



Savage Bakken Connector

Case No. PU-16-753

As-Built Inspection Report



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October 12, 2017

RE: Case No. PU-16-753
Savage-Bakken Connector Line
10-Inch Crude Oil Pipeline Project -
Williams County
As-Built Inspection Report

Ms. Sara Cardwell
North Dakota Public Service Commission
600 East Boulevard Avenue, Dept. 408
Bismarck, ND 58505-0480

Dear Ms. Cardwell:

Attached is the As-Built Inspection Report for the above referenced project. This report includes the following:

1. Executive Summary
2. Inspection Report
3. Appendix A - Map of Photograph Locations
4. Appendix B - Photographs

Sincerely,

A handwritten signature in blue ink, appearing to read "R. A.", is positioned above the typed name of the sender.

Ken Nysether, PE
Short Elliot Hendrickson Inc.
4719 Shelburne Street, Suite 6
Bismarck, ND 58503-5677

Engineers | Architects | Planners | Scientists

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EXECUTIVE SUMMARY

Date: 09/29/2017

Project: Savage Bakken Petroleum Hub Connector - 10" Crude Oil Pipeline

An inspection of the Savage Bakken 10" Crude Oil Pipeline route was conducted after As-Built plans had been submitted to the NDPSC. This construction inspection was conducted to determine the replacement grading of topsoil and subgrade soils, along with the condition of the vegetation in the area and erosion control practices used. Savage has submitted a soil mitigation plan to the NDPSC stating seeding, fertilization and mulching operations along with the planting of trees will not take place till the spring of 2018. The attached inspection report gives details of the inspection for topsoil grades, erosion control, and stationing/descriptions of associated pictures taken.

- All site grading has been completed and topsoil has been spread evenly over areas that topsoil was stripped. Grades have been re-established to match existing surroundings and to facilitate drainage to match conditions prior to construction. All areas have positive drainage off of disturbed soil and drain into ditchways that run adjacent to pipelines.
- All gravel in the Savage stockyard/rail yard (STA 52+22 - STA 74+44) has been replaced and matches existing grades. No depressions or excess material was observed.
- It was observed that no erosion control devices were installed along the project route to mitigate any erosion of topsoil. Most grades were relatively flat and would not call for any bank stabilization. No erosion control devices were installed in any of the ditches that run parallel to the pipeline alignment.

Identified Issues (until 70% reestablished vegetation) :

It is recommended that fiber rolls be installed in ditches in areas that surface flows would leave the easement or Savage property. Following is a list of stations that fiber rolls are recommended to be placed in ditch bottoms.

- STA 3+48 LT for ditch flowing to the east
- STA 10+75 LT for ditch flowing SE into farm field, and along ditch bottom that is eroding to the east and west.
- STA 45+50 - STA 50+00 RT along bottom of hill prior to ditch bottom
- STA 105+60 potentially. Ditch is relatively flat and drains to existing low areas.

Minimal chance of soil erosion around Receiver Station pad.


Inspector's Signature



INSPECTOR'S DIARY

Project: Savage Bakken Petroleum Hub Connector - 10" Crude Oil Pipeline		Contractor: Savage Bakken Connector	
Date: 09/29/2017	Day: Friday		Subcontractor: N/A
Weather: Sunny, wind SW @ 7mph (11:52am)		Temp: 66 F	Inspector: Matthew Schaible
Work Activities: * No work items were being performed. All grading, topsoil replacement, and cleanup work has been completed.			
Labor Force: Savage: 1-Maintenance Manager			
Contractor Correspondence: * Spoke with Savage terminal maintenance manager, Dan, about as-built construction and mitigation plans. Dan said KLJ was going to be back on-site to perform a second tree mitigation study due to a large number of Cottonwood trees sprouting in the work area near the connection to DAPL. Dan also said that the seeding and fertilization had been moved to the spring of 2018, and that a mitigation plan had been submitted to NDPSC and was accepted. Dan also said it was planned that the farmer of the land the pipeline easement crosses was going to be doing the discing, seeding and fertilizing.			
Other Remarks: * It was noted that no erosion control devices were installed along the project route, and existing vegetation was the only sediment deposition control present. All areas that may have erosion of topsoil tend to drain into ditches that are vegetated for a large distance prior to leaving the site or farm field. As-built grades are relatively flat in disturbed areas, resulting in minor potential for erosion of topsoil.			

Inspector's Signature



INSPECTOR'S DIARY

Date: 09/29/2017

Project: Savage Bakken Petroleum Hub Connector - 10" Crude Oil Pipeline	Contractor or Sub: ProPipe
Work Performed & Location: <p>*All site grading is complete along the pipeline route and appears to be placed back to existing grades. All topsoil piles were spread over disturbed areas with no large clumps visible. All spread topsoil was graded to match surrounding grades and appears to be as existing prior to construction. In areas that pipeline was installed under gravel driveways or stock yards, all gravel was replaced to grades that match surrounding area. Gravel was graded smooth with no soil visible in gravel.</p> <p>* At STA 3+48, it was observed that the ditch that runs parallel to construction area between STA 3+48 - STA 7+81 that drains to the east had no erosion control devices to catch any sediment traveling along ditch. There was evidence of sediment deposition throughout ditch line. (See photo #3). Potential need for fiber rolls in ditch bottom.</p> <p>* At STA 4+00, it was noted that all replaced grades matched existing grades and appear to be replaced to existing conditions. Topsoil may need disced prior to seeding. (See photo #2).</p> <p>* At STA 10+75, It was noted that existing culvert that drains SE into farms field had large amounts of sediment deposition in front of it and had sediment draining into field. Gully erosion was taking place in ditch bottom up & down station from it. Some of the sediment could be coming from drainage area to the north (inside rail loop), but most of the sediment was coming from the erosion of the ditch bottoms along stationing. No construction had taken place in this area due to being within Bore #1. Up station, the ditch running between STA 14+00 - STA 23+00 drains to the east across the site access road and to this drainage culvert and then SE into the same field. (See photo #7). Erosion control devices needed in this area and along ditch flowline.</p> <p>* Disturbed area between STA 14+00 - STA 26+00 were graded to match existing ground elevation. Most of disturbed area drains to the north into ditch that runs parallel to pipeline. (See photo #8- #10)</p> <p>* At STA 45+50 - STA 50+00, It was noted that disturbed areas drained into ditch to the west of pipeline, and no erosion control devices were installed to mitigate erosion or transportation of soils along ditch in the event that soil was eroded off hill and into ditch. Ditch runs from N to S then SW from rail stockyard. (See photo #20 & #21)</p>	
CONTRACTOR EQUIPMENT: No equipment on project.	


Inspector's Signature



INSPECTOR'S DIARY

Date: 9/29/2017

Project: Savage Bakken Petroleum Hub Connector - 10" Crude Oil Pipeline	Contractor or Sub: ProPipe
Work Performed & Location: * Between STA 47+00 - STA 51+00, disturbed area was graded to provide drainage to the ditch to the west. A berm was graded at east construction limits to facilitate this drainage. (See photo #22). This berm next to the agricultural land matches what was existing prior to construction. * Between STA 52+22 - STA 72+28 (Bore #2), all gravel and soil in stockyard was replaced and graded to match existing. (See photos #23 - #27) * It was observed that multiple Cottonwood trees had sprouted in Clear & Grub area at STA 97+00 LT. (See photo #31) * Between STA 86+59 - STA 103+00, site was graded to match conditions prior to construction. Graded to provide drainage to the north side that runs along the railroad tracks. Existing low areas between this station range were left as-is for grade, with areas showing potential for collection of surface waters. (See photos #30 - #33) * No erosion control devices were installed between STA 86+59 - STA 105+63. At end of pipeline at Receiver station, gravel was used as sediment filter before and after double culverts under access road to Receiver station. (See photo #34 & #35)	
CONTRACTOR EQUIPMENT: No equipment on project	

Inspector's Signature



INSPECTOR'S DIARY

Date: 09/29/2017

Project: Savage Bakken Petroleum Hub Connector - 10" Crude Oil Pipeline	Contractor or Sub: ProPipe
Photo Description:	
Photo Number:	Description/Location:
(AH=Ahead Stationing, BK=Back Stationing)	
#1 - STA 3+63 BK, gravel graded to match existing	
#2 - STA 3+63 AH, topsoil replaced to match existing grade	
#3 - STA 3+63 LT BK, no erosion control at grading limits for ditch flowing east.	
#4 - STA 5+80 BK, replaced grade drains into ditch flowing east out of project area.	
#5 - STA 6+00 AH, grade break at point of Bore #1, ditch flows to the W then SE	
#6 - STA 7+75 AH, minor erosion in ditch over Bore #1 area	
#7 - STA 10+75 LT BK, Erosion and sediment deposition at culvert that drains SE into farm field.	
#8 - STA 13+80 AH, graded to match existing grades. In-place fiber roll near culvert.	
#9 - STA 14+50 AH, topsoil graded to match existing grade. Drains to ditch at RT.	
#10 - STA 22+00 BK, graded area drains to ditch which flows east.	
#11 - STA 27+45 BK, graded area over pipeline. Exist ditch grade restored.	
#12 - STA 27+60 AH, area graded to match existing. Existing ditch line not disturbed.	
#13 - STA 33+40 BK, graded area to the LT matches existing. Ditch running parallel to work area was full vegetated and non-disturbed.	
#14 - STA 33+40 AH, graded area to RT, vegetated ditchline on LT	
#15 - STA 33+35 LT, Existing riprap at corner of ditch.	
#16 - STA 41+00 AH, topsoil replaced and graded to match existing grades	
#17 - STA 41+40 BK, topsoil replaced to match existing grade	
#18 - STA 45+75 AH, site graded to drain to the west	
#19 - STA 45+75 BK, Pipeline route graded to match existing. Drains to ditch to the S.	
#20 - STA 45+75 AH, Grading drains to ditch that runs SSW. No erosion control devices in place.	
#21 - STA 45+75 RT AH, ditch line upstream from construction area	
#22 - STA 50+75 BK, graded area with berm on RT of centerline	
#23 - STA 59+00 BK, gravel in stockyard replaced and graded to pre-construction conditions	
#24 - STA 59+00 AH, graded gravel in stockyard	
#25 - STA 70+50 BK, rocks from excavation left on surface in gravel stockyard edge	
#26 - STA 70+50 AH, area over Bore #2	
#27 - STA 81+00 BK, graded gravel/soil area replaced to existing conditions. No vegetation	
*See attached map with location of each photo, and attached pages of photo's	

Inspector's Signature



INSPECTOR'S DIARY

Date: 09/29/2017

Project: Savage Bakken Petroleum Hub Connector - 10" Crude Oil Pipeline	Contractor or Sub: ProPipe
Photo Description:	
Photo Number: Description/Location: (AH=Ahead Stationing, BK=Back Stationing)	
#28 - STA 81+00 AH, area graded to match existing prior to Bore #3	
#29 - STA 94+00 BK, area was graded to match surrounding area. Drains to the west ditch.	
#30 - STA 94+00 AH, Site graded to match existing grades	
#31 - STA 97+00 LT AH. Cottonwood saplings sprouted in Clear & Grub area.	
#32 - STA 104+25 RT AH, graded ditch and gravel used as sediment block at exit of culverts under access roadway. No erosion control devices	
#33 - STA 102+50 BK, disturbed area graded to drain into ditch to the west. All topsoil replaced to match existing	
#34 - STA 103+00 AH, grading completed at connecting to Receiver Point.	
#35 - STA 103+50 AH, ditch was graded around Receiver pad and drains to the NNE.	
*See attached map with location of each photo, and attached pages of photo's	
*(AH=Ahead Stationing, BK=Back Stationing)	


Inspector's Signature

Appendix A

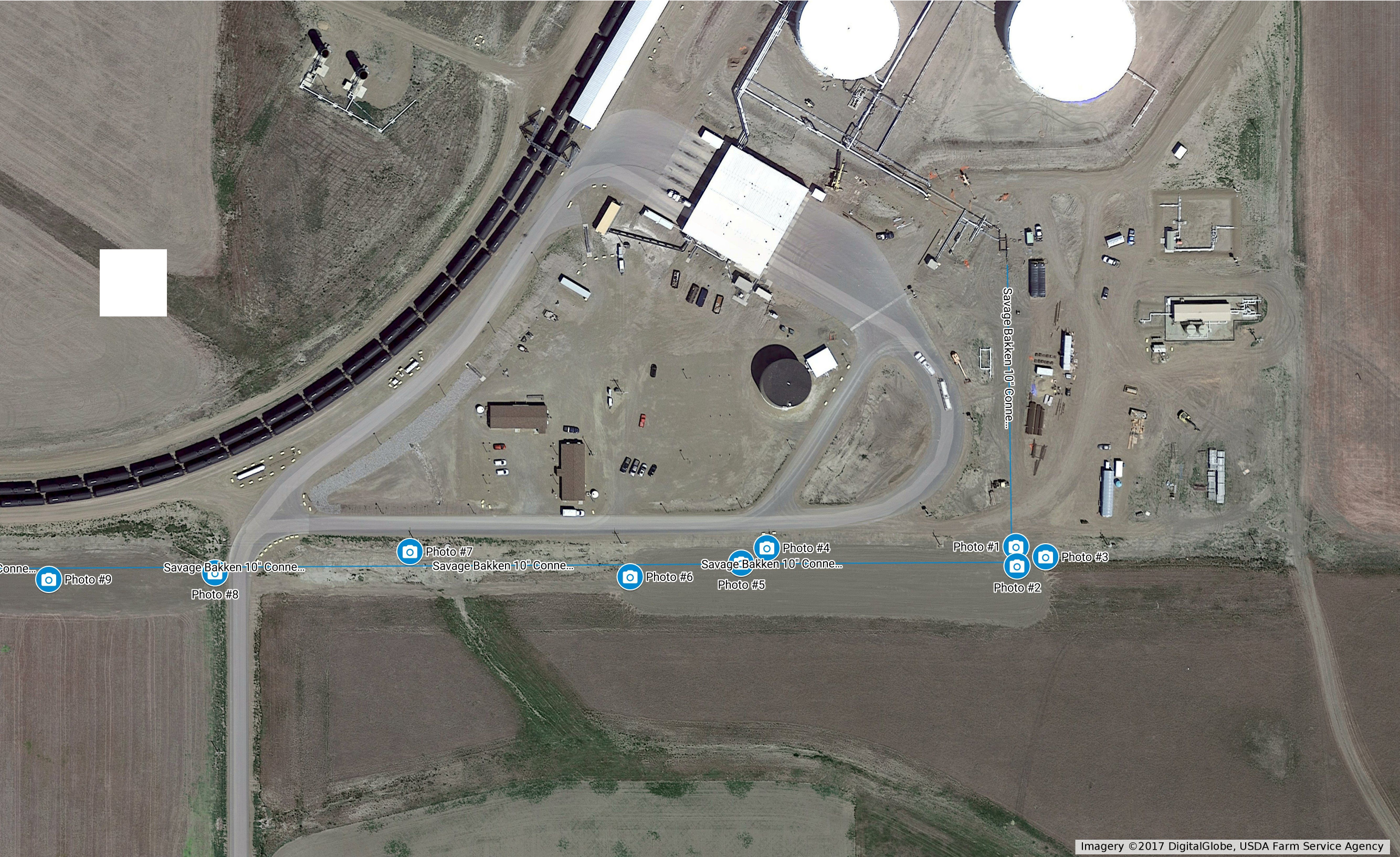
Photo Location Maps

As-Built Inspection

Photo Locations

 All items

Map shows locations of photos in reference to the pipeline alignment.

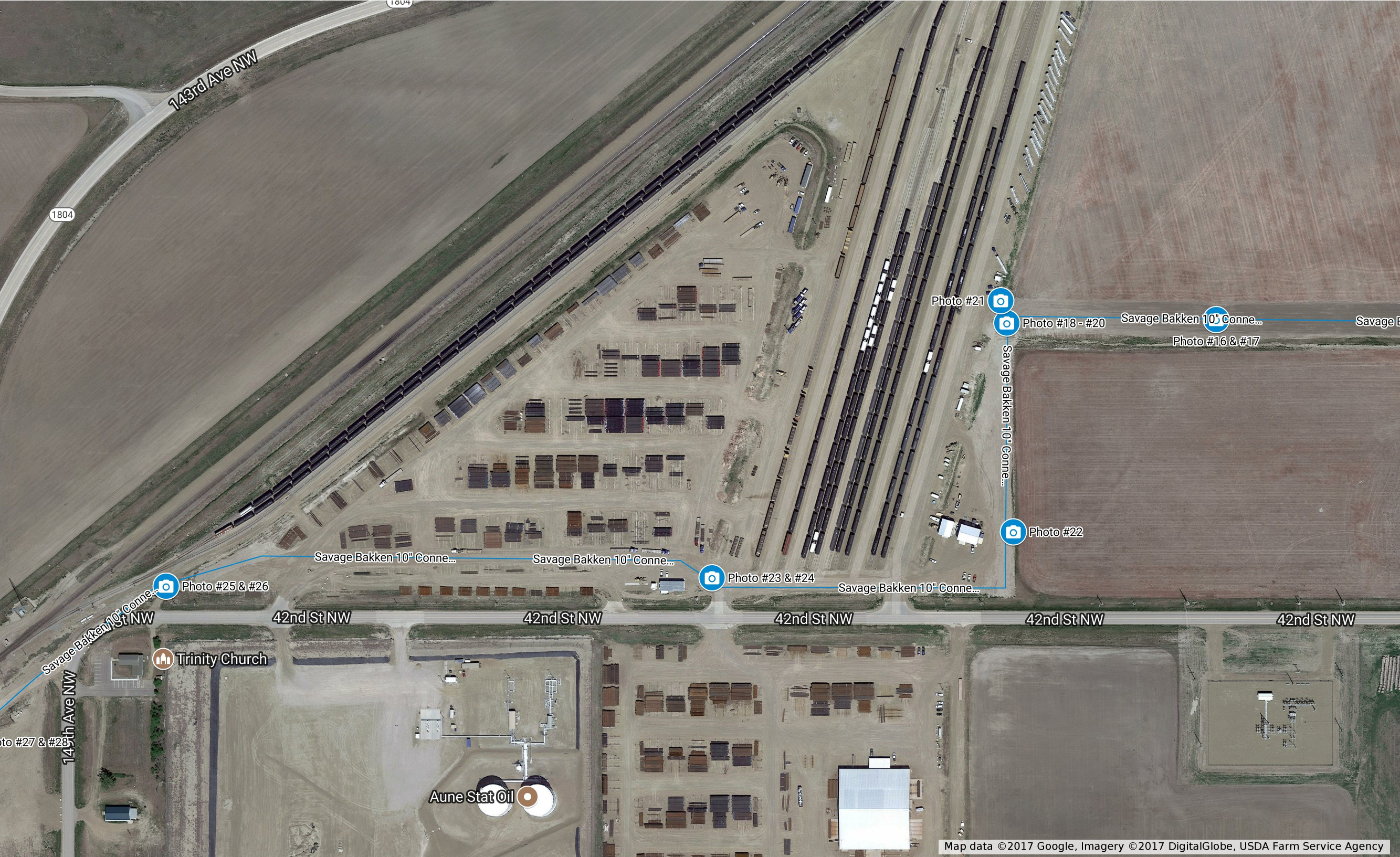


As-Built Inspection

Photo Locations

All items

Map shows locations of photos in reference to the pipeline alignment.



As-Built Inspection

Photo Locations

 All items

Map shows locations of photos in reference to the pipeline alignment.



Appendix B

Photos

#1



#3



#2



#4



#5



#6



#7



#8



#9



#10



#12



#11



#15



#13



#16



#17



#14



#18



#19



#22



#20



#21



#23



#25



#26



#24



#27



#29



#28



#30



#31



#32



#33



#34



#35





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We're confident in our ability to balance these requirements.

