NORTH Dakota | Environmental Quality
Be Legendary.™

May 25, 2021

Denbury Green Pipeline – North Dakota, LLC
Rusty Shaw
5851 Legacy Circle, Suite 1200
Plano, TX 75024

Re: NDPDES Permit No. NDG070805

We have received your "Application for Permit to Discharge - NDPDES Industrial-Short Form C" and have granted authority to discharge under the General Permit for Temporary Discharge Activities – Permit NDG070000. Your facility has been assigned permit no. **NDG070805.** This permit has been issued by the North Dakota Department of Environmental Quality (department) with the understanding that all other applicable permits and permissions have been obtained for the start of the following project. The application indicates that the discharge(s) will consist of hydrostatic test water for the Cedar Hills South Unit (CHSU) Lateral Carbon Dioxide (CO2) Pipeline project.

Discharge Point	Volume (gallons per day)	Location	
001H	531,886	CHSU Lateral CO2 Pipeline	TWN 132N, RGE 106W, SEC 7; Bowman County

In the event of a discharge, all discharge points shall be inspected daily. On a daily basis, record the total volume of discharge and make a visual inspection for Oil and Grease. Analytical parameters for pH and Total Suspended Solids (TSS) shall be tested for this project. The parameter for Chlorine shall be tested only if the water source has been chlorinated. The parameter for Oil and/or Grease is waived unless a sheen is observed in the discharge; if observed then collect a sample for Total Petroleum Hydrocarbon (TPH). The department shall be contacted on all findings of Oil and Grease. All discharges made directly to a surface water body or wetland shall be inspected closely in order to minimize any turbidity issues. Best Management Practices (BMPs) must be used to minimize the impact of the discharge.

ADDITIVES: No additives were reviewed for this project.

The department has granted your request for a temporary waiver from electronic reporting. The granted waiver is not transferable. The waiver is effective May 25, 2021 and **will expire on March 31, 2025.** Enclosed are Discharge Monitoring Report (DMR) forms for your use. If someone else is responsible for the submittal of the DMRs, please forward this letter and the enclosed forms to them. The reports cover three months; the dates and location have been filled out. If no discharge occurs during the reporting period, check "No" in section one. The reports must be post-marked by the last day of the month following the end of each reporting period. All original DMR forms should be sent to the department and a copy should be kept for your files.

If any other testing is conducted during this project, copies of the results of any such test should be forwarded to the department. **Should you wish to no longer be covered under this permit, you must submit a written request to terminate and cite the reasons for termination**. Coverage shall be maintained until a written notification to release has been issued to the permittee by the department. Should you have any questions about your permit or how to complete the DMRs, please contact me at (701) 328-5237.

Sincerely,

Sarah Waldron Feld

Sarah Waldron Feld
Environmental Scientist
Division of Water Quality

72 PU-19-294 Filed 05/26/2021 Pages: 20
Copy of NPDES General Permit Coverage for Temporary Discharge Activities
Denbury Green Pipeline - North Dakota, LLC

APPLICATION FOR PERMIT TO DISCHARGE (NDPDES) INDUSTRIAL-SHORT FORM C

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY
SFN 8319 (03/2019)

FOR DEPT USE ONLY

Application Number	
Date Received	

Organization Responsible for Facility			
Denbury Green Pipeline - North Dakota, LLC			
Individual Responsible for Discharge Rusty Shaw		Telephone Number	
Mailing Address 5851 Legacy Circle, Suite 1200	City Plano	State TX	Zip Code 75024

Brief description of nature of operations which produce the discharge

Hydrostatic testing of the Cedar Hills South Unit Carbon Dioxide Pipeline. See attached Project Narrative and Hydrostatic Test Plan.

Check all possible substances which discharge may contain:

☐ Aluminum ☐ Beryllium ☐ Chromium ☐ Cyanide ☐ Mercury ☐ Phenols ☐ Zinc
☐ Ammonia ☐ Cadmium ☐ Copper ☐ Lead ☐ Nickel ☐ Selenium ☑ Other Total Suspended Solids

METHOD OF TREATMENT IS TO ROUTE WATER TO:

☐ Municipal Sewer System		Owner of System	**If discharge is to a municipal sewer system, skip to signature area at bottom.**
OR	☐ Evaporation Lagoon or Ponds	Number of Ponds	Size of Each (Acres)
OR	☑ No Treatment, Goes to Surface Waters Directly	Name of Body of Water Little Beaver Creek	
OR	☐ Other (Specify)		

Method of Treating Sanitary Wastes (if different from above)

TYPE AND AMOUNT OF WASTEWATER DISCHARGED TO TREATMENT SYSTEM(S) OR WATER OF THE STATE

☐ Sanitary Wastewater _____ gal/day ☐ Cooling Water _____ gal/day ☑ Hydrostatic Testing 531,886 gal/day
☐ Process Water _____ gal/day ☐ Surface Runoff Water ☐ Other: Type _____ / _____ gal/day

Frequency of Discharge from Treatment Facility (if only certain months please indicate): One time discharge, December 2021

Number of Separate Discharge Points: ☐ 1 ☐ 2 ☐ 3 ☐ 4 or more **If more than one, please attach sheet with locations and types of waters handled at each point.**

DISCHARGE POINT LOCATION	Latitude (Decimal Degrees)		Longitude (Decimal Degrees)		County
	OR SW ¼ NE ¼	Section 7	Township 132	Range 106	County Bowman

Provide a brief description of area to which treated discharge flows (i.e., river, unnamed stream, landlocked slough, lake, etc.). Use names whenever possible.
Discharge to Little Beaver Creek. See attached Project Narrative and Hydrostatic Test Plan.

REQUEST FOR TEMPORARY ELECTRONIC REPORTING WAIVER:

☒ I request a temporary electronic reporting waiver.

Please provide a brief statement regarding the basis for requesting a temporary waiver(e.g. short duration permit).

This will be a one-time discharge after hydrostatic testing of the proposed pipeline.

SIGNATURE:

RETURN COMPLETED APPLICATION TO: North Dakota Dept. of Env. Quality Division of Water Quality 918 East Divide Avenue, 4th Floor Bismarck, ND 58501-1947 Telephone: (701) 328-5210	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
	Printed Name Randy J. Robichaux	Title VP, Health, Safety & Environmental
	Signature Randy J Rob	Date 05/14/21

DENBURY GREEN PIPELINE - NORTH DAKOTA, LLC
CHSU LATERAL CARBON DIOXIDE PIPELINE
PROJECT NARRATIVE AND HYDROSTATIC TEST PLAN

PROJECT NARRATIVE

Denbury Green Pipeline – North Dakota, LLC (Denbury) proposes to construct the Cedar Hills South Unit (CHSU) Lateral Carbon Dioxide (CO_2) Pipeline project (Project) that will consist of a 12.75-inch outside diameter, approximately 17.77-mile-long welded steel pipeline to transport carbon dioxide (CO_2) from a pipeline source in Fallon County, Montana to Denbury's CHSU oil production facilities in Bowman County, North Dakota. Approximately 8.54 miles of the pipeline will be in Fallon County, Montana, while the remaining 9.23 miles will be in Slope and Bowman Counties, North Dakota (Figures 1 and 2). The Project will involve installation of welded steel pipeline using both conventional lay (trenching) and horizontal directional drilling (HDD) installation methods. Pipe specifications and pipeline operating characteristics for the pipeline are summarized in Table 1. As shown in Figure 2, the pipeline route enters North Dakota in the NE¼NW¼ of Section 31, Township (T) 133 North (N), Range (R) 106 West (W), heads generally in an east-southeasterly direction for approximately 5.23 miles to the NW¼SW¼ of Section 9, T132N, R106W, where it turns to the south and traverses for approximately 4.0 miles to its end point in the NE¼SW¼ of Section 33, T132N, R106W.

Table 1. CHSU Lateral CO2 Pipeline Specifications

Installation Method*	O.D.† (inches)	W.T.‡ (inches)	I.D.§ (inches)	API Specification¶	Coatings#	MOP** (psi)	MOT†† (°F)
Conventional	12.75	0.469	11.812	API 5L GR X70 steel pipe	14–18 mils FBE	3,702	100
HDD	12.75	0.562	11.626	API 5L GR X70 steel pipe	14 -- 18 mils FBE; 30 – 40 mils ARO	3,702	100

* Installation Method: conventional = trenched; HDD = horizontal directional drilling
† O.D. = outside diameter
‡ W.T. = wall thickness
§ I.D. = inside diameter
¶ API Specifications: API = American Petroleum Institute; ERW = Electric Resistance Welded
# Coatings: mils = thousandths of an inch; FBE = fusion bonded epoxy; ARO = abrasion-resistant overcoat
** MOP = maximum operating pressure; psi = pounds per square inch
†† MOT = maximum operating temperature, degrees Fahrenheit

The Project will use a 75-foot-wide construction right-of-way (ROW), with additional temporary workspace areas along the route that will be required to accommodate pipeline fabrication activities and HDD boring equipment for roadway, railroad, and wetland/stream crossings along the route, as shown on the pipeline route maps included as Appendix A. As summarized in Table 2, the pipeline route will consist of approximately 45,604 feet of conventional lay pipeline and approximately 3,130 feet of HDD pipeline installation, for a total of approximately 48,734 feet (9.23 miles).

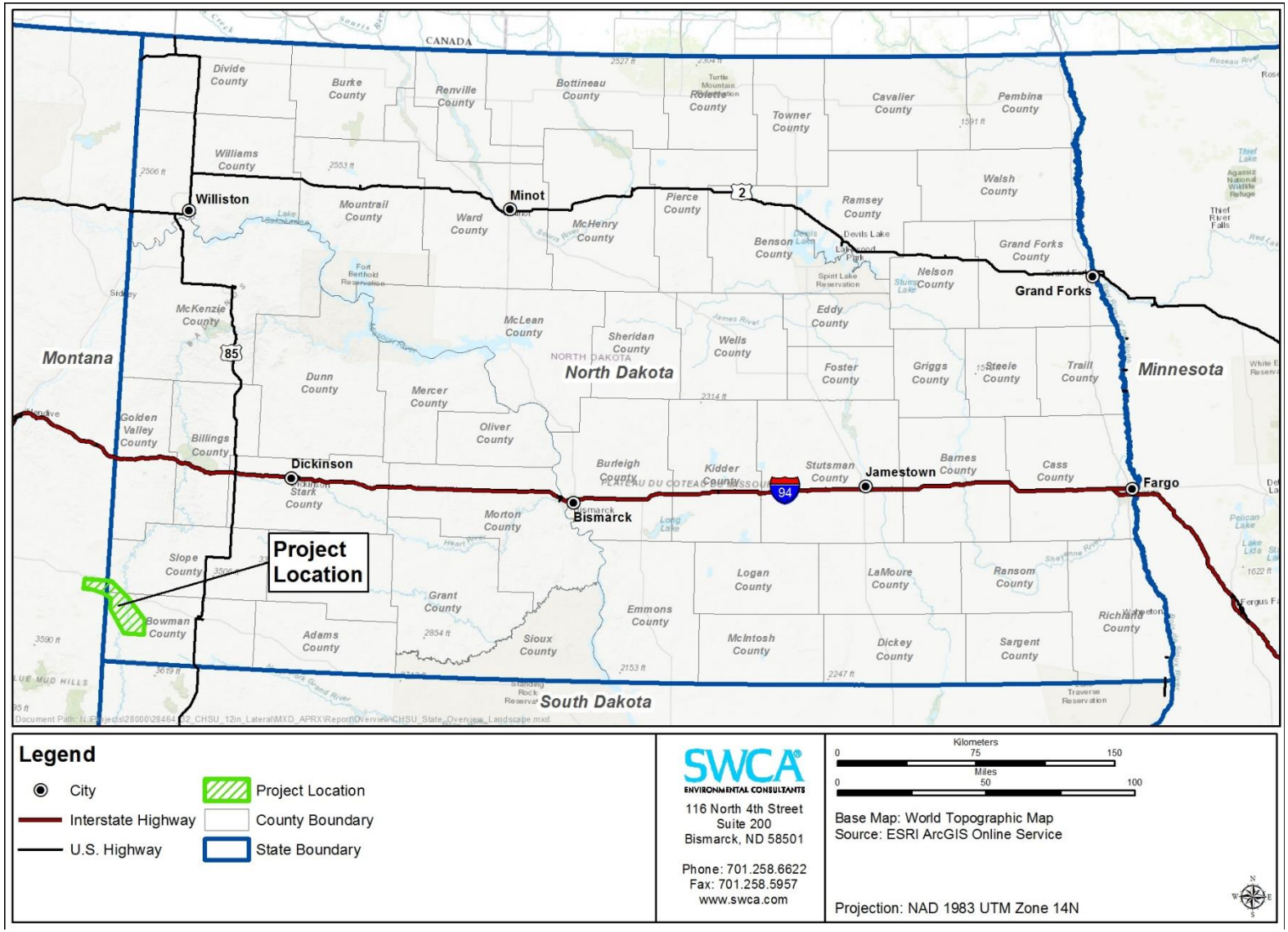

Figure 1. CHSU Lateral CO_2 Pipeline Project location map.

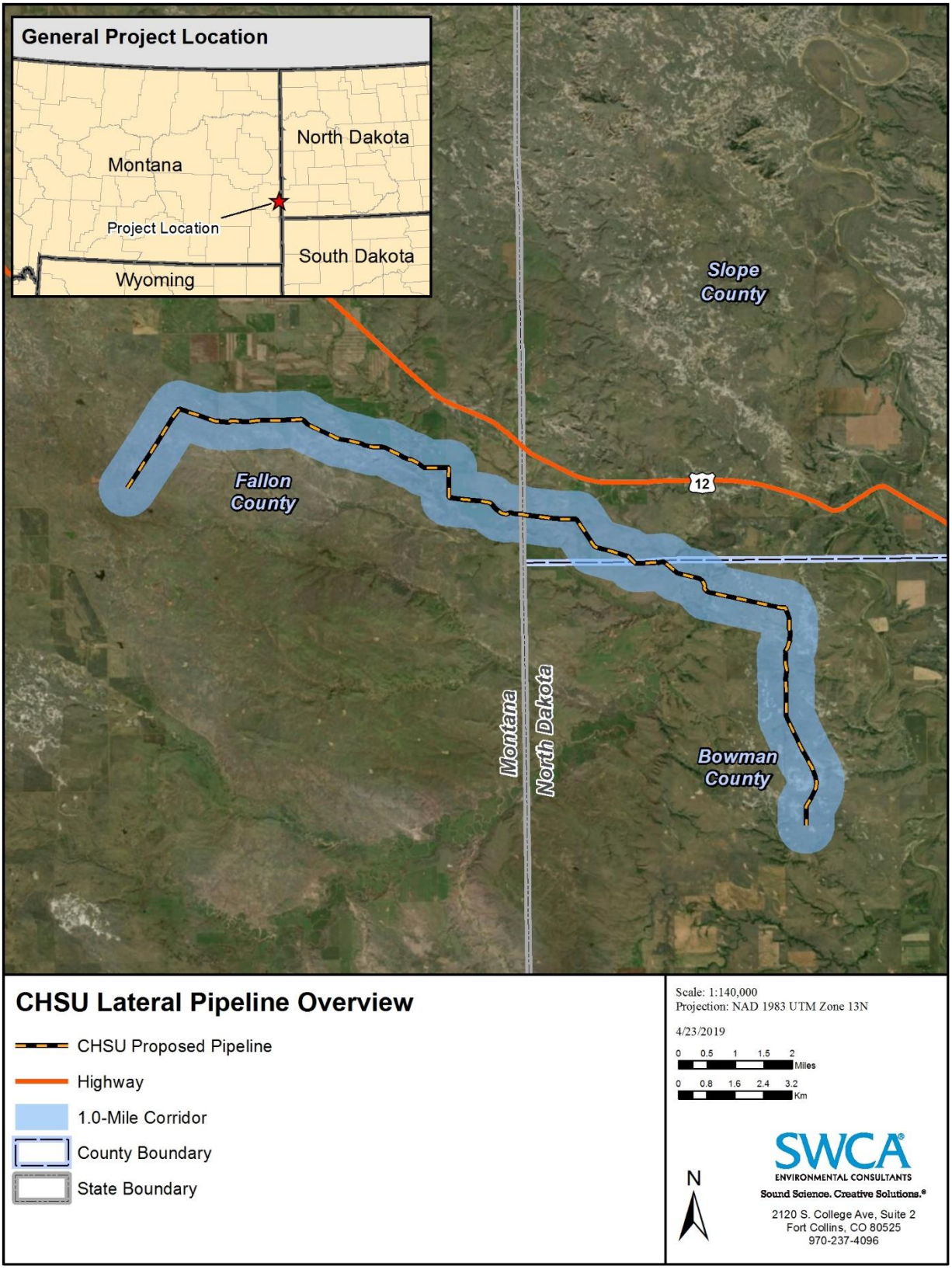

Figure 2. CHSU Lateral CO_2 Pipeline route.

HYDROSTATIC TEST PLAN

Denbury will conduct hydrostatic testing of the pipeline in accordance with the requirements of 40 Code of Federal Regulations (CFR) 195.300, as summarized in Table 2. Three separate hydrostatic testing events will be conducted: 1) testing of the pipeline segments that will be installed using the HDD method prior to installation; 2) testing of the HDD pipeline segments after installation; and 3) testing of the entire pipeline (i.e., both HDD and conventional lay segments) after installation. As indicated in Table 2, the HDD hydrostatic testing sequence will proceed from shortest to longest segment so the test water can be reused for each subsequent test. HDD locations are shown in Figure 3 and Attachment 1.

Table 2. CHSU Lateral CO_2 Pipeline Hydrostatic Testing Requirements

Segment ID*	Pipeline Information			HDD Pre-Installation Test†, ‡		Post-Installation Test‡, §		Total Water Usage	
	Diameter (feet)	Length (feet)	Volume (gallons)	Pressure (psi)	Duration (hours)	Pressure (psi)	Duration (hours)	HDD Pre-Install (gallons)	Entire Pipeline Post-Install (gallons)
HDD									
HDD-1	0.969	100	551	4,628	4	4,072	8	551	551
HDD-7	0.969	145	799	4,628	4	4,072	8	799	799
HDD-4	0.969	160	882	4,628	4	4,072	8	882	882
HDD-2	0.969	200	1,103	4,628	4	4,072	8	1,103	1,103
HDD-6	0.969	200	1,103	4,628	4	4,072	8	1,103	1,103
HDD-3	0.969	500	2,757	4,628	4	4,072	8	2,757	2,757
HDD-5	0.969	1,825	10,062	4,628	4	4,072	8	10,062	10,062
HDD-MT	0.969	5,898	32,518	4,628	4	4,072	8	32,518	32,518
Total HDD Segments		9,028	49,775					49,775	49,775
Conventional	0.984	84,798	482,111	N/A	N/A	4,072	8	N/A	482,111
Total Water Usage								49,775	531,886

* Segment ID
HDD-1 = Oilfield Road
HDD-2 = Unnamed intermittent tributary to Little Beaver Creek
HDD-3 = BNSF Railroad track
HDD-4 = Duffield Road
HDD-5 = Little Beaver Creek
HDD-6 = Camp Crook Road
HDD-7 = Oilfield Road
HDD-MT = all HDD segments in Montana
Conventional = trenched pipeline

† For HDD-installed pipeline segments: hydrostatic test will be conducted prior to and after installation.

‡ 49 CFR 195.304 requires that a test pressure of 125% or more of the maximum operating pressure be maintained for 4 hours when the segment is visually inspected during the test. For pipeline segments that cannot be visually observed during the hydrostatic test (i.e., post-installation HDD segments and the entire pipeline after installation), the pressure will be maintained at 110% of the maximum operating pressure for a total of 8 hours.

§ Includes HDD and conventional lay pipeline

N/A = not applicable
psi = pounds per square inch

The general hydrostatic testing procedure will entail the following steps.

1. Set up testing and monitoring equipment.
2. Fill pipe segment with the test water.
3. Pressurize the pipe segment to the minimum value and hold for the required duration (Table 2).

4. If hydrostatic test results are acceptable, depressurize segment and discharge the test water.

Pre-installation hydrostatic testing of the HDD segments will be conducted from shortest length (i.e., smallest water volume) to longest length (i.e., greatest water volume) so that the test water from the previous test can be used in subsequent tests, with supplemental fresh water added to achieve the required volume for each succeeding test, and the same testing protocol will be followed for the Montana HDD segments. The hydrostatic test water volume requirements are summarized in Table 2, and the North Dakota testing sequence is illustrated in Figure 3.

As review of Table 2 indicates, the shortest to longest North Dakota testing sequence will be as follows.

1. Segment HDD-1 (Oilfield Road); then
2. Segment HDD-7 (Oilfield Road); then
3. Segment HDD-4 (Duffield Road); then
4. Segment HDD 2 (Unnamed tributary to Little Beaver Creek); then
5. Segment HDD-6 (Camp Crook Road); then
6. Segment HDD-3 (BNSF Railroad); then
7. Segment HDD-5 (Little Beaver Creek); and then
8. The entire replaced pipeline (i.e., HDD and conventional lay segments combined).

After completion of each HDD-segment hydrostatic test, the water will be collected and stored in aboveground tanks (e.g., frac tanks) for use in subsequent tests. Once the HDD pre-installation hydrostatic tests have been completed, post-installation tests will be conducted in the same sequence as the pre-installation tests. After the post-installation HDD segment tests have been completed, the HDD segments will be joined and connected to the conventional lay pipeline segments. After all segments have been joined, hydrostatic testing of the entire replaced pipeline will be conducted. In this manner, only one hydrostatic test water discharge will occur for the project.

The pipeline hydrostatic test water discharge will be routed through an open-top tank to facilitate visual observation and sample collection, and then through a filter bag (Figure 4) or other suitable energy dispersion devices (e.g., straw bale and rip rap barriers), at a rate of up to 1,500 gallons per minute. The final hydrostatic test water discharge will be to Little Beaver Creek at latitude 53146.273822ºN and longitude 103.976759ºW.

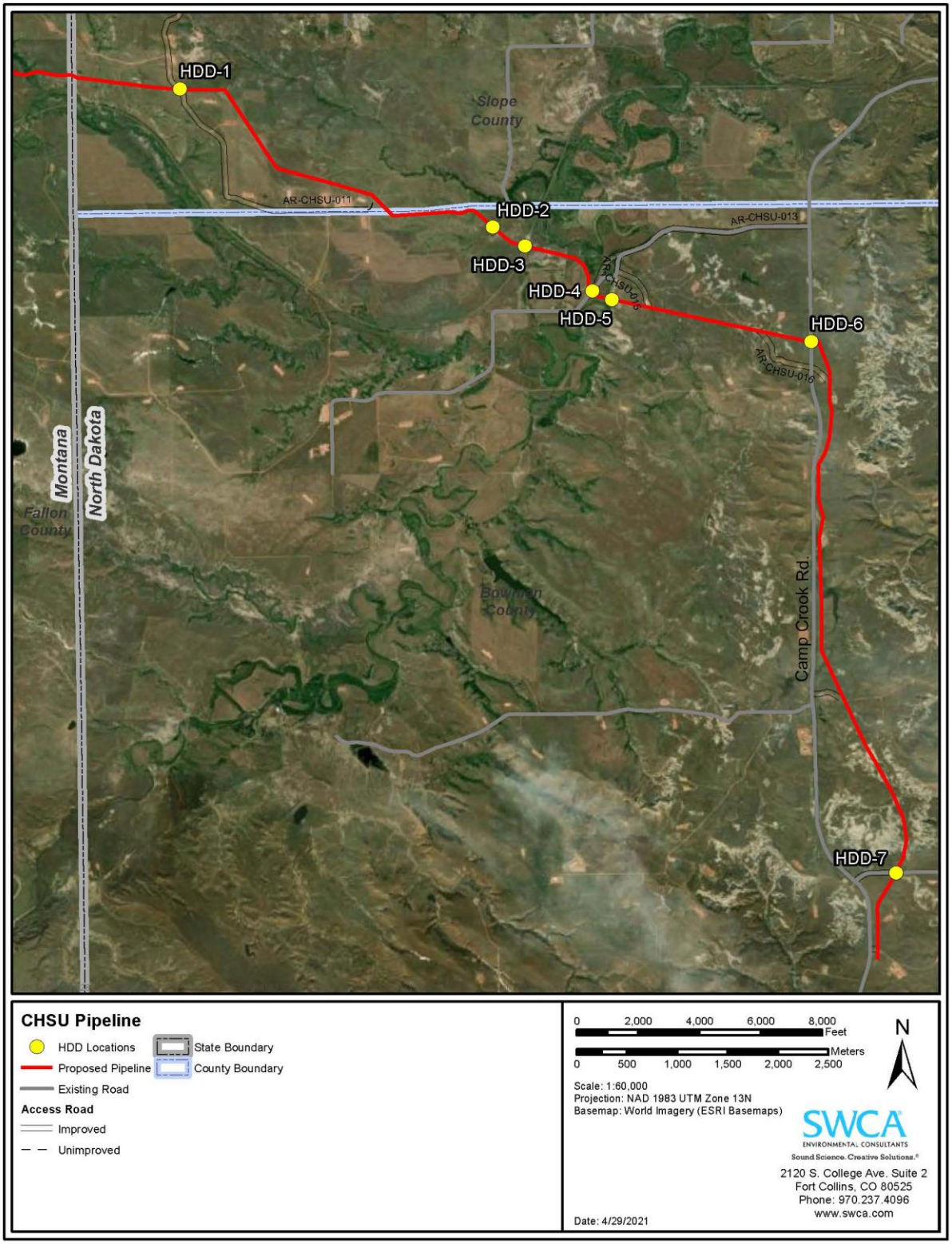

Figure 3. North Dakota HDD hydrostatic testing sequence map.

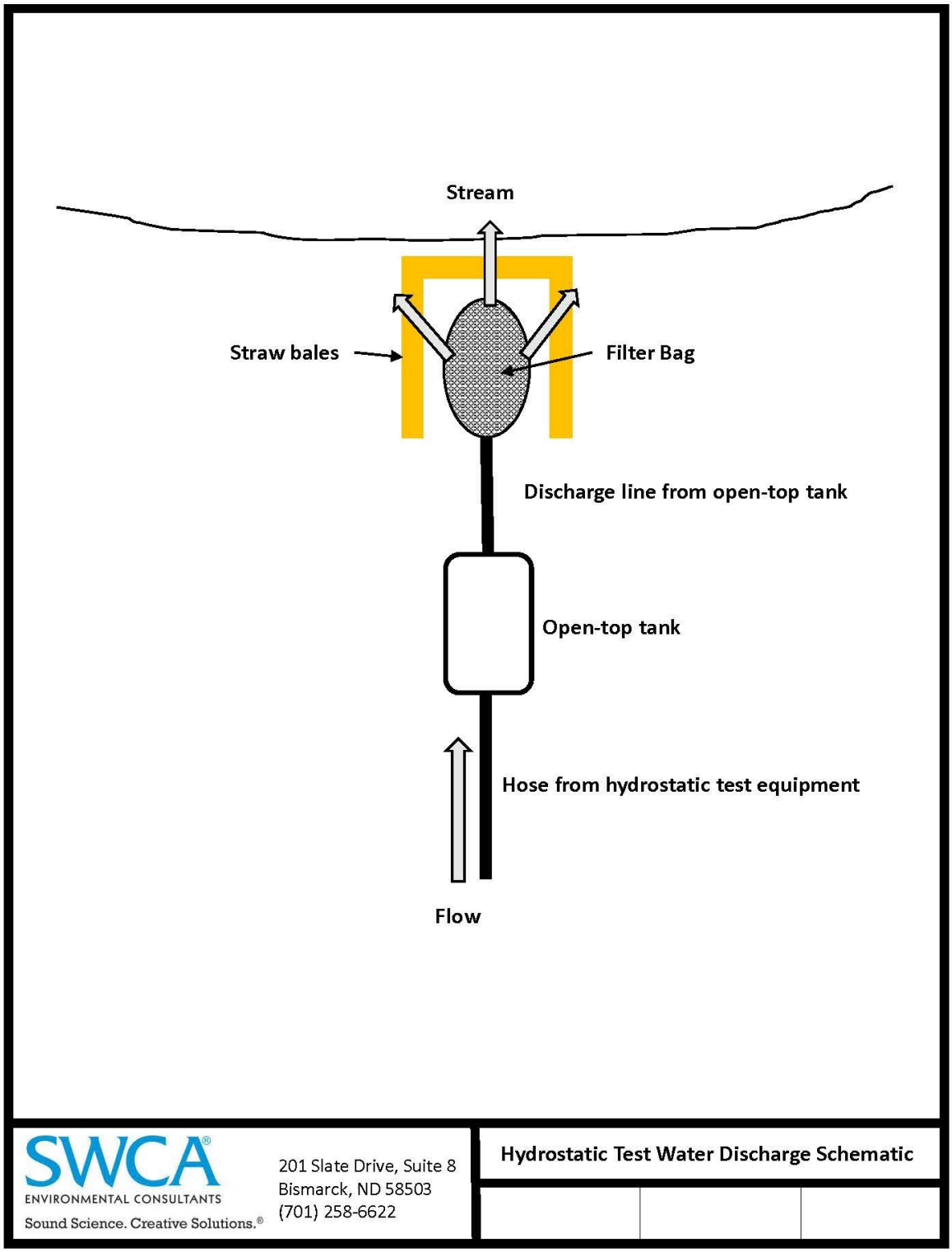

Figure 4. Hydrostatic test water discharge schematic.

Table 3 summarizes the analytical parameters for hydrostatic test water discharge samples. As indicated, the discharge water will be visually observed for an oil sheen or floating oil throughout the entire discharge period. Water quality samples will be collected near the beginning, middle, and end of the discharge period and will analyzed for the parameters indicated in Table 3. The principal analytes of interest are pH and total suspended solids; however, if an oil sheen or floating oil is observed on the water surface, a sample will be collected and analyzed for oil and grease. Also, if a chlorinated water source is used for the test water, field analysis for residual chlorine will be conducted to determine the chlorine content of the water and assess if the discharge to state waters will not violate North Dakota water quality standards. Laboratory analysis for residual chlorine will be conducted as well.

Table 3. Hydrostatic Test Water Discharge Analytical Parameters

Parameter	Units*	Limit†	Sample Type	Frequency‡
pH	S.U.	6.0–9.0	Grab	During discharge
Total Suspended Solids	mg/l	100	Grab	During discharge
Sheen	N/A	Observable	Visual	Continuous during discharge
Total Residual Chlorine§	mg/l	0.05	Grab	During discharge
Oil and Grease¶	mg/l	10	Grab	Visual
Flow	gallons	N/A	Calculated	Daily

* Units:
S.U. = standard units
mg/l = milligrams per liter
N/A = not applicable
† Limit = regulatory concentration allowed in the discharge for Class II or Class III waters.
‡ Frequency = visual observation of the discharge for oil sheen or floating oil will be continuous throughout the discharge interval, while grab samples will be collected near the beginning, middle, and end of the discharge period.
§ Only required if a chlorinated source (e.g., municipal) is used for the hydrostatic test water; field testing to assess the chlorine concentration, followed by laboratory analysis.
¶ Only required if an oil sheen or floating oil is observed during the discharge.

The anticipated hydrostatic test water discharge date is the fourth quarter of 2021. Denbury will submit a Discharge Monitoring Report for the discharge location no later than 30 days after the end of the calendar quarter in which the hydrostatic test water discharge occurs.

ATTACHMENT 1

CHSU Lateral CO_2 Pipeline North Dakota Route and HDD Boring Location Maps

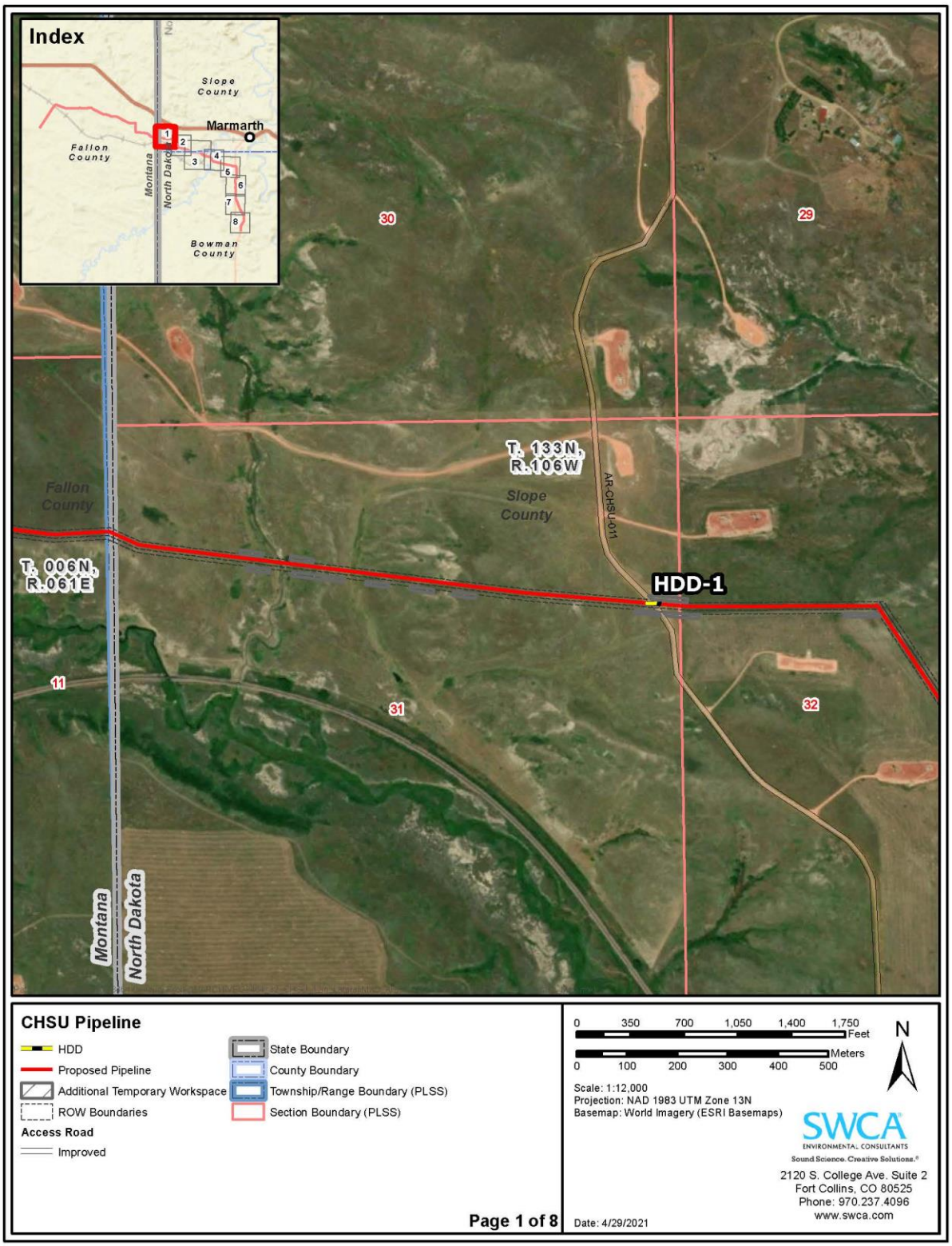

Figure A1. Pipeline route and HDD bore location map 1 of 8.

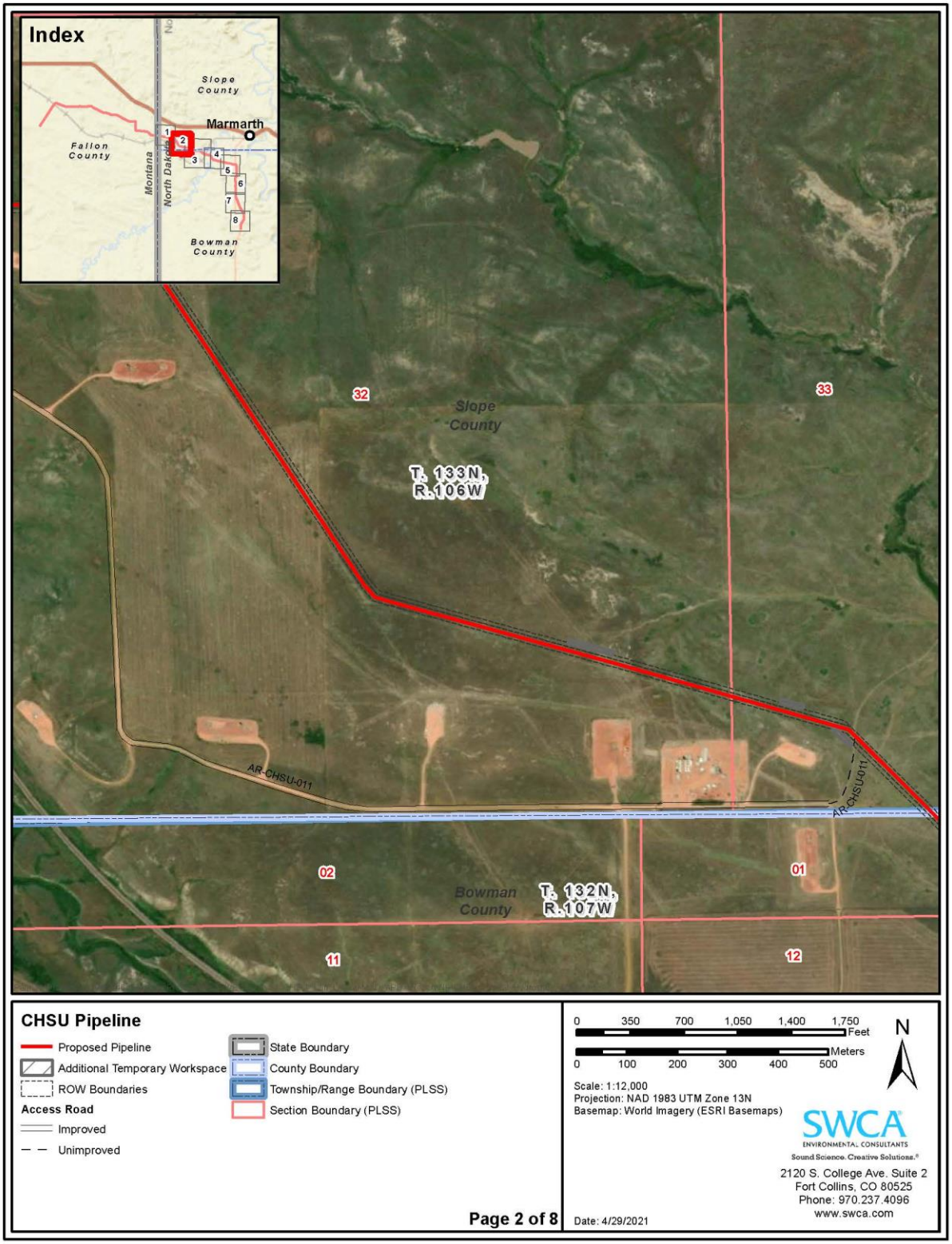

Figure A2. Pipeline route and HDD bore location map 2 of 8.

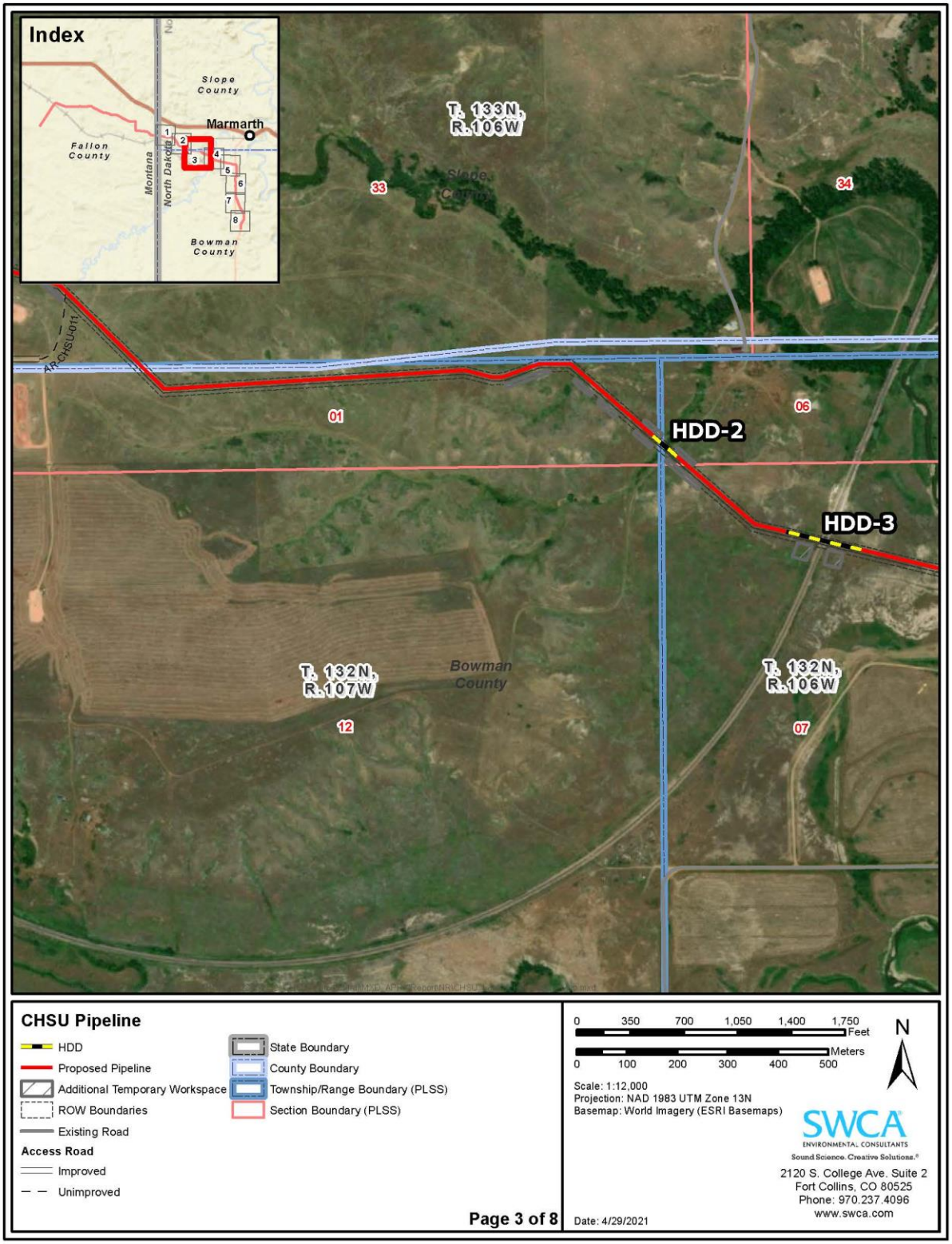

Figure A3. Pipeline route and HDD bore location map 3 of 8.

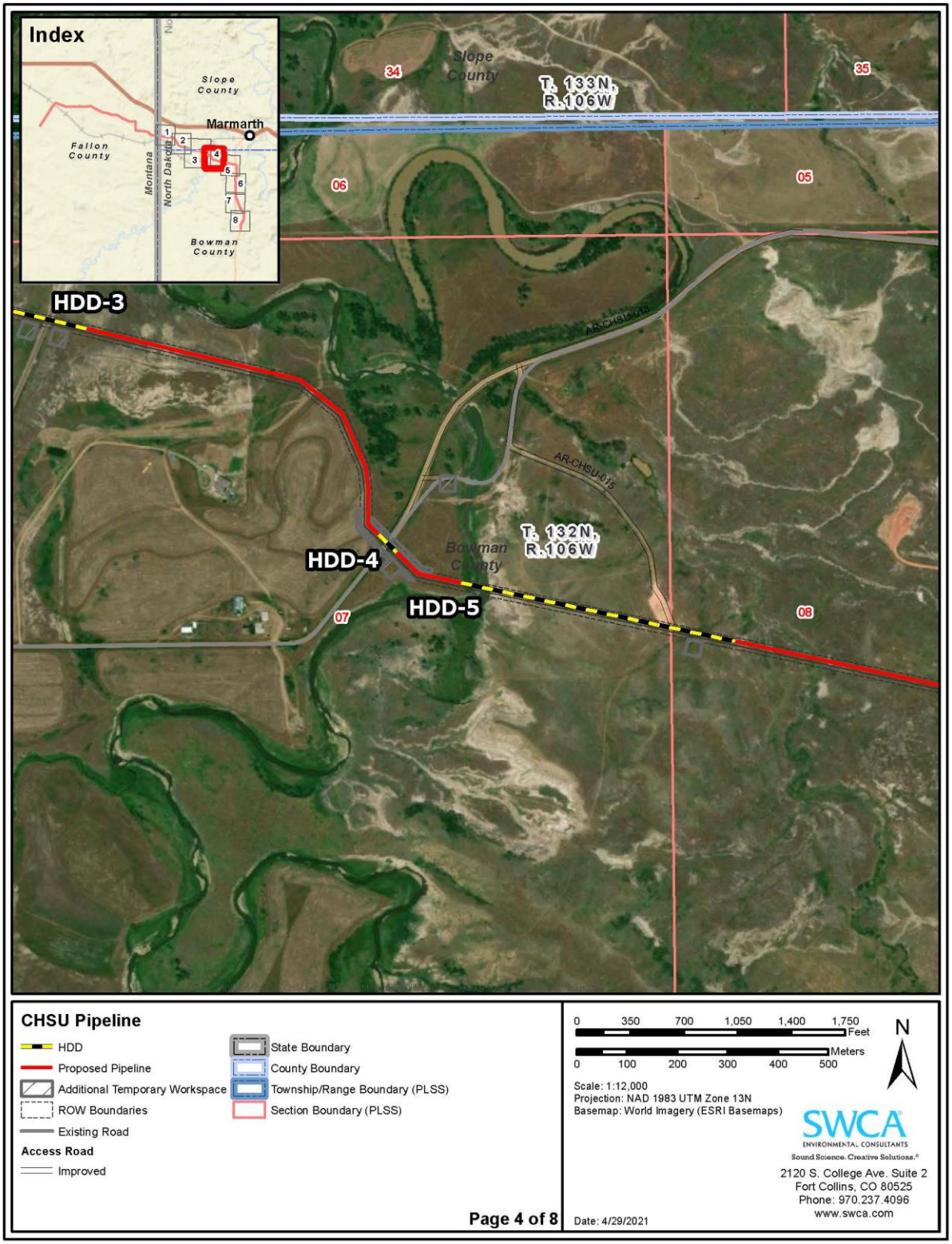

Figure A4. Pipeline route and HDD bore location map 4 of 8.

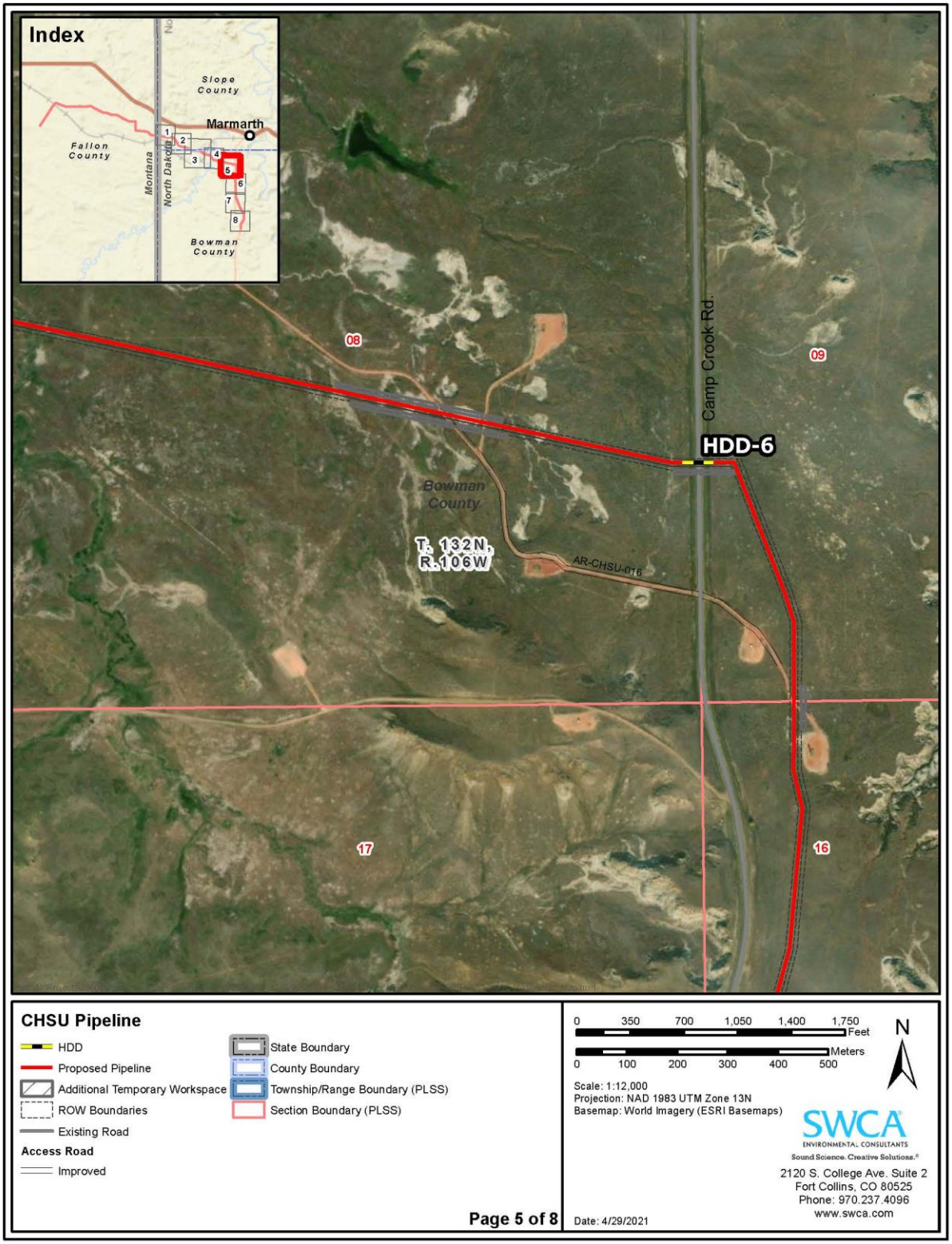

Figure A5. Pipeline route and HDD bore location map 5 of 8.

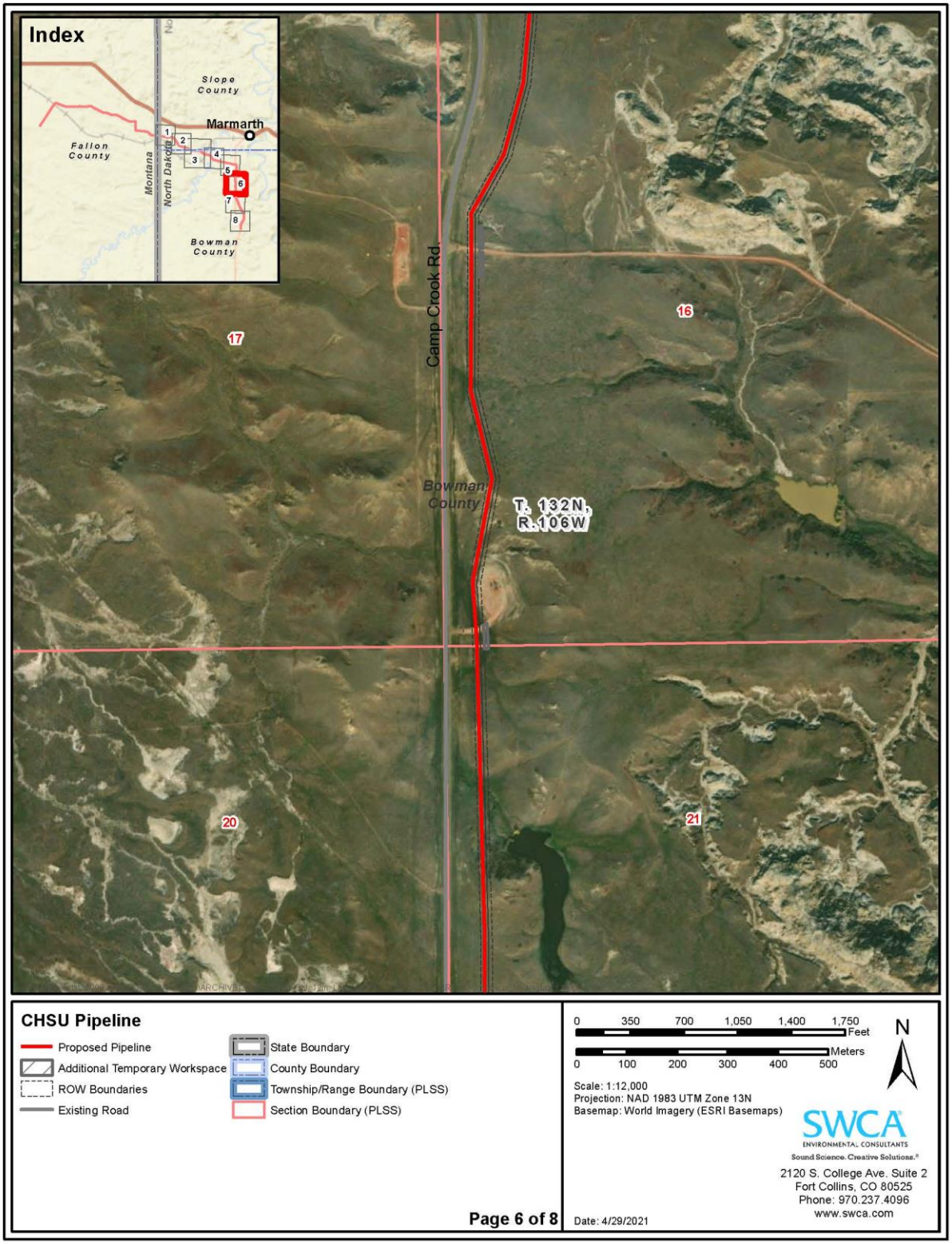

Figure A6. Pipeline route and HDD bore location map 6 of 8.

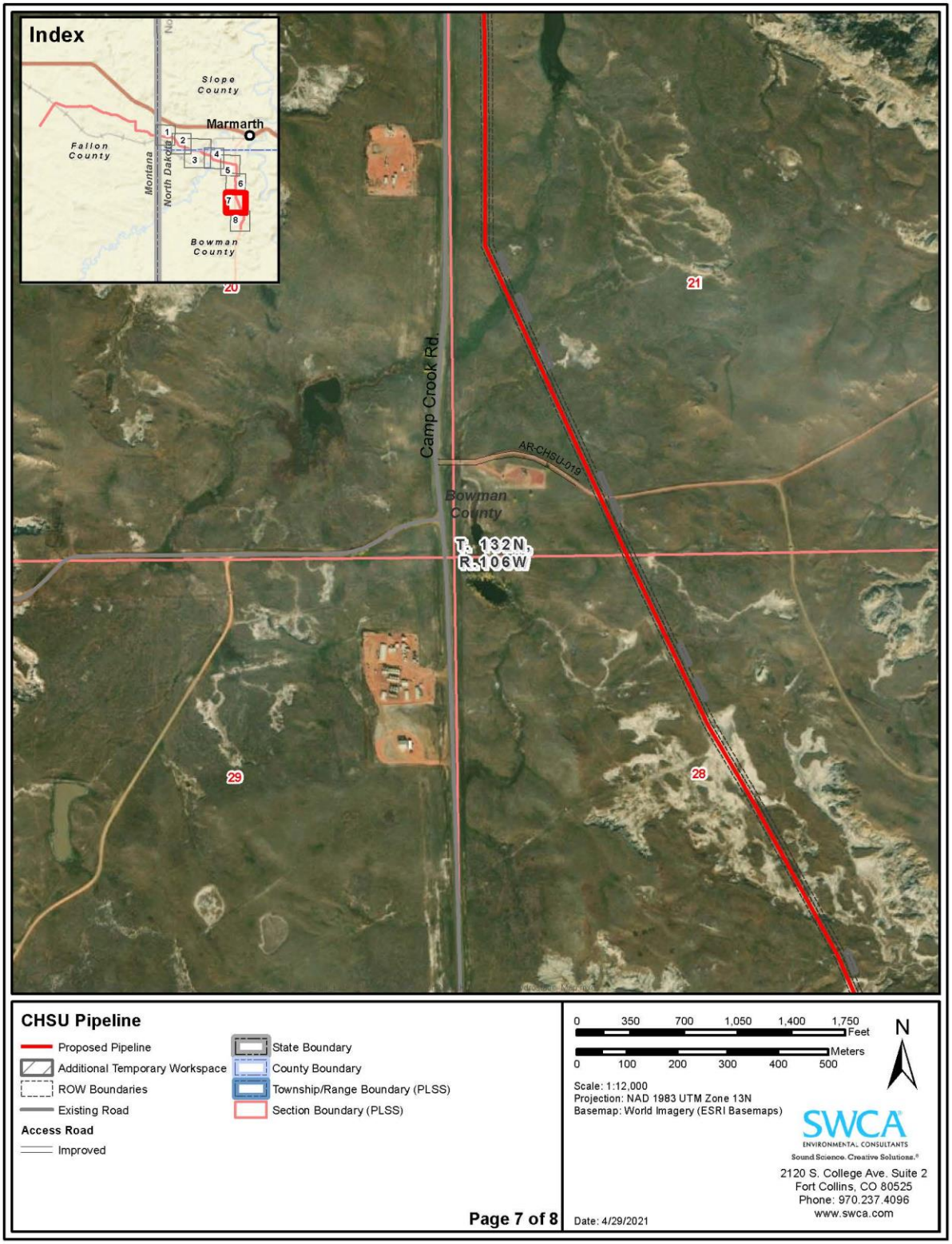

Figure A7. Pipeline route and HDD bore location map 7 of 8.

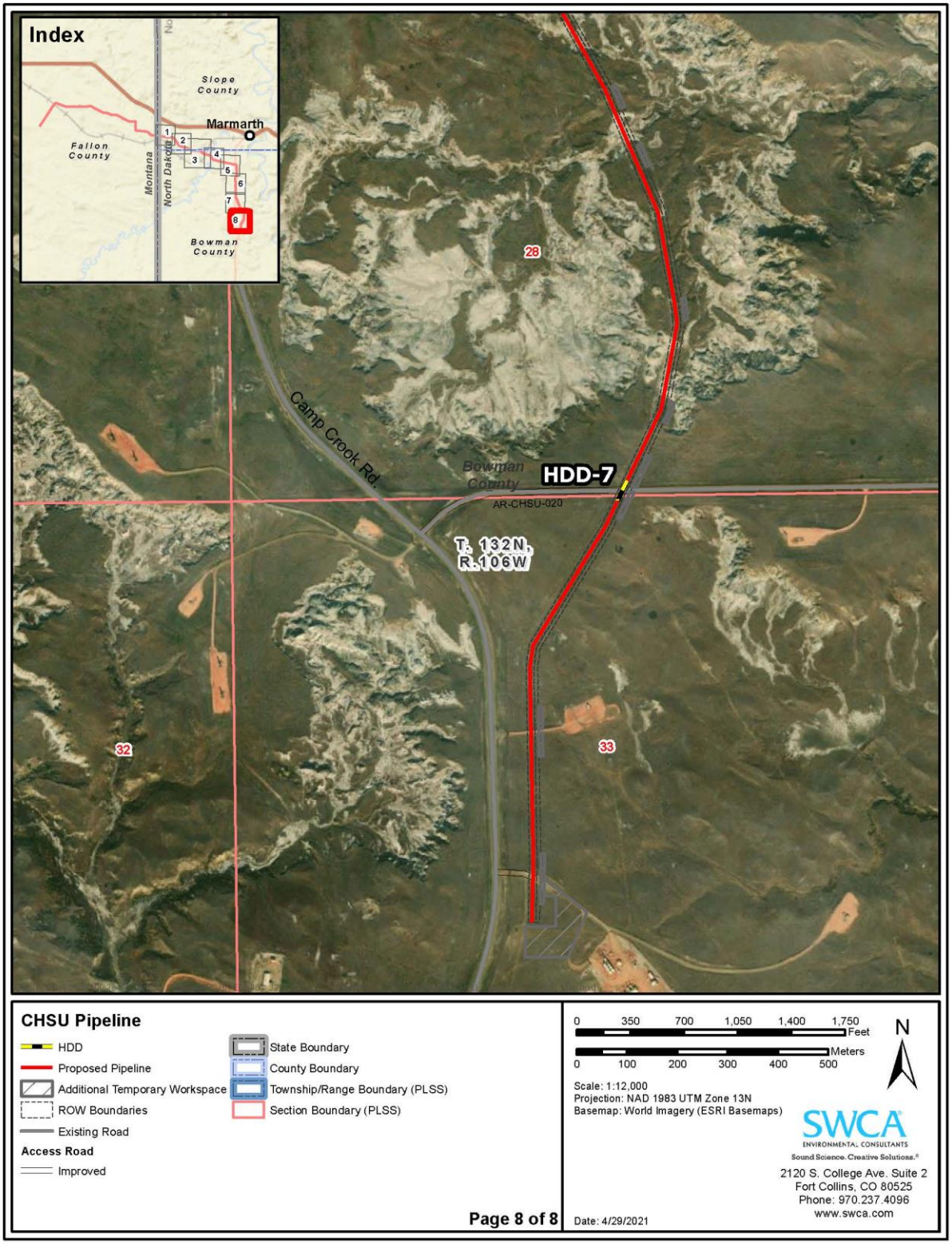

Figure A8. Pipeline route and HDD bore location map 8 of 8.