

# Footprint or Buffer?

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A Comparison of Regulatory Approaches for Managing  
Historical Resources for Linear Projects

Jennifer Russell, Enbridge  
Kate Peach, Stantec  
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- Introduction
  - Background – Historical Resources
  - The Challenge
  - Footprint Approach– Athabasca Pipeline Twinning (APT)
  - Buffer Approach – Wood Buffalo Extension (WBE)
  - Advantages and Disadvantages
  - Outcomes/Conclusions

- Development of linear projects requires baseline assessment of historical resources
- Regulatory approval from the historical resources Ministry is required prior to construction
- For environmental scope, historical resources are becoming biggest budget and schedule risk
  - Due to uncertainty
- Strong Indigenous interest
- Advance planning and assessment are key; however, project footprints continually change
- Presents scheduling challenges when approvals are needed during construction execution phase

# Historical Resources

## What are they?

- Archaeological sites (buried artifacts and other evidence that tell us about human life in the past)
- Palaeontological sites (fossilized remains of plants and animals)
- Historic buildings and other structures
- Aboriginal traditional use sites



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# Historical Resources

## The Complexity

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- Impossible to know ahead of assessment, how many sites will be found in what location or of what value.
- Field assessment and mitigative excavation must be completed under snow-free and frost-free conditions (May to October in Alberta)
- Often at least two years of fieldwork for larger projects
  - First season - field assessments
  - Second season – mitigation of significant sites
- Field assessments and mitigative excavation are conducted largely by hand
- Labour-intensive and time-consuming

# Historical Resources

## Process in Alberta

- Desktop assessment relative to the project footprint. Includes recommendations for field assessment work
- Regulator (ACT) reviews desktop assessment and provides direction on field assessments
- Field assessments consist of foot survey and subsurface testing at identified target areas. Subsurface testing is usually conducted by hand/shovel



# Historical Resources

## Process in Alberta

- Results of the field assessments and recommendations for site mitigation (if required) are submitted to ACT
- ACT reviews these and issue requirements for significant sites (*i.e.* site mitigation)
- If mitigation is not required, clearances are issued
- Review period - minimum 8 weeks



# The Challenge

- Approvals are footprint based
- Footprints change throughout linear project development
- Construction contractors are typically not engaged until closer to construction start
- Late footprint changes can be numerous
  - stockpile sites, laydown areas, log decks, shooflies, extra-temporary workspace (ETWS), and access routes.
- Footprint changes require additional field assessment and regulatory review. Site mitigation may also be required



# The Challenge

- Construction schedules typically do not allow for 8+ weeks for field assessments and regulatory approvals
- Results in cost increases
  - regulatory fees
  - consultant costs
  - contractor standby
  - contractor work arounds



# The Case Studies

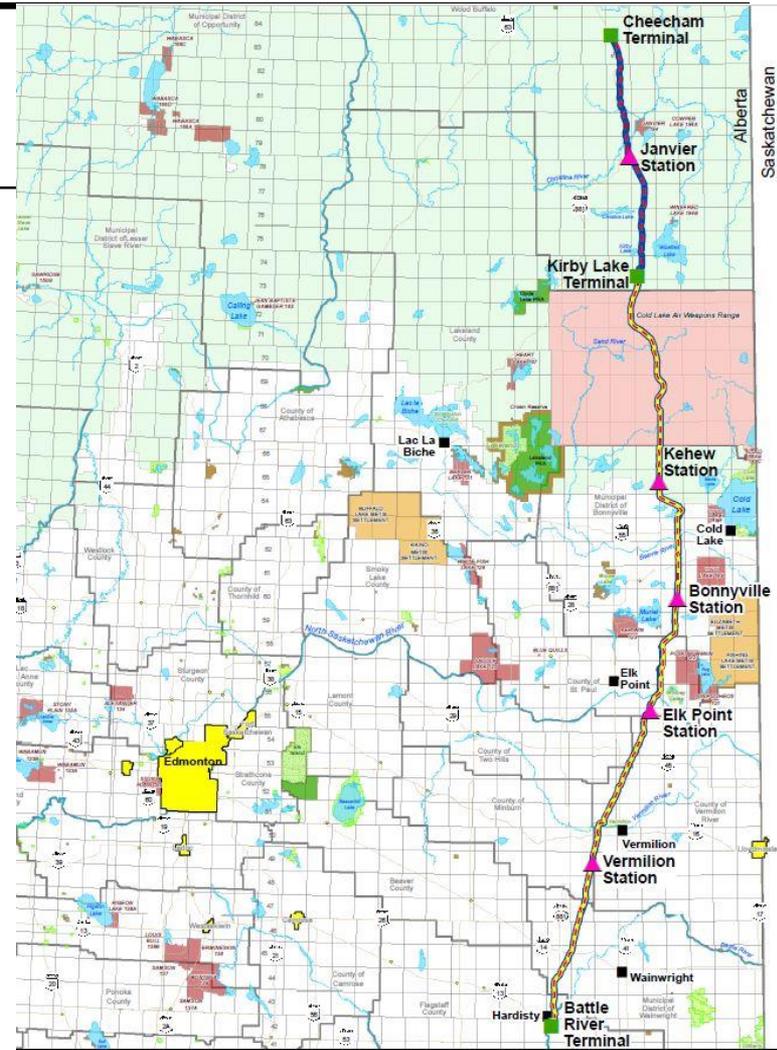
## Footprint vs. Buffer



# Footprint Approach

## Athabasca Pipeline Twinning Project

- ~350 km pipeline project
- East-central Alberta
- Parkland and boreal forest regions
- Desktop assessment completed early 2012
- Regulatory requirements received spring 2012
- Field assessments largely complete in 2012
- Site mitigation started in 2013
- Approval for most of line received in 2013



# Footprint Approach

## The Challenge

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- Construction started in 2013 and so did requests for footprint modification
- Hundreds footprint modifications received
- Became apparent that the regular process of conducting field assessments and regulatory review would not work
  - schedule delays
  - cost implications
- An innovative, streamlined approval approach was needed

# Footprint Approach

## The Solution – Red/Green Mapping

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- Collaborative solution developed between Enbridge, the archaeological consultant and ACT
- Archaeology team evaluated an area within 50 m of the original project footprint and ranked areas as
  - “low” archaeological potential (i.e. low probability for encountering a significant archaeological site) or
  - “moderate to high” (i.e. higher probability for encountering a significant archaeological site).

# Footprint Approach

## The Solution – Red/Green Mapping

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- Low areas mapped **green**
  - Construction activities could proceed in green areas
  - a final “as built” footprint provided to the regulator in a shapefile
- Moderate to high areas mapped **red**
  - Archaeology team would evaluate footprint change at a finer scale
    - no further work recommended,
    - some ground truthing, and/or
    - field-based assessment
  - Based on need for further assessment, construction team would determine how necessary additional footprint was

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# Footprint Approach

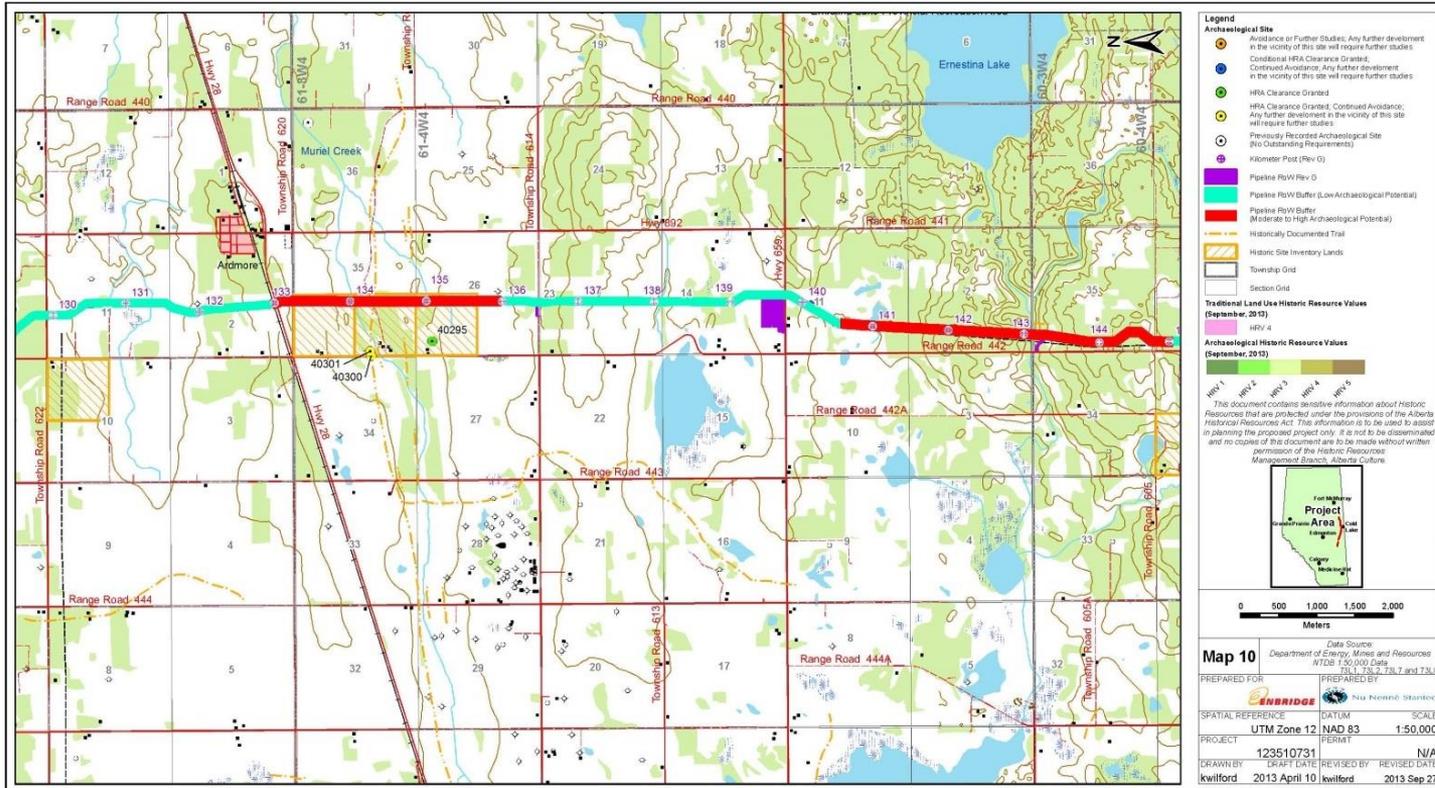
## The Solution – Red/Green Mapping

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- 52 were in the green
- 82 were in the red
  - 18 required field assessment

# Footprint Approach

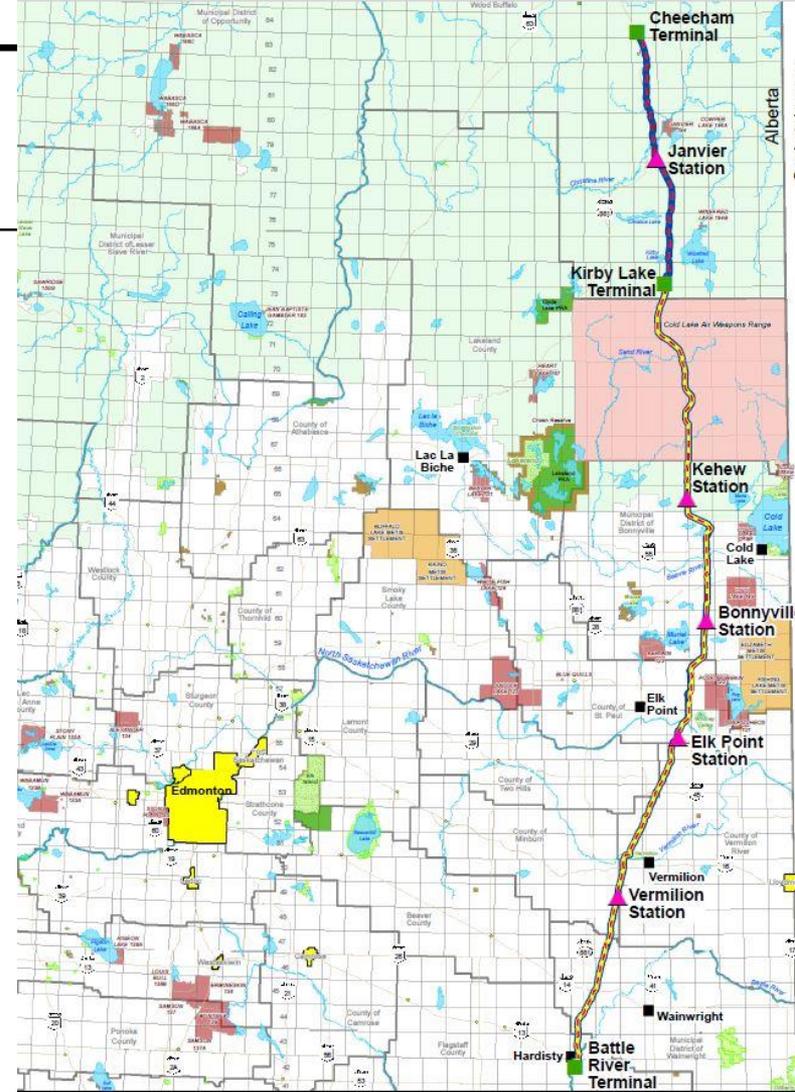
## The Solution – Red/Green Mapping



# Buffer Approach

## Wood Buffalo Extension

- ~460 km pipeline
- Generally paralleled Athabasca Pipeline Twinning Project
- In 2014
  - Desktop assessment completed
  - Regulatory requirements received
  - Field assessments largely complete
  - Approval for most of line received



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# Buffer Approach

## Wood Buffalo Extension

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- Red/green mapping approach was innovative, but administratively challenging
- Looked at ways to improve the process
- Most additional footprint requests occur within 50 m of the RoW
- Conduct assessment on an area larger than the known project footprint

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# Buffer Approach

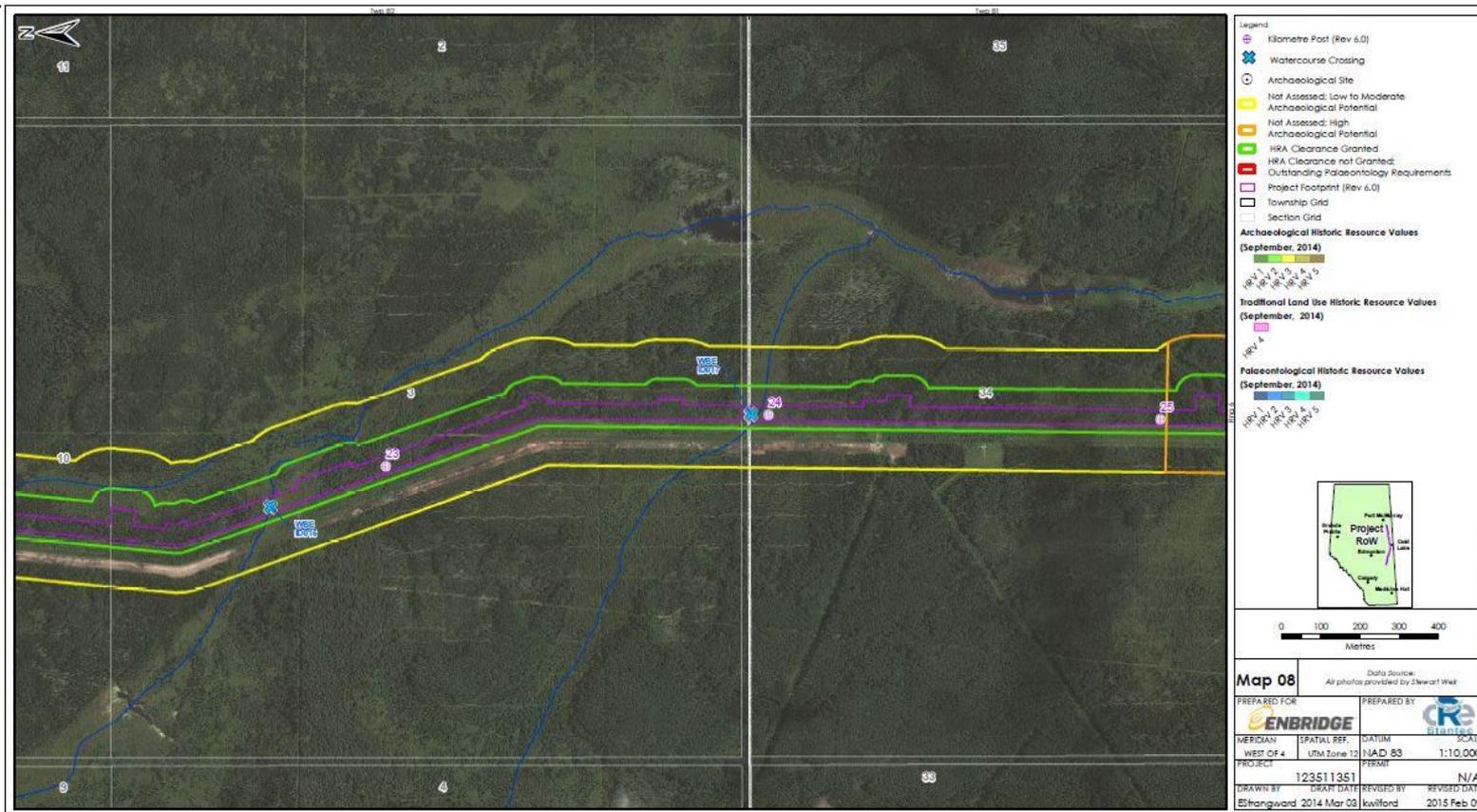
## Wood Buffalo Extension

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- Desktop and field assessments were completed on the footprint and the 50 m buffer
- Increased to 100 m at major watercourses and horizontal directional drill locations
- Regulatory approval was granted for footprint and buffer
- Resulted in very little additional archaeological work during construction.
- Most additional footprint requests by the construction contractor were located within the buffer

# Buffer Approach

## Wood Buffalo Extension



# Footprint vs Buffer Approach

## Footprint

### Advantages

- Reduced front end field time
- Reduced front end cost
- Field program focuses more closely on the actual area of construction impact

### Disadvantages

- Increased complexity in tracking ETWS requests
- Increased potential for non-compliance
- Increased need for regulatory input
- Lesser certainty around archaeological constraints during earlier stages
- Limits ability to avoid impacts to archaeology from ETWS

# Footprint vs Buffer Approach

## Buffer

### Advantages

- Decreased complexity in tracking ETWS requests
- Decreased need for regulatory input following the completion of the field assessment
- Increased certainty around archaeological constraints at an earlier stages
- Increases ability to avoid impacts to archaeology from ETWS during planning phase

### Disadvantages

- Increased front end field time
- Increased front end cost
- ACT was concerned intensity of the field assessment would be reduced because of the larger footprint

# Outcomes/Conclusions

- Red/Green Mapping became a formalized approach with ACT for future projects
- Regulatory requirements can be flexible given the right approach and team
- Red/Green Mapping highlighted additional footprint requests are not always necessary
- Appropriate approach is dependent on project goals



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# Questions?

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# Thank you

