

# Hiland Crude, LLC.

## Reclamation and Revegetation Inspection Report

### New Town Expansion

### Hiland Crude Oil Pipeline Project

### Mountrail County

Case No. PU-15-416

Contract No. PU-748-16

*December 17, 2018*

Prepared for:

North Dakota Public Service Commission

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## Introduction

The New Town Expansion Project is an 8-inch diameter, 42.5-mile pipeline constructed by Hiland Crude Pipeline Company, LLC. The Pipeline originates 5 miles southwest of Ross, North Dakota at Hiland's White Earth injection station and terminates to the south at Dakota Plains Holding, Inc.'s Pioneer Rail Terminal, approximately 1.5 miles southeast of New Town, North Dakota.

## Regulatory Purpose and Scope of Work

The North Dakota Energy Conversion and Transmission Facility Act authorizes the State to determine that the location, construction, and operation of energy transmission facilities that will produce minimal adverse effects on the environment and the welfare of citizens of North Dakota. The North Dakota Public Service Commission has contracted KLJ Engineering for inspection services on Case No. Pu-15-416, New Town Expansion.

KLJ is to document the reclamation and revegetation of the Project. The process includes inspection of the reclamation of subsoil and topsoil, as well as the seeding, and the status of revegetation.

## Methods

The project was inspected and documented on August 08, 2018 and August 09, 2018. A drone was utilized to collect aerial photography along the 42.5-mile pipeline, highlighting areas of both good revegetation and conformity to surroundings, as well as areas of concern. The equipment used during inspection includes a DJI Phantom 4 integrated GPS and 12-megapixel camera. (Appendix B, Pictures)



## Inspection Observations and Findings

At time of inspection in early August 2018, revegetation has been well established throughout the project. Locations where farmland covers the pipeline are generally undetectable, while grassland areas are found to be in various stages of reclamation as they become blended into the native terrain.

During observation and review of photos, indicators were seen in several locations where the native grass has successfully grown into or overtaken the reclaimed pipeline scar. Particularly in high or low locations along route, evidence can be seen that the reclamation efforts have grown to match the surrounding conditions. These findings leave us to believe that adequate topsoil spreading, and seeding has taken place that will also lead to improving conditions in future growing seasons.

Location 3, Page 15 - Some less established grass seen in foreground of picture. However, adjacent areas show rocky topsoil and areas of sparsely covered ground; as in the pipeline scar. Moving Northeast into background of photo, vegetation becomes well blended and undetectable with the surrounding vegetation.

Location 4, Page 15 - Example of undetectable area through farmland.

Location 7, Page 17 - Example of how high and low areas have become established to match the adjacent conditions. Pipeline undetectable in farmland in background of picture.

Location 15, Page 21 - Example of undetectable area through farmland.

Location 21, Page 24 - Area highlights different stages of reclamation. Surrounding vegetation beginning to be established across pipeline scar.

Location of 25 and 26, page, 26 - Example of varying stages of two different pipelines. Hilland pipeline at left in Location 26 observed to be well established to match the surrounding conditions.

Location 38, page 32 - Evidence that varying grassland adjacent to pipeline has been established to match previous conditions.

Location 57, page 42 - Example of vegetation established to become nearly undetectable against adjacent grassland.

Location 62, page 44 - Shows visual difference in vegetation on either side of fence line, likely due to grazing (right side). This is an example of how native grassland varies at different growth stages. Pipeline scar at left side of photo become well blended with existing conditions

Location 66, page 46 - Shows various types vegetation adjacent to pipeline, grass has been established to closely match the existing conditions.

Location 77, page 52 - Showing reclamation well established and matching adjacent conditions.



## Areas of Concern

Location 6, Page 16 - Vegetation well established, however visible difference to surroundings are evident.

Location 18, Page 22 - Slight difference of vegetation in pipeline scar, area near fence line shows evidence of ongoing reclamation, as the grass begins to blend in with adjacent conditions.

Location 23, Page 25 - Scar visible in background of photo, however closer view in foreground shows grass that closely matches the surrounding area. These differences are less noticeable at ground level and expected to become less detectable with time.

Location 43, Page 35 - Pipeline scar to the left in photo. At foreground an area of thin revegetation can be seen, however vegetation is better established in pipeline scar in the foreground.

Location 52, Page 39 - Recent work or repair west of road. Areas of sparse vegetation in this area likely due to steep terrain.

Location 62, page 44 - Area of less established vegetation. This area is believed to have been completed more recently than other areas of the pipeline and expected to become better established in future growing seasons.

## Recommendations for Resolution

Based on our observations, we find that the reclamation efforts have successfully revegetated the pipeline work throughout the project. We believe no further reclamation work is required at this time, however future monitoring at areas of concern may be advisable to verify native grassland continues to blend into the reclaimed areas.

## Determination of Reclamation

The Hiland Crude Pipeline Project appears to have been reclaimed and revegetated as near as practical to match the existing conditions. Comparing areas of the pipeline that were reclaimed at different times, we find that the grassland is a continual state of revegetation, that appears to become more adapt to the adjacent conditions with time. Some areas of varying vegetation are believed to be attributed to planting season or varying species of native grassland. However, we do not see these areas as problems with the revegetation and believe the issues will likely be resolved naturally as the grass is further established in future growing seasons.



## References

North Dakota Public Service Commission (ND PSC). 2015. Online Case Search.  
Available from: <http://www.psc.nd.gov/database/companycaselist.php>



## Signatures

The services performed by KLJ staff for this project have been conducted in a manner consistent with the degree of care and technical skill appropriately exercised by professionals currently practicing in this area under similar time and budget constraints. Recommendations and findings contained in this report represent our professional judgement and are based upon available information and technically accepted practices at the present time and location. Other than this, no warranty is implied or expressed.

Lead Project Manager, Paul Lee

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Paul Lee, PLS, Project Manager

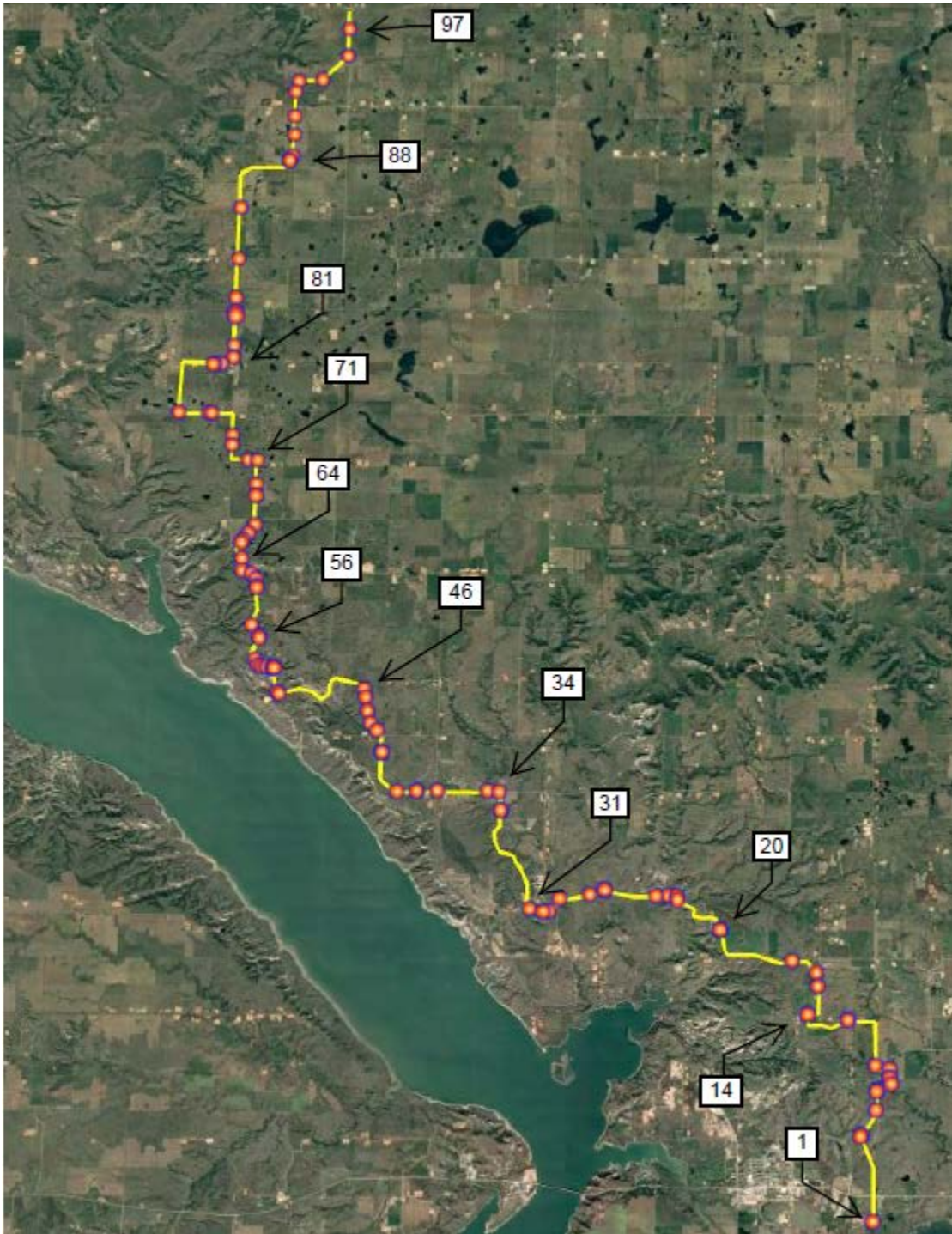
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Date

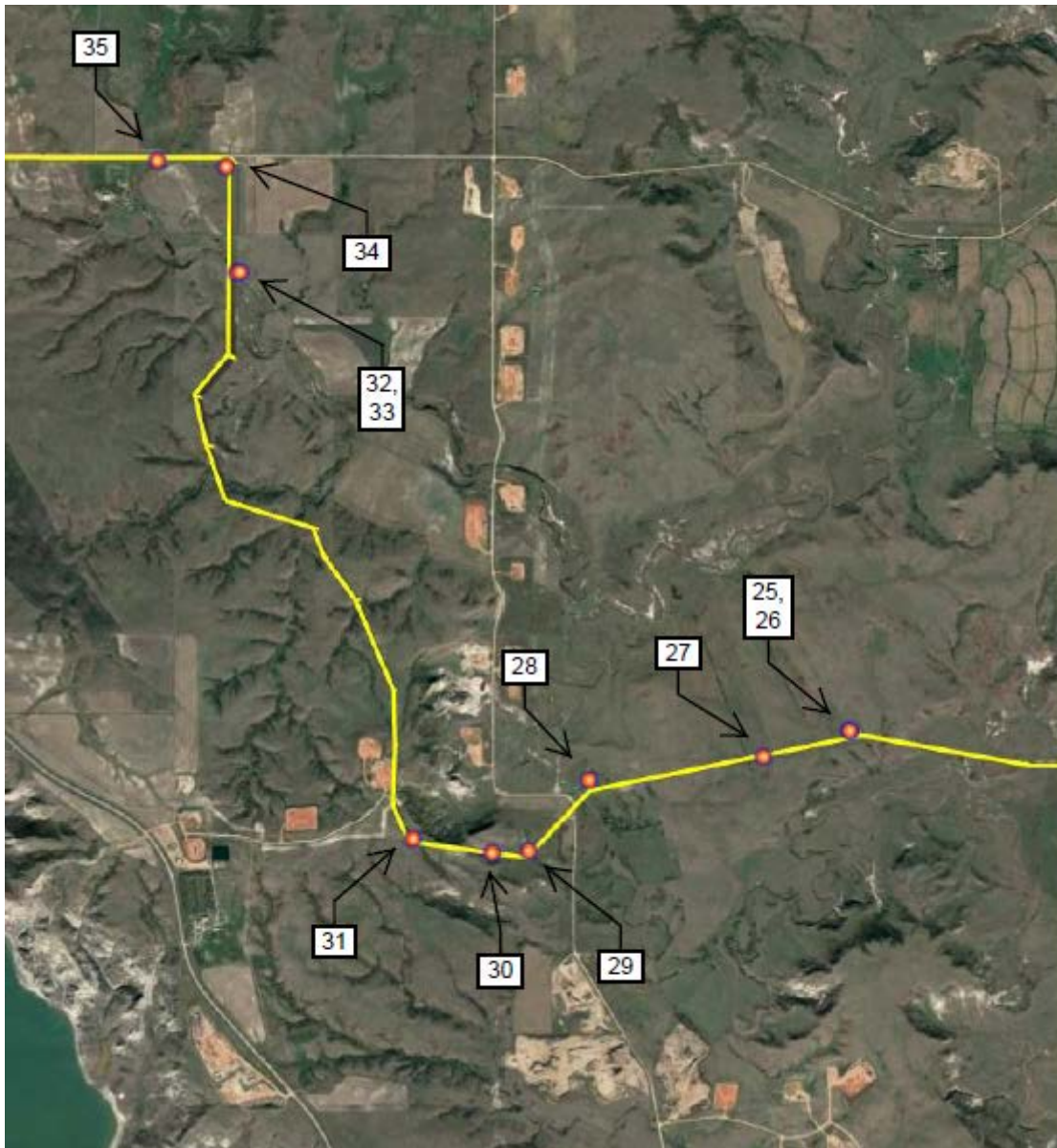


## Appendix A: Maps of Project Observation Points

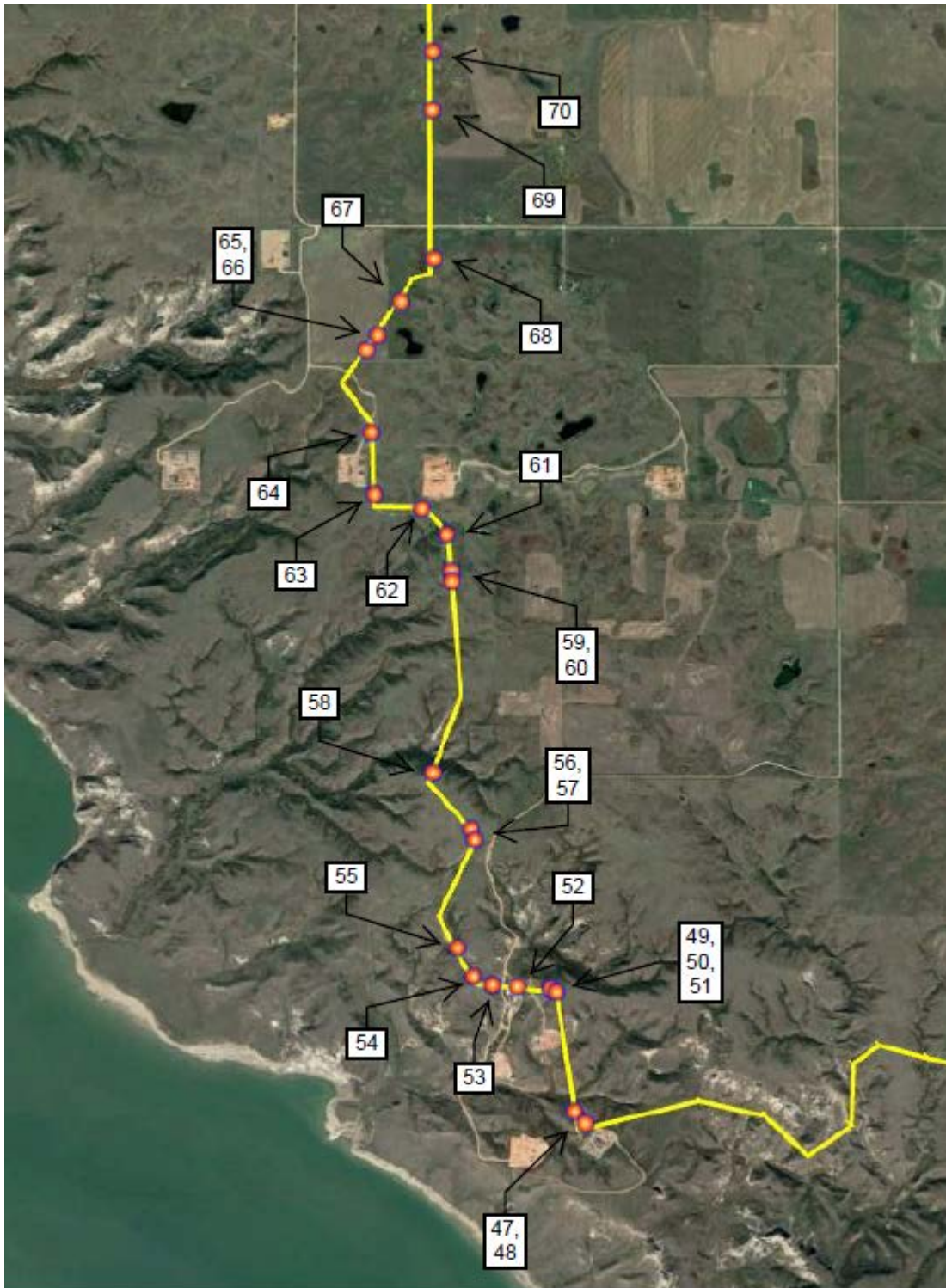


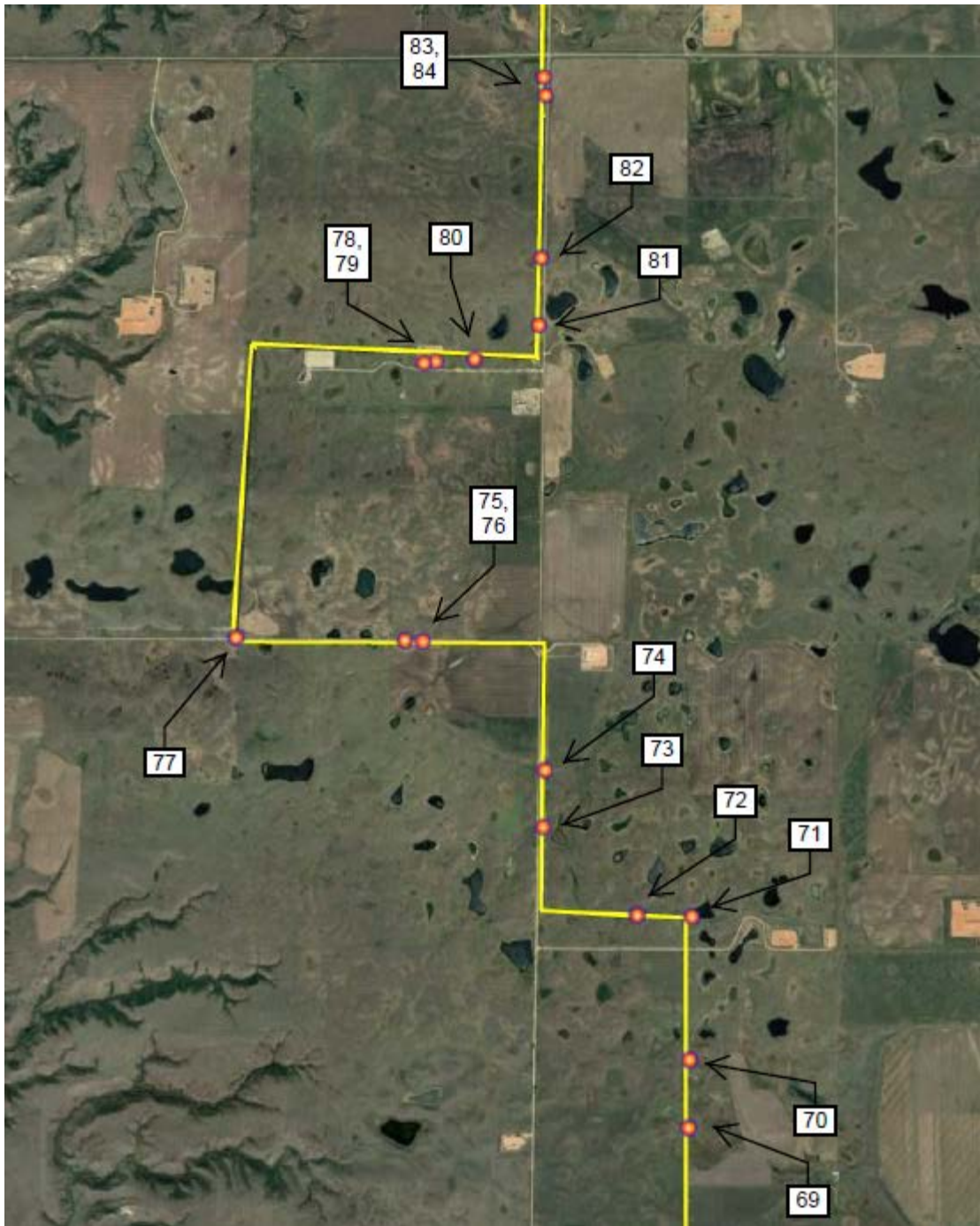


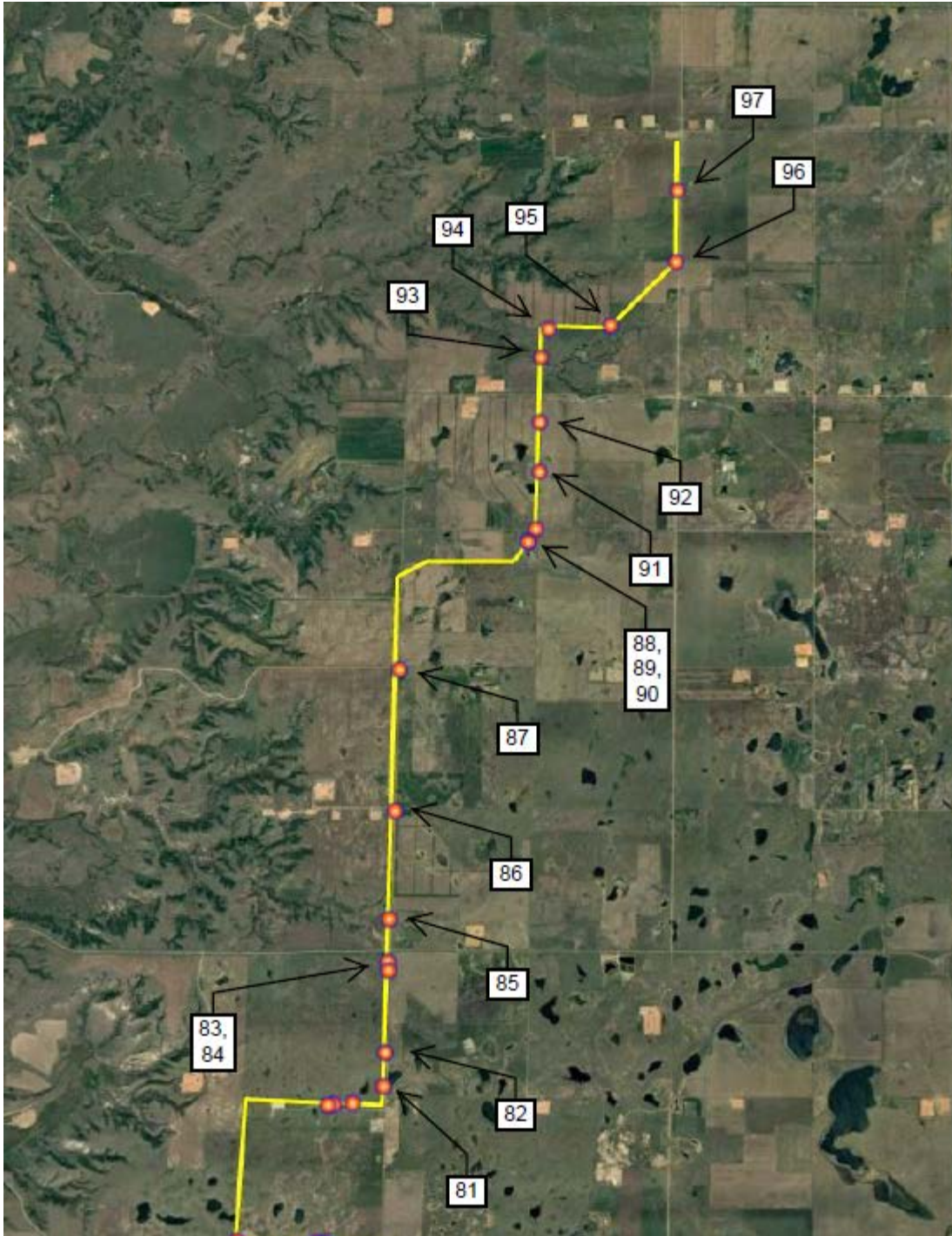














## Appendix B: Photos



*Location 1, looking West (47.971294, -102.441277)  
Minimal disturbance visible, likely near bore location*



*Location 2, looking Southeast (47.992519, -102.445679)*



*Location 3, looking Northeast (47.993015, -102.445267)  
Pipe marker visible in center of picture, scar nearly undetectable in distance*



*Location 4, looking North (47.999111, -102.439659)  
Pipeline at right, not detectable*



*Location 5, looking East (48.003819, -102.439461)  
Reclamation becoming blended with natural grassland*



*Location 6, looking Northeast (48.0042, -102.438972)  
Vegetation well established, but yet blended with existing vegetation*



*Location 7, looking North (48.00573, -102.433693)  
Vegetation being established close to surrounding conditions*



*Location 8, looking South (48.007252, -102.434273)*



*Location 9, looking North (48.007214, -102.434273)  
No visible scar in farmland*



*Location 10, looking West (48.009418, -102.434227)  
No visible scar in farmland*



*Location 11, looking North (48.010372, -102.439774)  
Little or no apparent disturbance to natural grassland. Pipeline extends to far North end of photo*



*Location 12, looking East (48.021873, -102.450356)  
Pipeline markers visible in photo, no issues present with reclamation*



*Location 13, looking West (48.021873, -102.450348)*



*Location 14, looking South (48.023304, -102.465897)  
Vegetation well established to adjacent conditions*



*Location 15, looking North (48.0233, -102.465897)  
Pipeline turns to the Right (East) at valve location*



*Location 16, looking North (48.03051, -102.461983)  
Little or no evidence of pipeline work after reclamation*



*Location 17, looking West (48.034012, -102.462486)  
Pipeline marker visible at corner of pad, vegetation well established. Strip of noticeable change in vegetation extending straight west is not on this pipeline alignment*



*Location 18, looking west (48.037025, -102.471939)  
Pipeline marker visible at fence. Vegetation blending well with surrounding conditions*



*Location 19, looking South (48.044998, -102.500023)  
Photo taken at pipeline marker, no visible scar through farmland*



*Location 20, looking North (48.044998, -102.500023)  
Photo taken at pipeline marker, no visible scar through farmland*



*Location 21, looking Southeast (48.052696, -102.516724)  
Scar visible in center of photo. Grass becoming well blended with surrounding conditions*



*Location 22, looking West (48.053665, -102.517097)  
Non-established scar at right of photo not from this pipeline*



*Location 23, looking west (48.053795, -102.520447)  
Scar visible in center of photo, but beginning to blend with surrounding conditions*



*Location 24, looking West (48.053711, -102.525238)  
Scar at left side in photo*



*Location 25, looking East (48.055264, -102.54528)  
Pipeline marker visible in scar on the right side*



*Location 26, looking West (48.055264, -102.54528)  
Visible scar from adjacent pipeline noted at Location 25*



*Location 27, looking West (48.054081, -102.551117)  
Visible scar from adjacent pipeline noted at Location 25*



*Location 28, looking Southwest (48.053013, -102.562912)*



*Location 29, looking West (48.049789, -102.566978)  
Grass well established and blending with existing conditions*



*Location 30, looking West (48.049702, -102.569336)  
Scar faintly visible in center of photo*



*Location 31, looking Northwest (48.050331, -102.574684)  
Marker visible at right/center of photo. Vegetation well established*



*Location 32, looking South (48.075985, -102.586487)  
Scar visible running straight south in photo, becoming well blended with surrounding conditions*



*Location 33, looking North (48.075951, -102.586739)  
Scar visible center of photo*



*Location 34, looking West (48.080761, -102.587425)*



*Location 35, looking West (48.081032, -102.592087)*



*Location 36, looking West (48.081089, -102.611862)*



*Location 37, looking West (48.081062, -102.619835)  
Scar becoming well blended with existing conditions*



*Location 38, looking East (48.08094, -102.620033)  
Example of natural vegetation overtaking pipeline scar*



*Location 39, looking West (48.080811, -102.627846)  
Vegetation established and beginning to blend with surroundings*



*Location 40, looking South (48.09119, -102.634209)  
Un-established scar not from this pipeline*



*Location 41, looking North (48.091187, -102.634201)*



*Location 42, looking Northwest (48.096901, -102.636375)  
Recent reclamation work not from this pipeline. Scar visible to the left*



*Location 43, looking Northwest (48.098866, -102.639008)  
Recent work follows path of reclaimed pipeline. Grass becoming well blended to surroundings.*



*Location 44, looking North (48.10207, -102.640343)*



*Location 45, looking North (48.105728, -102.641235)  
Scar to the right from different pipeline*



*Location 46, looking Northwest (48.107883, -102.641975)  
Scar to the right from different pipeline*



*Location 47, looking East (48.106636, -102.675812)*



*Location 48, looking North (48.107239, -102.67662)*



*Location 49, looking South (48.113468, -102.678055)*



*Location 50, looking West (48.113636, -102.678497)  
Multiple pipelines in this area. Some thin areas of vegetation*



*Location 51, looking West (48.113636, -102.678497)*



*Location 52, looking West (48.113766, -102.681122)*



*Location 53, looking West (48.11385, -102.68306)*



*Location 54, looking Northwest (48.114277, -102.684547)*



*Location 55, looking Northwest (48.115784, -102.685783)  
Scar visible at left of photo*



*Location 56, looking South (48.12141, -102.684456)*



*Location 57, looking Northwest (48.121979, -102.684746)  
Vegetation well blended with existing conditions*



*Location 58, looking North (48.124924, -102.687737)*



*Location 59, looking South (48.134964, -102.686295)*



*Location 60, looking North (48.135521, -102.686325)*



*Location 61, looking Northwest (48.137436, -102.686737)  
Reclamation well established to existing conditions. Pipeline scar visible in center of photo, then moving West and North to pad in background*



*Location 62, looking West (48.138809, -102.688652)*



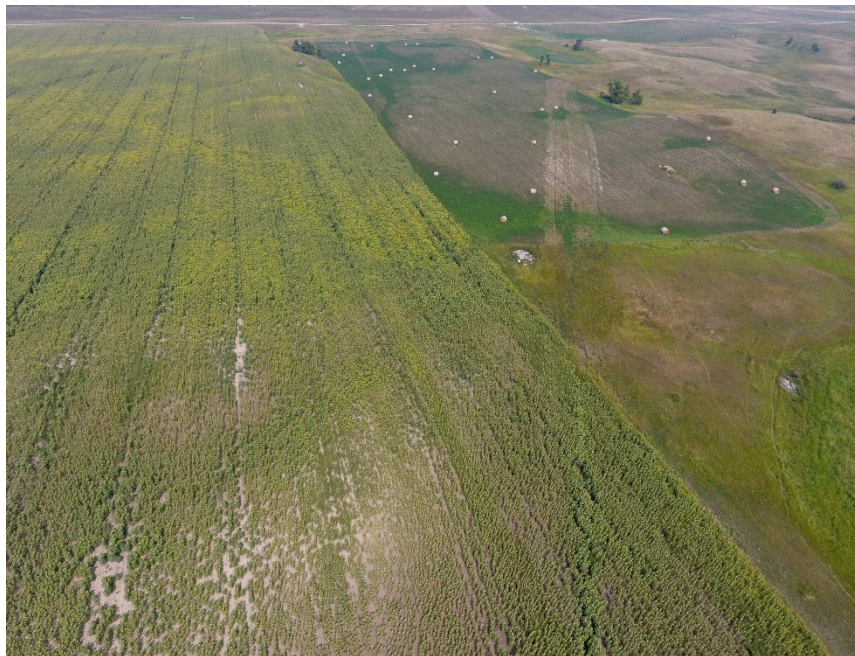
*Location 63, looking North (48.139553, -102.692406)  
Vegetation well established. Scar at the right/East side of photo from a different pipeline*



*Location 64, looking South (48.142822, -102.692673)*



*Location 65, looking Southwest (48.147175, -102.693085)  
No visible scar in cropland or assumed bore area*



*Location 66, looking Northeast (48.147964, -102.692215)  
Vegetation consistent with adjacent conditions*



*Location 67, looking Northeast (48.149734, -102.690361)  
Vegetation consistent with adjacent conditions*



*Location 68, looking North (48.152023, -102.687767)*



*Location 69, looking North (48.159924, -102.687958)  
Reclamation well established and consistent with existing conditions*



*Location 70, looking North (48.163025, -102.68792)*



*Location 71, looking North (48.169628, -102.687805)  
Scars showing recent work adjacent to pipeline*



*Location 72, looking North (48.169693, -102.691666)  
Scar showing established vegetation*



*Location 73, looking North (48.173794, -102.69838)  
Scar on left of photo from another pipeline*



*Location 74, looking North (48.176472, -102.698296)  
Pipeline marker visible in scar on the right*



*Location 75, looking East (48.182625, -102.70845)*



*Location 76, looking West (48.182579, -102.707176)*



*Location 77, looking North (48.182755, -102.720535)  
Scar visible in background of photo*



*Location 78, looking West (48.196117, -102.707527)*



*Location 79, looking East (48.196186, -102.706673)*



*Location 80, looking East (48.196304, -102.703835)*

*Scar and pipeline marker visible at left of photo. Vegetation well blended with existing conditions*



*Location 81, looking North (48.197979, -102.699196)*



*Location 82, looking North (48.201324, -102.699104)*



*Location 83, looking South (48.209515, -102.698967)*



*Location 84, looking North (48.21043, -102.69912)  
Scar visible on West side of road, well established, matching existing conditions*



*Location 85, looking North (48.214714, -102.699112)  
Scar visible on West side of road, well established, matching existing conditions*



*Location 86, looking North (48.225655, -102.698692)*



*Location 87, looking North (48.240166, -102.698669)  
No visible scar in cropland*



*Location 88, looking Southwest (48.253613, -102.679077)*



*Location 89, looking Northeast (48.253609, -102.679077)  
Faint scar visible, vegetation matching surrounding conditions*



*Location 90, looking North (48.254971, -102.677895)*



*Location 91, looking North (48.261082, -102.677498)*



*Location 92, looking North (48.266407, -102.67762)*



*Location 93, looking North (48.273453, -102.677628)  
Faint scar visible in center of photo, well blended with existing conditions*



*Location 94, looking East (48.276531, -102.676491)*



*Location 95, looking Northeast (48.276943, -102.666634)  
Vegetation well established to existing conditions*



*Location 96, looking North (48.283817, -102.656342)*



*Location 97, looking North (48.29163, -102.656204)  
Pipeline at West side of road. No reclamation issues in farmland*



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