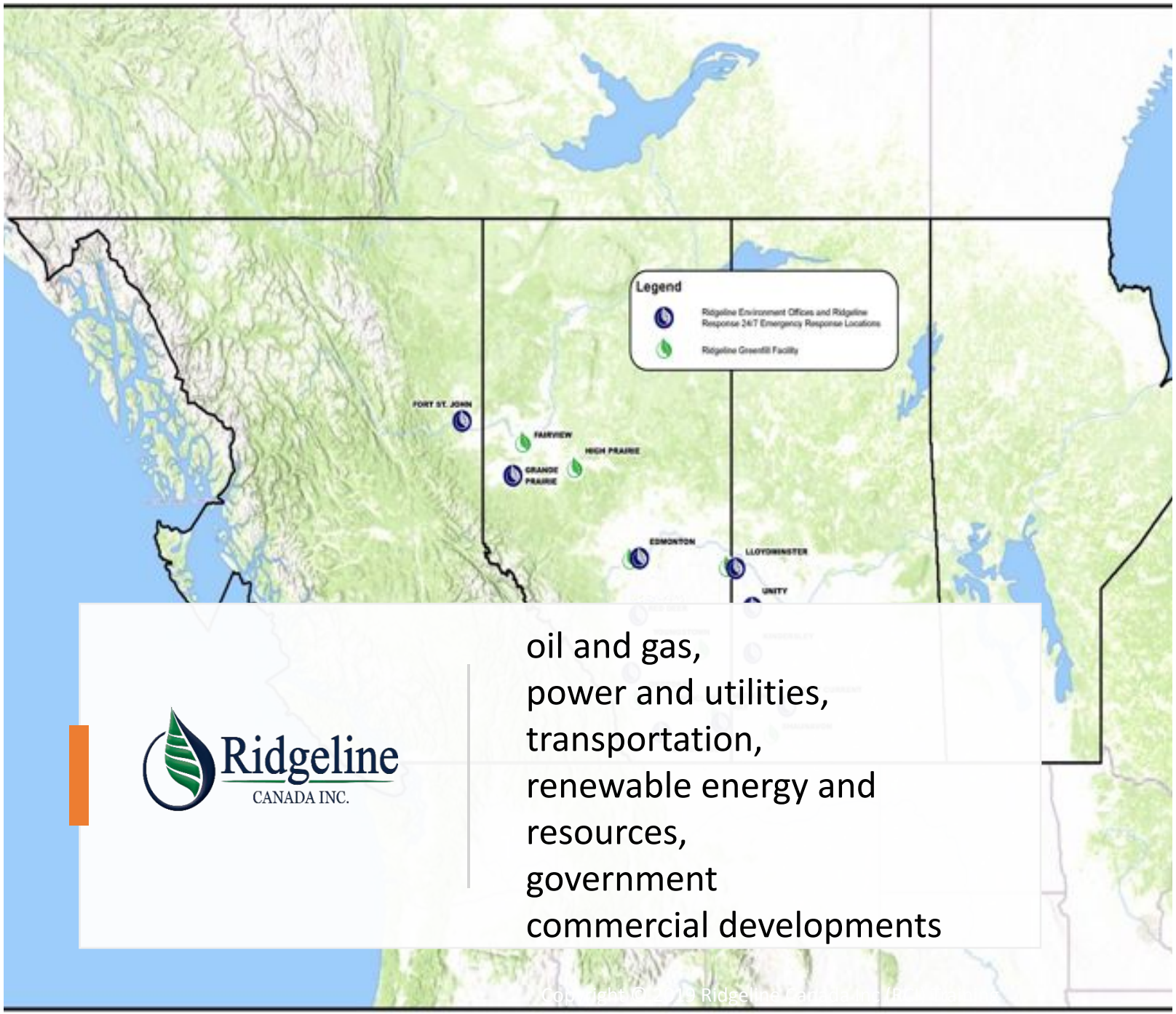
Jay Woosaree & Shellie English

Presentation Outline

- Who was involved?
- What is the rationale for the program & why is it different?
- How was it delivered?
- Results and Learnings?
- What is being done differently going forward?
- Q&A

Who was involved in the Ridgeline Land & Water Indigenous Cohort Program?

- Ridgeline Canada
- Northern Lights College
- Producer Advisory Group (7 mid and upstream)
- Fort Nelson First Nation
- BC OGC and BC Government Ministry of Education
- 24 Students from 13 Indigenous Communities across Northern BC



Ridgeline
CANADA INC.

oil and gas,
power and utilities,
transportation,
renewable energy and resources,
government
commercial developments

Northern Lights College

- BC's Energy College™, serving northern British Columbia.

- The Land and Water Resources (LWR) Diploma
  - Prepares students to be employable & skilled to conserve and restore disturbed land and riparian zones, as well as monitor water quality and quantity in forested and agricultural settings

  - Transferable credits to degree programs in Canada



Rationale for the Program

Ridgeline Canada wanted to invest in a sustainable capacity building program to build prosperity through collaboration for Indigenous People in the region and meet increasing operational demands in environmental industry



Rationale for Program

- Build technically skilled capacity for Indigenous students of diverse academic and work backgrounds.
- To earn post secondary education credits that create a ladder into a diploma or degree in different schools
- Equip students with fundamental scientific knowledge consistent with industry terminology & learning outcomes and identify commonality to Traditional Knowledge

How was this program different?

- Steering committee of multiple producers representing the needs and asks from multiple communities vs. one producer or one community

- Hosted theory online through an academic institution for long term adaptive management vs. a private training program for short term objectives

- Creating a bridge to access an academic base to build upon by earning Transferable post secondary credits vs. a close ended certificate (i.e. pipeline monitoring) with no ability to build upon
- Representation and funding from BC Ministry of Education including secondary school representation and management

Ridgeline CANADA INC.

How was this program different?

- Students had an opportunity to apply overlapping theoretical knowledge base in different hands on work settings vs. specific silo knowledge in specific settings (i.e. aquatic habitat in electrofishing)

- Opportunity to interact with different mentors and colleagues within different areas of expertise and backgrounds (i.e. forestry, agriculture, construction, botany, chemistry)

LWR Cohort Program

VS

NLC's LWR Diploma

- Courses delivered with UPFRONT theoretical lecture, Teams, exercises and specific learning practicum for outcomes vs. labs and reports completed AFTER
- 3 Practicum hosts were CONSISTENT with a specified curriculum and projects for each student
- One week agricultural knowledge sharing and applied forest ecology assessment field school

- Courses delivered with theoretical lecture, Teams, exercises and specific learning practicum for outcomes and labs and reports THROUGHOUT
- Practicum was different for each student and generic for experience
- Reclamation, Soils, Botany, & Ecology labs were completed within the 3 month curriculum

How was the program delivered

Utilise NLC's platforms, approved academic course outlines, instructor to build program

Select 4 specific practicum hosts to complement learning outcomes in field

Ongoing dialogue with Indigenous communities and advisory group

One week Program Orientation:

Technology, Platforms, Course Content

March, April, May

4 Courses Theory Foundation Delivery via Microsoft Teams

June-October

1 Course Theory

4 Course Field App

1 Practicum

One Week October

LWR Cohort Field School

Evaluations

Networking

Ridgeline CANADA INC.

Courses Taken by the Students

Students took 6 college 100 level courses such as:

- Introductory to Soils
- Botany ,
- Ecology,
- Land Restoration & Remediation,
- Field Experimental Design
- Applied Practicum

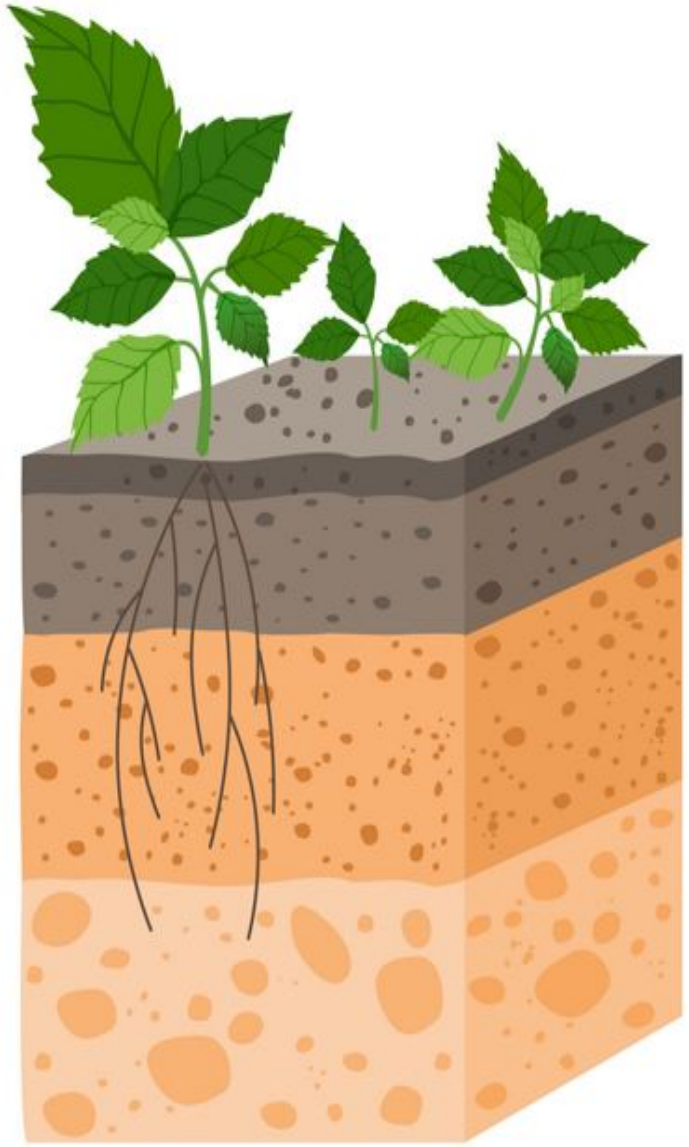
Design the Delivery of Learning Outcomes: Botany

- Gained key knowledge in foundational Botany theory and field ID skills paired with traditional knowledge of plant uses and values
- Identify the main characteristics of the major plant families, list commonly used measurements for trees, shrubs, and herbaceous plants and understand how to use a dichotomous key.
- Identify the different flower, fruit, seed, leaf, root structures we have been learning about on specific plants
- Integrating the concepts and terminology from scientific classification for morphology/physiology/groupings with Traditional Ecological Knowledge of uses, values and grouping
- Practice writing the scientific and common names of plants including their family name

Design the Delivery of Learning Outcomes : Botany

Theoretical foundations delivered online provided groundwork for:

- field application,
- collaboration of knowledge
- individual plant collections and TEK herbarium



Design the Delivery of Learning Outcomes:

Soils Intro SOIL117

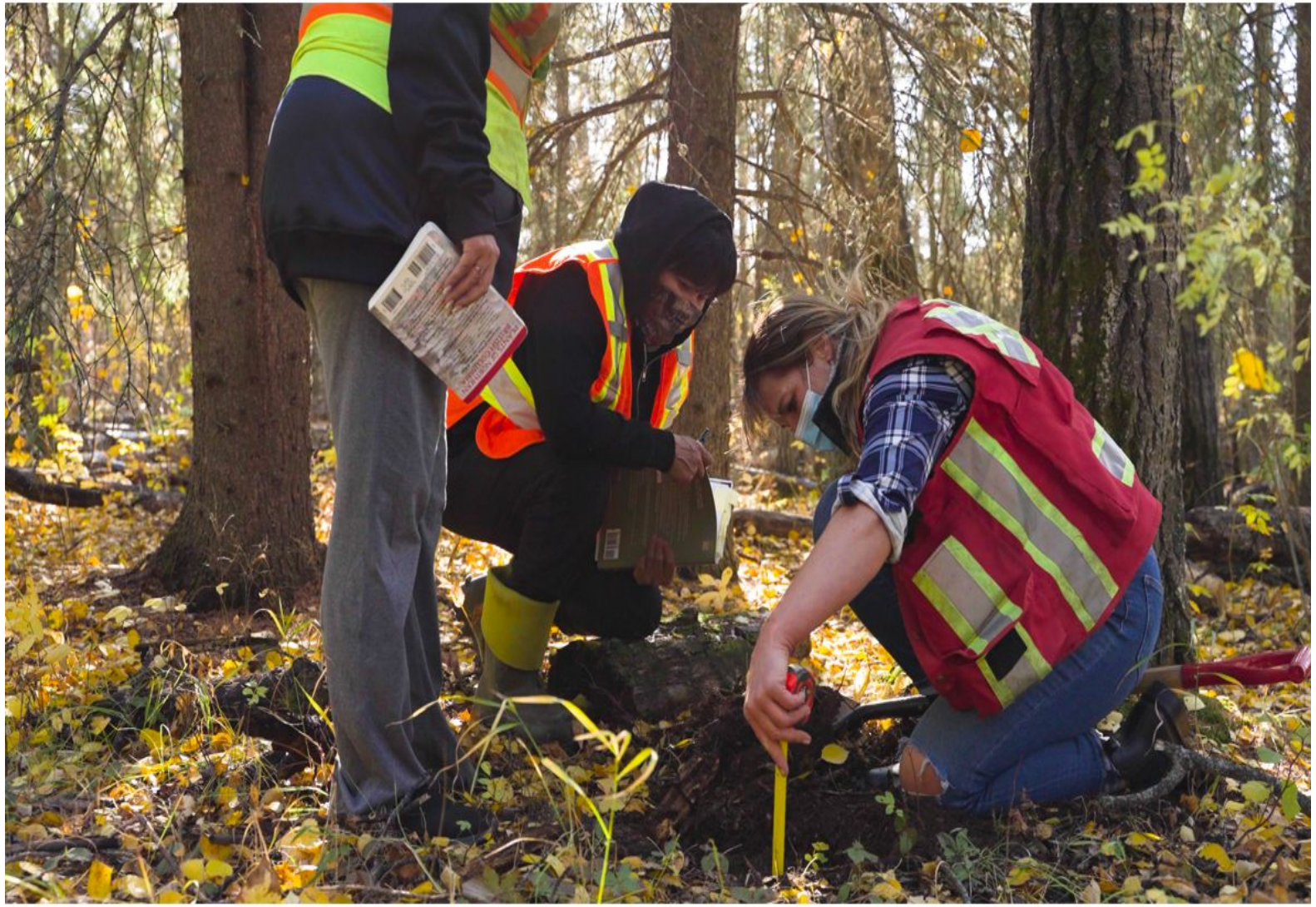
Why is soil important and what purpose does it serve?

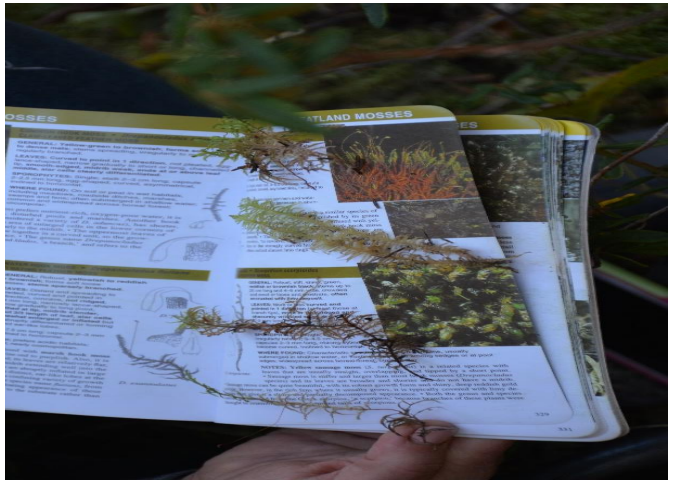
Identify the main Soil Forming Factors & Intro to Soils classification, Soil Texture and Color and their interpretation.

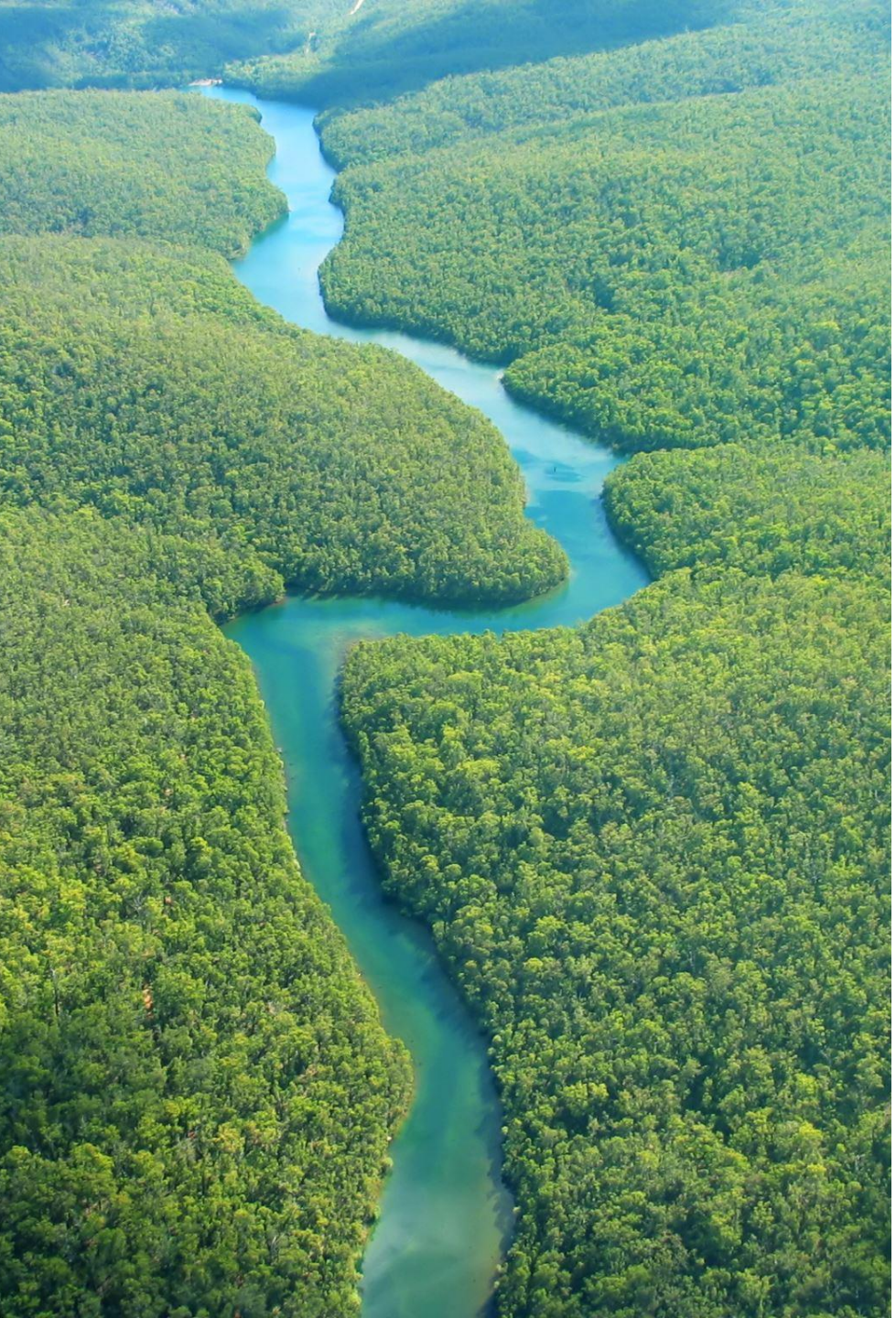
Soil Composition, Physical, Chemical and Biological Factors and how they are influenced

Identify soil management issues in both agricultural, forested and industrial settings

Design the Delivery of Learning Outcomes: Soils Intro SOIL117







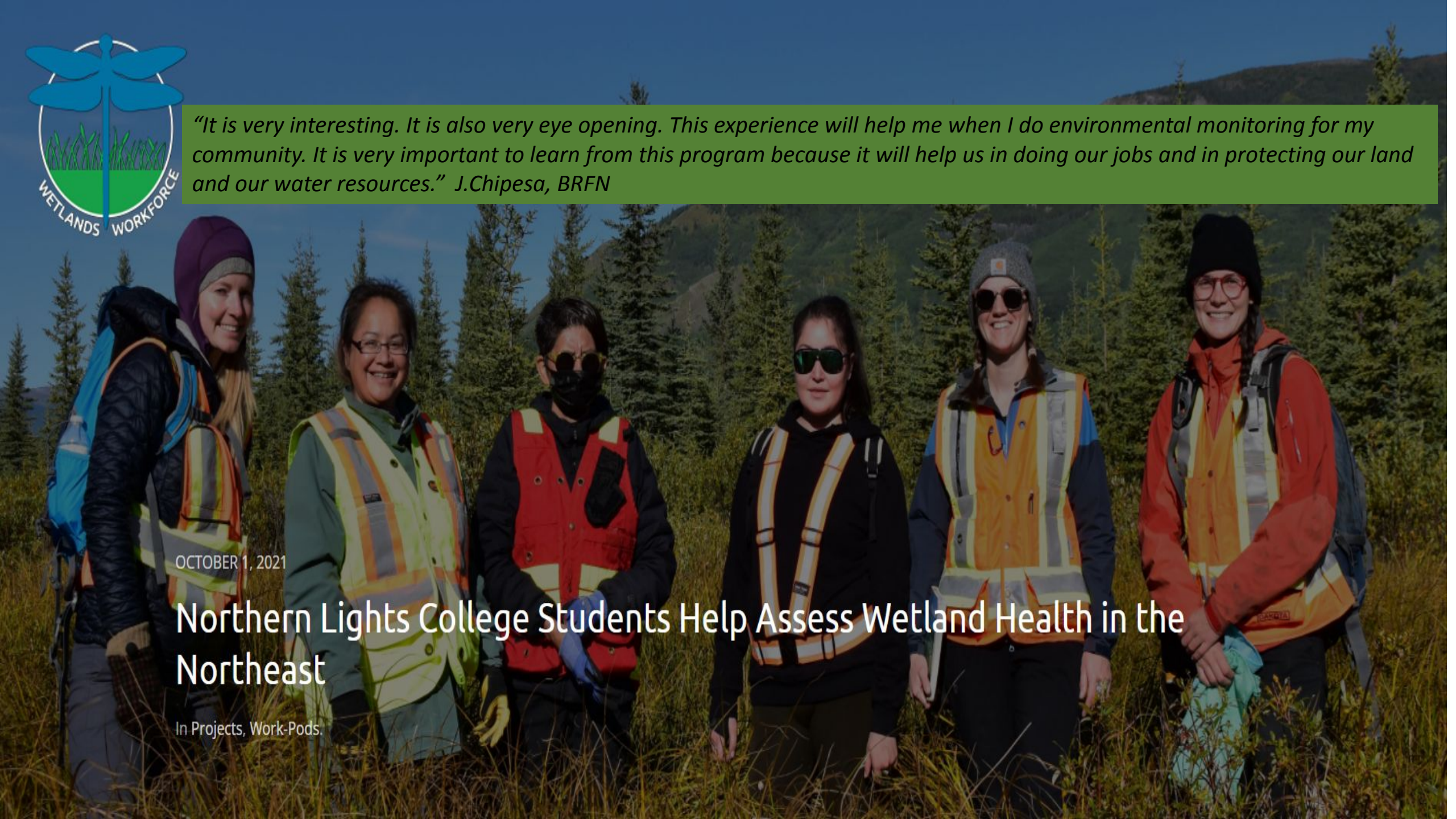
Practicum-
Learning Objective Based

- Each course (5 courses) had specific learning outcomes to be covered during the Practicum opportunities

- June to October 2021

- 5 Practicum Experiences to complete the learning outcomes
  - Wetland Workforce : BC Wildlife Federation
  - Ridgeline Field Reclamation Assessment and Supervision
  - SynergyAspen Environmental / INAC
  - Peace River Forage Association Agriculture Field Series
  - Cohort program field week-all instructors and students

“It is very interesting. It is also very eye opening. This experience will help me when I do environmental monitoring for my community. It is very important to learn from this program because it will help us in doing our jobs and in protecting our land and our water resources.” J.Chipesa, BRFN



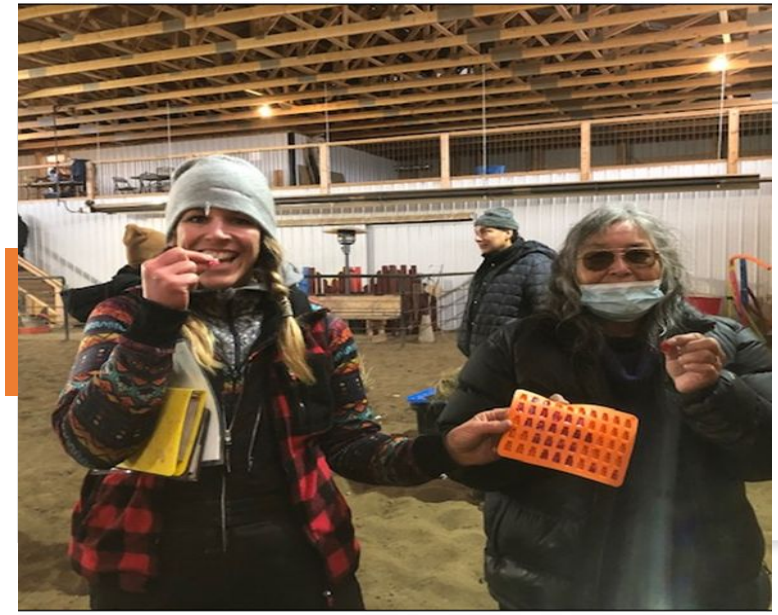
OCTOBER 1, 2021

Northern Lights College Students Help Assess Wetland Health in the Northeast

In Projects, Work-Pods.

Ridgeline's *:Brad Funk demonstrating the key skill of digging a soil pit for pre and post rec assessment….*
learning how to work more efficient in the field makes everyone's job easier!

Jay sharing his extensive Botany and Forest Ecology research with students and learning about Traditional and Cultural Values



- Sharing of Traditional Knowledge of Cultural uses between generations

SynergyAspen and ISC : Remediation Training

Knowledge Sharing Agricultural Event: PRFA, AG CANADA, NLC

Results

Students summary:

25 accepted students

24 students were enrolled on the stable enrolment date

15 students successfully completed the 6 courses and 18 credits

2 admitted to LAWR upon condition of completing the cohort

1 admitted to LAWR upon condition of completing the cohort and ENGL-099

8 admitted to LAWR upon condition of completing the cohort and English entrance requirements

9 students withdrew mid-program and did not complete

Competency Assessment

- Identify plant communities and create specific reclamation strategies to ensure establishment
- Manage watersheds and water quality
- Identify various soil landscapes and soil types
- Establish construction/development recommendations in order to ensure reclamation is successful once the development is complete
- Demonstrate knowledge on capabilities of various machinery in land construction/development and reclamation
- Identify invasive weed species and create adaptive management approaches

Competency Assessment

- Use critical thinking to solve post construction/disturbance problems
- Manage information using documentation and organizational skills
- Communicate information using written, oral and email methods appropriate to the workplace
- Access pertinent information to apply to various reclamation and environmental problems
- Demonstrate an understanding of professional ethics to the workplace when working with multiple stakeholders including companies, landowners and government officials

Result: LWR Cohort Completion WrapUp

- Virtual gathering to celebrate and acknowledge the students' achievements of completing this piloted approach to delivering a program that supports community capacity development and an innovative way for Indigenous students to ladder into a regular offered NLC program.

- It was a good opportunity for students to share their experiences with the program, provide feedback for improvement in next cohort & share inspirational message

- Talk about possible career and employment opportunities and create a network for mentorship and student cohort support

Convocation Wrap Remarks

“I’m so privileged to be taught by you thank you so much for all your teaching and knowledge which you shared yes if I do have any questions regards to the class you taught will be keeping in touch with you. In the future, I am interested in taking the class in January”

“We know our traditional knowledge and it was good to draw on the connection to the western sciences”

“Now I am more confident in my job”

“I want to learn more. I will register for the winter classes”.

“Now, we understand why something is done in a certain way”

Benefits

Reflects the Values of Students, Ridgeline and the Northern Lights College:

- Ridgeline recognizes that operating within local communities is a privilege and supports collaborative capacity building
- Offer a career path to students with academic and industry certifiable skills
- Sustainable Economic reconciliation toward prosperity within communities
- Longterm relationship creation with the NLC to instill academic integrity with a post secondary transcript for laddering & technical training that can be built upon
- Supporting partners engaged fully as it was a longterm investment

Some of our learnings

Recruitment

- Clarity on expectations and time investment with a full credit post secondary course

Internal flexibility from Academic Administration

- Build in flexibility with remote / digital learning challenges
- Technology and digital platforms

Instill more individual support and mentorship

- Create individual practicum placements vs. large group practicums that change

Competency assessment to verify learning outcomes

- Ongoing adaptive approach to assessments

Communication bridge for Students and Community about Learnings

- Create opportunities to share the connections between TEK and Scientific Knowledge

Hands-on training plays a pivotal role in teaching for Traditional cultures where historically they are known to learn and interpret their biophysical environment through hands-on activities.

Thank You

Funding provided by

BRITISH COLUMBIA Ministry of Education

Collaborators:

- BC Wildlife Foundation - Wetland Workforce SynergyAspen Environmental
- Indigenous Affairs Canada
- Fort Nelson First Nation Guardians
- Conuma Coal
- Peace River Forage Association