STEPHENS ENGINEERING

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December 29, 2025

USDA Rural Development – Texas Office
101 South Main Street, Suite 102
Temple, TX 756501

RE: De Berry WSC
ECWAG Application
Simplified Engineering Report and
Certification

To Whom It May Concern:

In accordance with 7 CFR 1778 and 7 CFR 1780, please accept this as the simplified engineering report for the above referenced application.

A. Project Justification

De Berry WSC (DWSC) currently serves 367 connections with one plant. The plant currently utilizes four (4) wells that previously had an approximate capacity of 239 gallons per minute. The WSC requires 220 gpm of water supply per TCEQ requirements.

The WSC's current water wells are developed in the Carrizo-Wilcox aquifer formation. The TWDB has been monitoring Well Nos. 1 and 4 on an annual basis since 1977 and 2001 respectively. Well No. 1 had an initial static water level reading in 1977 of 74' (below surface). The well has shown a decline since 2019 from 84.3' to the 2024 reading of 92.3'. Well No. 4 had an initial static water level reading in 2001 of 56.5'. The well has shown a decline since 2019 from 59.8' to the 2024 reading of 88.3'. Although Well No. 2 is not a TWDB monitored water well, the initial drilling static water level in 1970 was 41'. The water well was serviced in August of 2025 due to a rapid loss in production and the static water level was measured at 120'. Well No. 3 does not have a recent static water level reading to compare to historical readings. Well No. 3 had an initial static water level in 1979 of 55' with a production of 60 gpm. The most recent TCEQ inspection documented a well production of 85 gpm. Field tests as of December 2025 showed Well No. 3 pumping over 80 gpm.

The WSC had their routine TCEQ inspection on May 16, 2024. At that time the TCEQ field-tested well capacities resulted in a total capacity of 189 gpm, representing an approximate reduction in production capacity of 21%. The well capacities are published on TCEQ's "Drinking Water Watch" website. Since the inspection, DWSC has experienced a rapid loss of production at their Well No. 2. In October of 2024, DWSC

contracted a well service company to pull and service the pump due to a loss in production. At that time the static level was 118' and was pumping 24 gpm. At the May 2024 TCEQ inspection the well was producing 37 gpm, representing a 35% loss in production in five months. In August of 2025 an additional loss of production prompted the WSC to have the well service company pull the well and do further inspection and testing of the mechanical equipment. The mechanical equipment was found to be operable. However, the static water level had dropped to 120', causing the well to begin pumping air. With a maximum pump setting of 150', the well no longer has sufficient available draw down to continue operation of the water well.

DWSC had Well No. 4 serviced and inspected in July of 2025 due what appeared to be worsening water quality issues. Prior to the worsening water quality issues, Well No. 4 had elevated iron levels slightly above the TCEQ Secondary Maximum Contaminant Level (SMCL). The WSC utilized this well in conjunction with the other three wells, providing a blended water that resulted in iron SMCLs below the .3 mg/L threshold. Note that this higher iron concentration appears to be an isolated occurrence. The other three wells have very limited iron concentrations. The July 2025 inspection revealed multiple holes in the steel casing allowing higher levels of water to enter the casing. At that time the WSC discontinued use of the water well due to its potential of contamination to the water supply.

The existing age of the wells are:

- Well No. 1 – 60 years (1965)
- Well No. 2 – 55 years (1970)
- Well No. 3 – 46 years (1979)
- Well No. 4 – 37 years (1988)

After the loss of Well Nos. 2 and 4, DWSC is left with Well Nos. 1 and 3. The combined production capacity of the operable wells is 111 gpm (26 and 85 gpm respectively per the 2024 TCEQ inspection), or 50.4% of the TCEQ required capacity.

Reviewing drought conditions of DWSC and the surrounding Panola County area, the service area is not currently in a drought. Per historical drought monitoring data found on the Texas Water Development Board's drought monitoring website, over the last five years DWSC was in a moderate drought in 2020, 2021, 2022, and 2024 and a severe drought in 2023. When comparing the TWDB's carrizo-wilcox aquifer outcrop map (the aquifer recharge areas) to the drought monitoring maps, a majority of the recharge zones of the aquifer were in moderate drought in 2020, 2021, and 2024 and were in severe droughts in 2022 and 2023. The continued levels of moderate to severe drought in both the WSC's service area and the aquifer's recharge zones have appeared to have had a

significant adverse impact to the static water levels of the aquifer in the DWSC service area.

DWSC currently is not producing water supply in compliance with TCEQ requirements and is struggling to maintain tank levels. Should the WSC lose either of their remaining water wells, the reduction in capacities will not allow them to maintain tank levels and water service to their current customers. The WSC requires additional water supply to remain TCEQ compliant.

B. Scope of Work

The proposed project includes drilling two new water wells. The water wells will be drilled to the Carizzo-Wilcox formation. The wells will be constructed with 8" PVC well casing due to the shallower depth and the ability to withstand potentially corrosive effects of shallower water levels on steel casing. One of the wells will be drilled near the existing Well No. 3 and is expected to produce approximately 75 gpm. The second well will be drilled near the existing plant and is expected to produce approximately 50 gpm. After completion of the wells, the WSC is expected to have 235 gpm of production capacity and will be in compliance with TCEQ requirements for water supply.

Based on the observed conditions of DeBerry's wells, along with well logs of the surrounding area, the two proposed well locations show more promise than areas near Well Nos. 1, 2, and 4. The existing Well No. 3 has mostly maintained its capacity and water quality during these period of rapid static water level reduction. Well No. 3 has been the WSC's largest and consistent producer. Well logs revealed two wells in the Well No. 3 vicinity that produced approximate specific capacities of 0.50 gpm/ft (2018) and 1.1 gpm/ft (2024). The range of specific capacities near Well No. 3, along with the current pumping capacity of the well, suggests that a 75 gpm Well No. 6 is achievable.

The DeBerry WSC area appears to have stronger wells south and west of the existing DeBerry WSC well field. The nearest wells to the proposed Well No. 5 (adjacent to the existing water plant) have specific capacities of .45-1.4 gpm/ft. The stronger well (.75 miles due west) had a specific capacity of 5 gpm/ft, but appears to be an anomaly compared to neighboring wells. Assuming a .75 gpm/ft specific capacity at the proposed site, the Proposed Well No. 5 could produce up to 65 gpm. An alternate Well No. 6 well site is provided in Exhibit A that would have similar capacity to the proposed Well No. 6.

Each well will include security fencing, electrical improvements, and other associated appurtenances. One of the water wells will be equipped with an emergency backup generator. A layout of the proposed well locations can be found in Exhibit A.

C. Cost Estimate

The proposed project will cost $999,100 as shown in Exhibit B of this report. The proposed project includes the well and all associated appurtenances.

D. Project Schedule

The proposed project schedule is:

- Notice of Funding – February 1, 2026
- Advertise Test Well Bids – February 11, 2026
- Open and Award Test Well Bid – February 26, 2026
- NTP for Test Wells – March 16, 2026
- Test Well Results – April 13, 2026
- TCEQ Plan and Specification Submittal – May 1, 2026
- Submit Bid Documents to USDA-RD for Review/Approval – May 1, 2026
- Submit Attorney Agreement, ROW Certifications, and Other Documents to USDA-RD for Review/Approval – June 1, 2026
- TCEQ Approval – July 15, 2026
- Advertise For Bids – July 19, 2026
- Bid Opening – August 4, 2026
- Submit Bid Information to USDA for Review/Approval – August 5, 2026
- Award Contract – August 20, 2026
- Submit Contracts to USDA-RD for Review/Approval – September 17, 2026
- Pre-Construction Conference – October 12, 2026
- NTP for Construction – October 19, 2026
- Construction Completion – March 18, 2027

An alternative schedule that includes drilling test wells under the construction contract is:

- Notice of Funding – February 1, 2026
- TCEQ Plan and Specification Submittal – March 1, 2026
- Submit Bid Documents to USDA-RD for Review/Approval – March 1, 2026
- Submit Attorney Agreement, ROW Certifications, and Other Documents to USDA-RD for Review/Approval – April 1, 2026
- TCEQ Approval – May 15, 2026
- Advertise For Bids – June 3, 2026
- Bid Opening – June 23, 2026
- Submit Bid Information to USDA for Review/Approval – June 24, 2026
- Award Contract – July 8, 2026
- Submit Contracts to USDA-RD for Review/Approval – July 29, 2026
- Pre-Construction Conference – August 27, 2026
- NTP for Construction – September 7, 2026

- Construction Completion – February 4, 2027

*Please allow for up to 90 days of schedule float due to the various reviews, weather, and other factors effecting project progression.

Should you require any additional information or have any questions, please give me a call.

Sincerely,
STEPHENS ENGINEERING

Kyle Stephens, P.E.
Principal

Cc: De Berry WSC

12/29/25

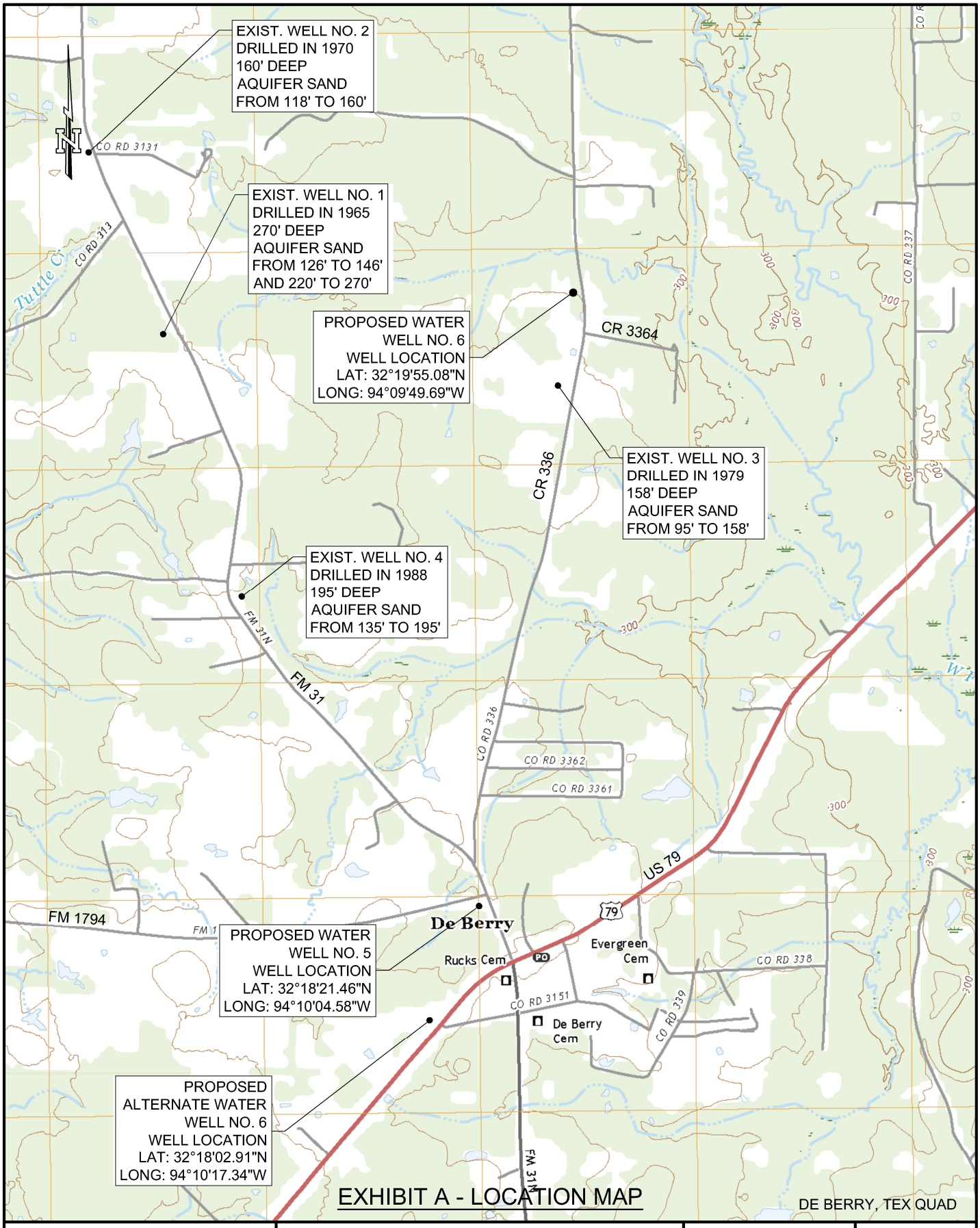

EXHIBIT A - LOCATION MAP

DE BERRY, TEX QUAD

STEPHENS ENGINEERING
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DE BERRY W.S.C.

ECWAG PROPOSED WATER WELLS
PANOLA COUNTY, TEXAS

DATE : SEP 2025

SCALE : 1"=2,000'

JOB NO. : –

A

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Exhibit B
DeBerry WSC
ECWAG Water Well Improvements
Opinion of Probable Construction Cost

Description	Qty.	U/M	Unit Cost	Total Cost
Water Well Improvements				
1 . Test well	2	EA	$30,000	$60,000
2 . Water well	2	EA	$210,000	$420,000
3 . Electrical improvements	2	EA	$57,500	$115,000
4 . Stand-by generator	1	EA	$30,000	$30,000
5 . Security fencing and access gates	400	LF	$45	$18,000
6 . All weather access driveway	200	SY	$60	$12,000
7 . 18" RCP culvert and safety end treatments	40	LF	$150	$6,000
8 . 4" raw water main	2500	LF	$24	$60,000
			Subtotal =	$721,000

Subtotal	$721,000
Contingencies (10%)	$72,100
Total Opinion of Probable Construction Cost	$793,100
Basic Engineering	$81,000
Topographic Surveying	$4,000
Boundary Surveying	$5,000
Preliminary Engineering and Environmental Reports	$10,000
Resident Project Representative	$36,000
Corrosion Study	$10,000
Legal Fees	$10,000
Property Acquisition	$50,000
Total Opinion of Probable Project Cost	$999,100

9/5/25

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Exhibit C
DeBerry WSC
ECWAG Water Well Improvements
Documentation of Drought Conditions for
Carrizo-Wilcox Panola County Outcropping

Month/Year	% of Avg. Monthly Rainfall[1]	US Drought Monitor Data[1]					Palmer Modified Drough Index[2]
		D0	D1	D2	D3	D4	
Jan-21	90-100	62.89%					0.45
Feb-21	50-70	17.38%					(0.29)
Mar-21	110-130	47.55%					0.56
Apr-21	110-130	15.91%					1.70
May-21	130-150						3.00
Jun-21	90-110						3.24
Jul-21	130-150						3.66
Aug-21	70-90						4.48
Sep-21	30-50	99.22%					3.00
Oct-21	30-50	100.00%	100.00%				1.73
Nov-21	50-70	100.00%	100.00%	46.09%			0.30
Dec-21	20-30	100.00%	100.00%	55.53%			(2.01)
Jan-22	30-50	100.00%	100.00%	100.00%	3.04%		(2.82)
Feb-22	70-90	100.00%	100.00%	100.00%	3.15%		(2.93)
Mar-22	170-200	100.00%	100.00%	100.00%			(0.03)
Apr-22	70-90	14.94%					(0.42)
May-22	110-130						(0.37)
Jun-22	20-30	100.00%	100.00%				(1.57)
Jul-22	150-170	100.00%	76.68%				(2.26)
Aug-22	200-300	100.00%	48.49%				0.24
Sep-22	10-20	36.99%					(1.24)
Oct-22	30-50	100.00%	100.00%				(1.55)
Nov-22	110-130	100.00%	93.76%				(0.85)
Dec-22	70-90	100.00%					(0.77)
Jan-23	170-200						0.68
Feb-23	70-90						0.02
Mar-23	70-90						(0.34)
Apr-23	170-200						1.35
May-23	110-130						0.68
Jun-23	70-90						0.58
Jul-23	30-50	48.88%					(0.67)
Aug-23	10-20	100.00%	100.00%	37.84%			(1.69)
Sep-23	90-110	100.00%	100.00%	99.08%			(1.81)
Oct-23	70-90	100.00%	100.00%	100.00%			(1.25)
Nov-23	30-50	100.00%	100.00%	29.45%			(1.99)
Dec-23	30-50	100.00%	100.00%	2.91%			(2.57)
Jan-24	200-300	100.00%	100.00%	19.82%			0.54
Feb-24	70-90						0.09
Mar-24	110-130						0.83
Apr-24	200-300						3.04
May-24	150-170						3.48
Jun-24	130-150						3.82

Denotes Months of below average precipitation and drought conditions

Sources

1. TWDB Water Data for Texas Drought Monitor - https://waterdatafortexas.org/drought/drought-monitor?period=2025-09-16&areaType= state&areaName=tx
2. NOAA Climate At A Glance Time Series - https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series/TX-365/pmdi/1/12/2021-2025?trend=true&trend_base=10&begtrendyear=2021&endtrendyear=2025