Initial

Application

Part I

Received: <u>04/17/2019</u>

This application is placed in file for record. It MAY or MAY NOT have been reviewed to be determined Administratively Complete

RECEIVED:	REVIEWER:	TYPE:	APP NO:
4/17/2019	Will have been seen as a second	500	DMAM 1910754656
		ABOVE THIS TABLE FOR OCD DIVISION U	SEONLY
	NEW MEXIC	O OIL CONSERVATIO	NOISION NOISIVID NO
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- Geological & Eng	
1220 South St. Francis Driv	/e, Santa Fe, NM 8/505
ADMINISTRATIVE AP	PLICATION CHECKLIST
THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRA	TIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND SSING AT THE DIVISION LEVEL IN SANTA FE
Applicant: Solaris Water Midstream, LLC	OGRID Number: 371643
Well Name: Mike Honcho SWD 1	API: 30-015-45394
Pool: SWD; Devonian	Pool Code: 96101
	N REQUIRED TO PROCESS THE TYPE OF APPLICATION TED BELOW
1) TYPE OF APPLICATION: Check those which approximately A. Location – Spacing Unit – Simultaneous Demonstration — NSL NSP(PROJECT AREA)	
B. Check one only for [1] or [1] [1] Commingling – Storage – Measureme DHC DHC DTB PLC PO [11] Injection – Disposal – Pressure Increase WFX PMX SWD DP 2) NOTIFICATION REQUIRED TO: Check those which A. Offset operators or lease holders B. Royalty, overriding royalty owners, reverse. Application requires published notice D. Notification and/or concurrent approximate. Notification and/or concurrent approximate. Surface owner G. For all of the above, proof of notification. No notice required	C OLS OLM Se - Enhanced Oil Recovery I EOR PPR FOR OCD ONL Chapply. Notice Complete Application Content Complete on or publication is attached, and/or,
administrative approval is accurate and comp	
Note: Statement must be completed by an ind	lividual with managerial and/or supervisory capacity.
	4-16-19
Brian Wood	Date
Print or Type Name	
	505 466-8120
1 Stylood	Phone Number
	brian@permitswest.com

e-mail Address

Signature

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

FORM C-108 Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I.	PURPOSE: Secondary Recovery Pressure Maintenance XXX Disposal Storage Application qualifies for administrative approval? XXX Yes No
II.	OPERATOR: SOLARIS WATER MIDSTREAM, LLC
	ADDRESS: 907 TRADEWINDS BLVD., SUITE B, MIDLAND TX 79706
	CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-812
III.	WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
IV.	Is this an expansion of an existing project? Yes XXX No If yes, give the Division order number authorizing the project:
V.	Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
VI.	Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
VII.	Attach data on the proposed operation, including: Mike Honcho SWD 1 30-015-45394
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed;
	 Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
*VIII.	Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
IX.	Describe the proposed stimulation program, if any.
*X.	Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted)
*XI.	Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
XII.	Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
XIII.	Applicants must complete the "Proof of Notice" section on the reverse side of this form.
XIV.	Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
	NAME: BRIAN WOOD TITLE: CONSULTANT
	SIGNATURE: DATE: APR. 15, 2013
	E-MAIL ADDRESS: brian@permitswest.com
*	If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:

III. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

OPERATOR:

INJECTION WELL DATA SHEET

LLC

SOLARIS WATER MIDSTREAM,

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MIKE HONCHO SWD

1807 ff. ff3 F Method Determined: CIRCULATE Method Determined: CIRCULATE 26 E RANGE 7.625" a a Method Determined: CBL 13.375" Casing Size: 9.875" 20" WELL CONSTRUCTION DATA 13715 TOWNSHIP 12712 feet to 13715' Casing Size: Casing Size: 9 25 TD Intermediate Casing Production Casing Injection Interval Surface Casing w or or or 12712' SX. SX. SX. SECTION 1 B SURFACE LINER SURFACE 17.5" 8152 1445 8.5" 26" 191 2094 SIZE HOLE Top of Cement: Cemented with: Top of Cement: Cemented with: Cemented with: Top of Cement: Total Depth: UNIT LETTER Hole Size: Hole Size: Hole Size: 6.5" B TOC (1445 sx) = GL26" hole @ 612' 17.5" hole @ 1807" TOC (1112 sx) = GLTOC (191 sx) = 8152' (CBL)20" 94# in 12.25" hole @ 8352" 13.375" 54# in TOC (982 sx) = GL 7.625" 39# in 8.5" hole @ 12712" 9.875" 53.5# in 670 FNL & 1930 FEL FOOTAGE LOCATION WELLBORE SCHEMATIC (not to scale) TD 13715' WELL NAME & NUMBER: 4.5" IPC tbg @ ≈12262" Devonian 12712' - 13715' 6.5" open hole WELL LOCATION: packer @ ≈12262° YEAR TO THE TOTAL PROPERTY.

(Porforated or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Lu	Fubing Size: 4.5" Lining Material: DUOLINE GLASSBORE
L	Type of Packer: NICKEL PLATED DOUBLE GRIP RETRIEVABLE
Ра	Packer Setting Depth: ≈12662
O	Other Type of Tubing/Casing Seal (if applicable):
	Additional Data
$\vec{-}$	Is this a new well drilled for injection?
	If no, for what purpose was the well originally drilled?
7	Name of the Injection Formation: DEVONIAN
3	Name of Field or Pool (if applicable): SWD; DEVONIAN (96101)
4	Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. N/A
5	Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:
	OVER: BRUSHY CANYON (3032'), BONE SPRING (5247'), WOLFCAMP (8372'), UPPER PENN (9500'), ATOKA (10432'), & MORROW (11002')
	UNDER: NONE

SOLARIS WATER MIDSTREAM, LLC MIKE HONCHO SWD 1 670' FNL & 1930' FEL SEC. 7, T. 25 S., R. 26 E., EDDY COUNTY, NM

30-015-45394

I. Goal is to drill a 13,715' deep commercial saltwater disposal well on fee surface. Proposed disposal interval will be 12,712' – 13,715' in the SWD; Devonian (96101). See Exhibit A for map and C-102.

II. Operator: Solaris Water Midstream, LLC [OGRID 371643]

Operator phone number: (432) 203-9020

Operator address: 907 Tradewinds Blvd., Suite B, Midland TX 79706

Contact for Application: Brian Wood (Permits West, Inc.)

Phone: (505) 466-8120

III. A. (1) Lease (fee surface / BLM subsurface): NMNM-028172
Lease Size: 1119.6 acres
Lease Area: Lots 3-7, SENW, E2SW4, & SE4 Sec. 6, T. 25 S., R. 26 E. and Lots 1-4, E2, & E2W2 Sec. 7, T. 25 S., R. 26 E.
Well name and number: Mike Honcho SWD 1
Location: 670' FNL & 1930' FEL Section 7, T. 25 S., R. 26 E.

A. (2) Surface casing (20", 94#, J-55, BTC) will be set at 612' in a 26" hole and cemented to GL with 1445 sacks.

First intermediate casing (13.375", 54#, J-55, BTC) will be set at 1,807' in a 17.5" hole and cemented to GL with 1,112 sacks

Second intermediate casing (9.875", 53.5#, L-80) will be set at 8,352' in a 12.25" hole and cemented to GL with 982 sacks.

Liner (7.625", 39#, P-110) will be set at 12,712' in an 8.5" hole and cemented to 8,152' (TOL) with 191 sacks.

A 6.5" open hole will be drilled to 13,715'.



SOLARIS WATER MIDSTREAM, LLC MIKE HONCHO SWD 1 670' FNL & 1930' FEL SEC. 7, T. 25 S., R. 26 E., EDDY COUNTY, NM

30-015-45394

- A. (3) Tubing will be CLS 4.5" duoline 20 Glassbore® or its equivalent. Setting depth will be ≈12,662'. (Disposal interval will be 12,712' to 13,715'.)
- A. (4) A nickel plated double grip retrievable packer will be set at ≈12,662' (or ≤100' above the top of the open hole which will be at 12,712').
- B. (1) Disposal zone will be the Devonian (SWD; Devonian (96101) pool). Estimated fracture gradient is ≈0.65 psi/foot.
- B. (2) Disposal interval will be open hole from 12,712' to 13,715'.
- B. (3) Well has not been drilled. It will be drilled as a saltwater disposal well.
- B. (4) No perforated intervals are in the well.
- B. (5) Productive zones in the 1-mile area of review and above the Devonian (12,712') are the Brushy Canyon (3032'), Bone Spring (5247'), Wolfcamp (8372'), Upper Penn (9500'), Atoka (10,432'), and Morrow (11,002'). No oil or gas zone is below the Devonian within 1 mile.
- IV. This is not an expansion of an existing injection project. It is disposal only.
- V. Exhibit B shows and tabulates the 7 wells (4 oil or gas + 3 P&A) within a 1-mile radius. Deepest well within a mile is 12,167' TVD. Exhibit C shows all 44 existing wells (25 oil or gas wells + 11 P & A wells + 8 water wells) within a 2-mile radius.

All leases within a 1-mile radius are BLM or fee. All leases within a 2-mile radius are BLM, fee, or State. Exhibits D and E show all the leases within a 1-mile radius and lessors within a 2-mile radius.



30-015-45394

VI. No Devonian penetrator is within a mile. Deepest (12,167' TVD) well (30-015-34523) within a mile bottomed in the Morrow, 545' above the Devonian.

- VII. 1. Average injection rate will be ≈30,000 bwpd. Maximum injection rate will be 40,000 bwpd.
 - 2. System will be open and closed. Water will both be trucked and piped.
 - 3. Average injection pressure will be <2,500 psi
 Maximum injection pressure will be 2,542 psi (= 0.2 psi/foot x 12.712'
 (top of open hole)).
 - 4. Disposal water will be produced water, mainly from Bone Spring and Wolfcamp wells. There are 53 approved Bone Spring wells and 92 approved Wolfcamp wells in T. 25 S., R. 26 E. The well will take other Permian Basin waters. Abstracts of produced water analyses (from GoTech) from wells in T. 24 S., R. 26 E. are in Exhibit F. (Go-Tech had no analyses from T. 25 S., R. 25 & 26 E.) The table below compares nearby produced waters to Devonian produced water.

Parameter mg/l	Devonian	Atoka	Morrow	Pennsylvanian	San Andres	Wolfcamp
Chloride	121100 - 136964	N/A	81000- 129200	10000	2948 - 5070	9100 - 10000
Sulfate	2220 - 2511	N/A	81 - 1910	1320	413 - 887	1320 - 7300
TDS	203100 - 229700	60623	123887 - 216221	19085	2948 - 6811	N/A

Solaris has not experienced any compatibility problems in the first 9 months of operating its Solaris Eddy State 2 (30-015-44001) Devonian SWD well. Over 4,571,124 barrels have been disposed to date.

5. Closest Devonian producer is more than half dozen miles away. Closest Devonian SWD (30-015-33187) is 3.14 miles east-northeast.



30-015-45394

VIII. The Devonian (estimated 1,185' thick) is mainly composed of carbonates. Closest possible underground source of drinking water above the proposed disposal interval is the Quaternary at the surface. According to State Engineer records (Exhibit G), five water wells are within a mile and eight are within two miles, deepest of which is 360'. No active water well was found within a mile during a November 2, 2018 field inspection. One active well (C 00834) 1.32 miles SW was seen from afar, but could not be accessed due to a locked gate. A second water well, not in the Engineer's data, 1.99 miles SSW in Section 19 was sampled. Mike Honcho SWD is 2.9 miles southeast of the Capitan Reef. No underground source of drinking water is below the proposed disposal zone.

Formation tops are:

Quaternary = 0' Rustler anhydrite = 147' Top salt = 662' Base salt = 1732Bell Canyon = 1757' Cherry Canyon = 2547' Brushy Canyon = 3032' Bone Spring = 5247' Wolfcamp = 8372' Cisco = 9802'Strawn = 10037'Atoka = 10432'Morrow = 11002Barnett = 11882' Devonian = 12712' disposal interval = 12712' - 13715' TD = 13715'(Fusselman = 13897')

Eight water wells are within a 2-mile radius according to State Engineer records (Exhibit G), deepest of which is 360'. There will be >2 miles of vertical separation and shale, salt, and anhydrite intervals between the bottom of the only likely underground water source (Quaternary) and the top of the Devonian.



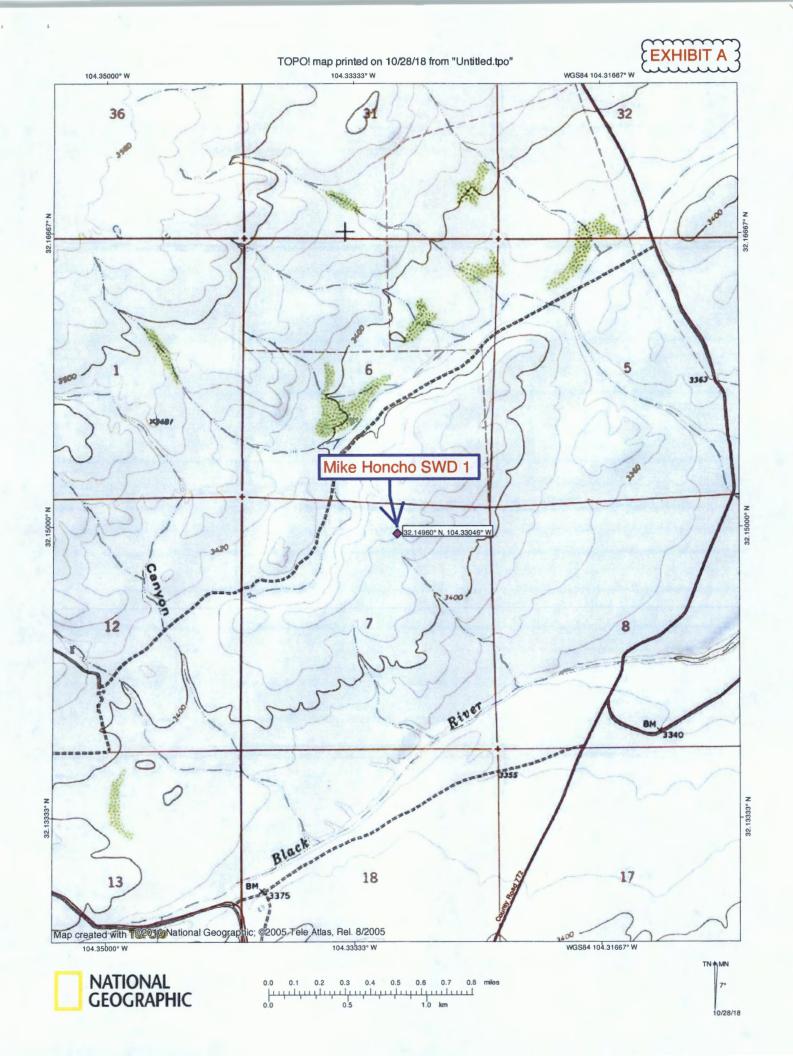
SOLARIS WATER MIDSTREAM, LLC MIKE HONCHO SWD 1 670' FNL & 1930' FEL SEC. 7, T. 25 S., R. 26 E., EDDY COUNTY, NM

PAGE 5

30-015-45394

- IX. The well will be stimulated with acid as needed.
- X. A CBL will be run from production casing setting depth to TOC. GR/neutron log will be run from TD to GL.
- XI. No active water well was found within a mile during a November 2, 2018 field inspection.
- XII. Solaris Water Midstream, LLC (Exhibit H) is not aware of any geologic or engineering data that may indicate the Devonian is in hydrologic connection with any underground sources of water. Deepest water well within a 2-mile radius is 360'. There are 260 approved Devonian SWD wells in New Mexico, of which 145 are active. Closest Quaternary fault is ≈ 37 miles southwest.
- XIII. A legal ad (see Exhibit I) was published on March 22, 2019. Notice (this application) has been sent (Exhibit J) to the surface owners (David & Eva Maley), BLM, all well operators (Breitburn, Cimarex, EOG Resources, Oxy USA WTP) regardless of depth, lessees of record (Black Magic 2 et al, Cimarex, EOG A, EOG M, EOG Resources, EOG Y, Glenn et al, Magnum Hunter, Marathon, Oxy Y-1, Spenergy, & XTO), operating right holders, and government lessor (BLM) within a mile.





NM OIL CONSERVATION

ARTESIA DISTRICT

DISTRICT I 1625 N. French Dr., Hobbs, NM 68240 Phone (676) 385-6161 Fax: (676) 393-0720 DISTRICT II 811 S. First St., Artesia, NM 88210 Phone (675) 748-1288 Fax: (575) 748-9720 DISTRICT III 1000 Rio Brazos Rd., Astec, NM 87410 Phone (505) 334-6178 Pax (505) 334-6170 DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 67605 Phone (506) 476-3460 Fex (508) 476-3463

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-102 OCT 2 9 2018 Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION RECEIVED

1220 South St. Francis Dr. Santa Fe, New Mexico 87505 **EXHIBIT A**

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

30-015-45394	Pool Code 96101	ool Name D; Devonian	
Property Code 322834		Property Name HONCHO SWD	Well Number
OGRÍD No. 371643		Operator Name WATER MIDSTREAM	Elevation 3439'

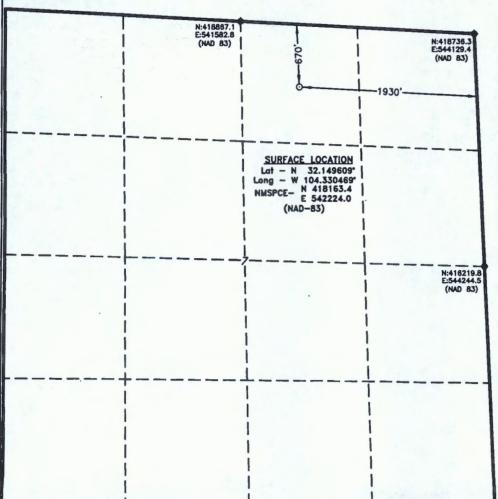
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Peet from the	East/West line	County
В	7	25 S	26 E		670	NORTH	1930	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres	Joint or	Infill Con	solidation (Code Ord	ler No.				

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organisation either owns a working interest or unliked mineral interest in the land tracluding the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an awner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretafore entered by the division.

10.26 Derru Signature

Bonnie Atwater

Printed Name

bonnie.atwater@solarismidstream.com

Rmail Address

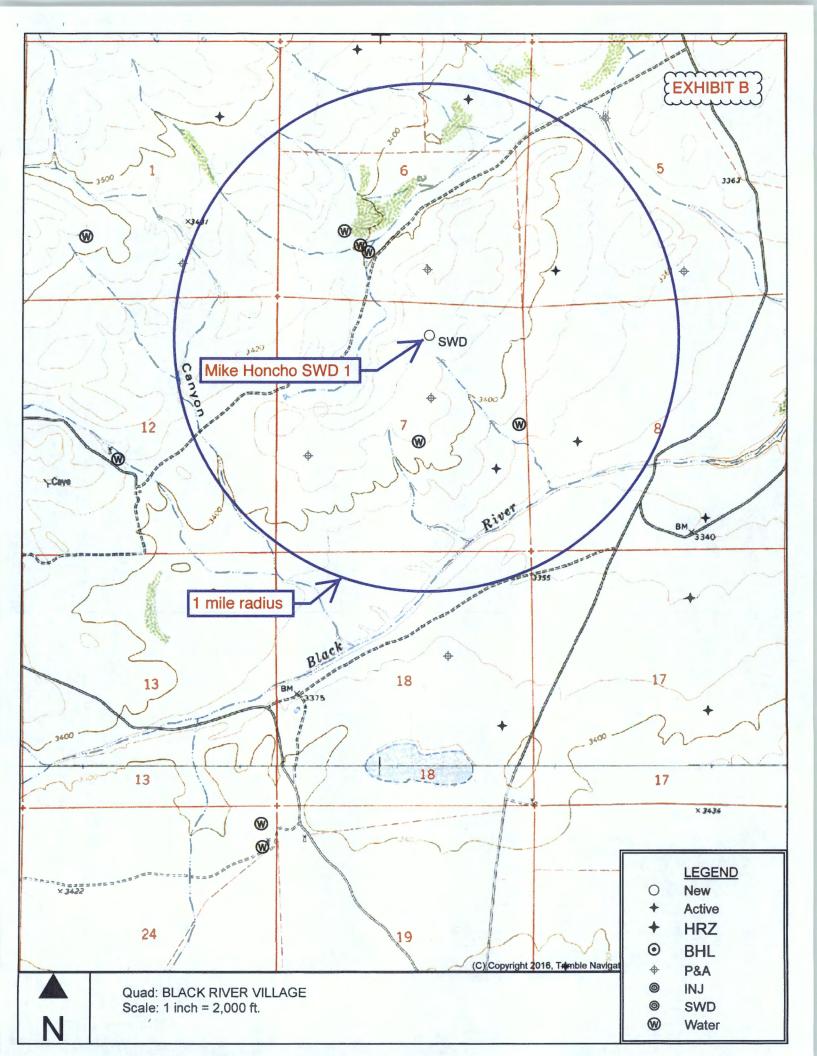
SURVEYOR CERTIFICATION

I hereby certify that the well location shou on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.

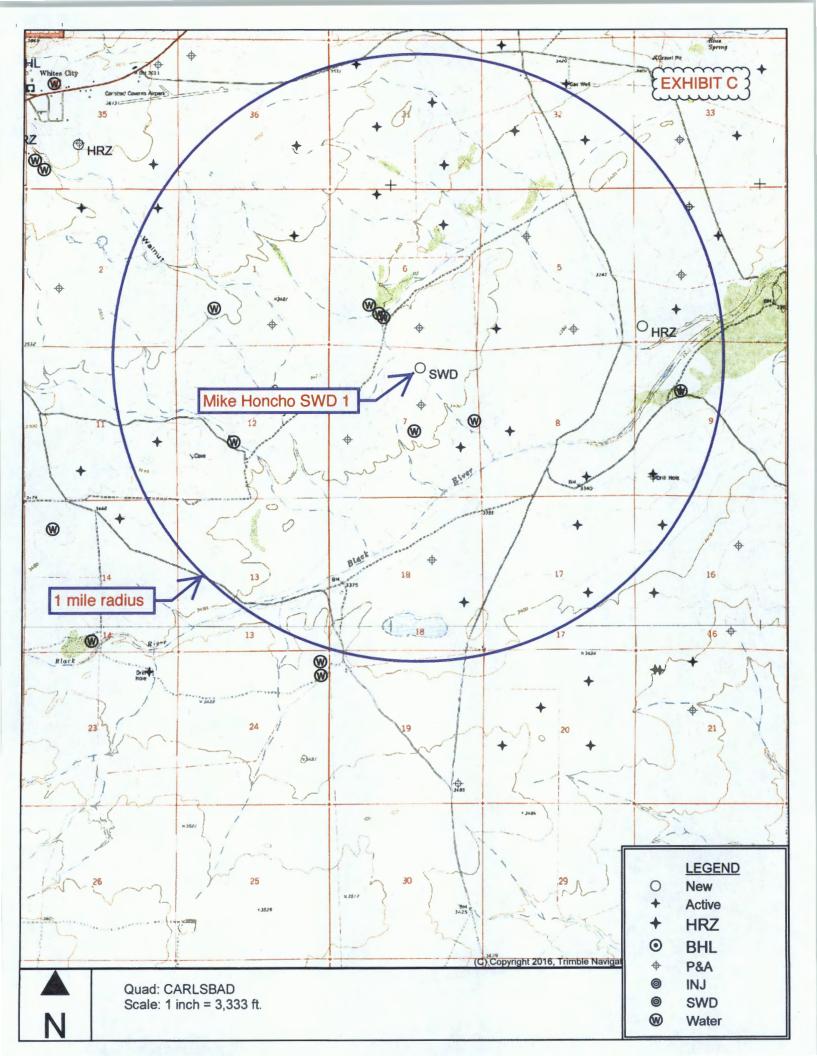
SEPTEMBER. 2 918 Signa Profe veyor 0' 500' 1000 1500 2000

SCALE: 1" = 1000' WO Num.: 34091

RW 11-2-18,



100								
FEET FROM MIKE HONCHO SWD 1	1301	1311	3006	3134	3544	3809	4905	5383
ZONE @ TD	MORROW	MORROW	MORROW	MORROW	MORROW	MORROW	MORROW	MORROW
WELL	P&A	P&A	ŋ	9	P&A	9	9	P&A
WELL	BLACK MAGIC 6 COM 002	DELTA FEDERAL 001	CHOSA ATR FEDERAL 002	DELTA FEDERAL 002	DELTA FED 002	CHOSA ATR FEDERAL 001	BLACK MAGIC 6 COM 001	WC FEDERAL 001
ΔVT	12167	11968	12056	11850	11478	11920	12075	11850
TOWNSHIP	25.05	25.05	25.05	25.05	25.05	25.05	25.05	25.08
UL- SECTION	9-0	G-7	M-5	1-1	L-7	7-8	A-6	0-1
RANGE			26E	26E	36E	26E	26E	25E
CURRENT OR MOST RECENT OPERATOR	CIMAREX ENERGY CO. OF COLORADO	OXY USA WTP LIMITED PARTNERSHIP	EOG Y RESOURCES, INC.	BREITBURN OPERATING LP	SUPERIOR OIL CO	EOG Y RESOURCES, INC.	CIMAREX ENERGY CO. OF COLORADO	SNOW OIL & GAS INC
API	3001534523	3001523147	3001534210	3001534807	3001524187	3001531215	3001534280	3001521023



New Mexico State Land Office

Map Created: 4/13/2019

Data pertaining to New Mexico State Toust Lands are provisional and subject to revision, and do not constitute an official record of title. Official records may be reviewed at the New Mexico State Land Office in Santa Fe, New Mexico.

MIKE HONCHO SWD 1 AREA OF REVIEW LEASES

				Operators (all
Aliquot Parts in Area of Review	Lessor	Lease	Lessee(s) of Record	shallower than
				Devonian)
T. 25 S., R. 25 E.				
SENE, E2SE4, & SWSE Sec. 1	BLM	NMNM-112254	Magnum Hunter	Cimarex
NE4, N2SE4, SESE Sec. 12	BLM	NMNM-104661	EOG A, EOG M, EOG Y, & OXY Y-1	N/A
T. 25 S., R. 26 E.				
NWNE & S2NW4 Sec. 5	fee	fee	Black Magic 2 et al	N/A
W2SE4 & SW4 Sec. 5	BLM	NMNM-094589	EOG A, EOG M, EOG Y, Marathon, & OXY Y-1	EOG Resources
NE4 Sec. 6	fee	Black Magic	Cimarex	Cimarex
NW4 & S2 Sec. 6	BLM	NMNM-028172	Spenergy & XTO	Cimarex
all Sec. 7	BLM	NMNM-028172	Spenergy & XTO	Breitburn
W2NE4, W2, & NWSE Sec. 8	BLM	NMNM-094589	EOG A, EOG M, EOG Y, Marathon, & OXY Y-1	EOG Resources & OXY USA WTP
NWNW Sec. 17	fee	Guitar BPL Com	EOG Resources	EOG Resources
NENE Sec. 18	fee	fee	Glenn et al	N/A
NWNE Sec. 18	BLM	NMNM-094589	EOG A, EOG M, EOG Y, Marathon, & OXY Y-1	N/A
N2NW4 Sec. 18	fee	fee	Glenn et al	N/A

Plugged / Dry / Abandoned

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Salt Water Disposal

Injection Gas

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4

Water Storage Miscellaneous

Carbon Dioxide

* *

Sections

Override 1 Townships

Legend

EXHIBITE 3

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Cancelled / Not Drilled

0

Detailed Roads

Unit Agreement Boundaries

Oil and Gas Leases

All Minerals

Coal Only

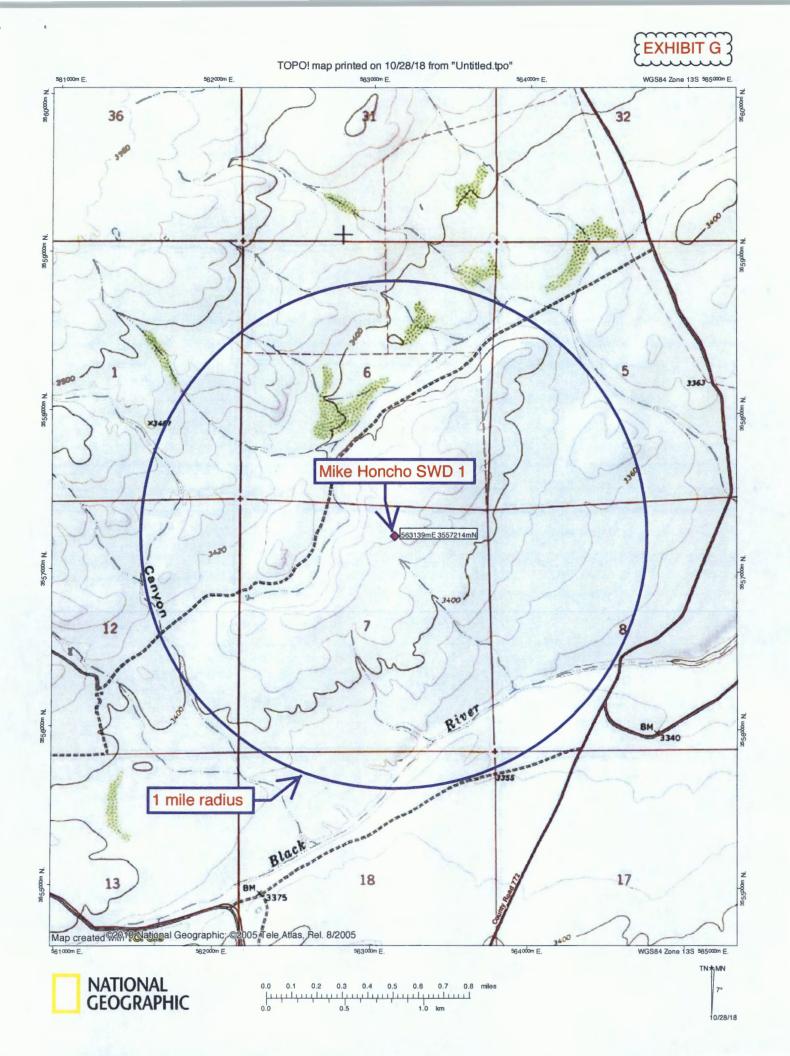
Oil, Gas and Coal Only

Other Minerals

Oil and Gas Only

Map Created: 4/13/2019 EXHIBITE φ. E 0.4 0.5 Data pertaining to New Mexico State Trust Lands are provisional and subject to revision, and do not constitute an official record of title. Official records may be revisiwed at the New Mexico State Land Office in Sarta Fe, New Mexico.

							_								_
Sulfate		3099	1336	2511	2220	81	1150	1278	1910	1320	1320	413	887	1320	7300
Bicarbonate		059	653	198	175	368.28	159	177	293	645	645	618	429	645	
Chloride		137300	10120	136964	121100	81000	106800	118655	129200	10000	10000	5070	2948	10000	9100
TDS	60623	230993		229706	203100	123887	176935	196574	216221	19085	19085	10492	6811		
Formation	ATOKA	DELAWARE	DEVONIAN	DEVONIAN	DEVONIAN	MORROW	MORROW	MORROW	MORROW	PENNSYLVANIAN	PENNSYLVANIAN	SAN ANDRES	SAN ANDRES	WOLFCAMP	WOLFCAMP
Range	26E	26E	26E	25E	25E	26E	25E	25E	25E	36E	26E	26E	26E	26E	26E
Township	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245
Section	12	11	29	5	5	11	5	5	5	19	29	11	11	29	18
API	3001500389	3001500387	3001500408	3001510280	3001510280	3001520301	3001510280	3001510280	3001510280	3001522118	3001500408	3001500386	3001500385	3001500408	3001505973





New Mexico Office of the State Engineer



Water Column/Average Depth to Water

(A CLW#### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned,

C=the file is

closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

		POD Sub-		Q	Q	Q								W	ater
POD Number	Code	basin	County	64	16	4	Sec	Tws	Rng	X	Y	DistanceDep	thWellDep	thWater Co	lumn
C 04036 POD1		C	ED	1	4	3	06	25S	26E	562745	3557733	652	160	125	35
C 03258		C	ED	1	l	4	07	25S	26E	563073	3556546*	671	360		
C 04050 POD1		CUB	ED	1	4	3	06	25S	26E	562695	3557776	716	165	125	40
C 03285		C	ED	4	4	2	07	25S	26E	563713	3556658	798	84	60	24
C 04049 POD1	1 mile =	CUB	ED	3	2	3	06	25S	26E	562592	3557864	850	165	120	45
<u>C 00834</u>	1610 m	С	ED		2	3	12	25S	25E	561156	3556423*	2134	115	58	57
<u>C 01552</u>		C	ED			3	01	25S	25E	560939	3557820*	2281	71	43	28
C 02675		С	ED	1	4	1	09	25S	26E	565907	3556978*	2778	180	45	135

Average Depth to Water:

82 feet

Minimum Depth:

43 feet

Maximum Depth:

125 feet

Record Count: 8

UTMNAD83 Radius Search (in meters):

Easting (X): 563139

Northing (Y): 3557214

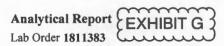
Radius: 3220

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

4/13/19 11:27 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER



Hall Environmental Analysis Laboratory, Inc.

Date Reported: 11/14/2018

CLIENT: Permits West Client Sample ID: S Mike Hondo #1

Project: Solaris Klein SWD and Mike Honcho Collection Date: 11/2/2018 2:17:00 PM

Lab ID: 1811383-001 Matrix: AQUEOUS Received Date: 11/7/2018 2:04:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664B						Analyst	SMS
N-Hexane Extractable Material	ND .	10.2		mg/L	1	11/12/2018 10:20:00 AM	A 41468
EPA METHOD 300.0: ANIONS						Analyst	smb
Chloride	39	5.0		mg/L	10	11/8/2018 3:47:31 PM	R55524
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst	KS
Total Dissolved Solids	2910	20.0	*	mg/L	1	11/12/2018 5:59:00 PM	41454

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: S Klein SWD #1

Project: Solaris Klein SWD and Mike Honcho

Collection Date: 11/3/2018 11:18:00 AM

Lab ID: 1811383-002

CLIENT: Permits West

Matrix: AQUEOUS

Received Date: 11/7/2018 2:04:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664B		2.3				Analyst	SMS
N-Hexane Extractable Material	ND	11.7		mg/L	1	11/12/2018 10:20:00 AM	M 41468
EPA METHOD 300.0: ANIONS						Analyst	smb
Chloride	330	50	*	mg/L	100	11/8/2018 4:51:50 PM	R55524
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst	: KS
Total Dissolved Solids	2080	40.0	*D	mg/L	1	11/12/2018 5:59:00 PM	41454

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

WO#:

Hall Environmental Analysis Laboratory, Inc.

14-Nov-18

Client:

Permits West

Project:

Solaris Klein SWD and Mike Honcho

Sample ID MB-41468

SampType: MBLK

TestCode: EPA Method 1664B

Client ID: **PBW** Batch ID: 41468

RunNo: 55596

LowLimit

LowLimit

Prep Date: 11/12/2018 Analysis Date: 11/12/2018

Units: mg/L

PQL

SeqNo: 1851335

HighLimit

%RPD

RPDLimit

Qual

N-Hexane Extractable Material

Sample ID LCS-41468

ND 10.0

SampType: LCS

TestCode: EPA Method 1664B

Client ID: LCSW Batch ID: 41468

RunNo: 55596

Analyte

Prep Date: 11/12/2018

Analysis Date: 11/12/2018

SeqNo: 1851336

%REC

Units: mg/L

HighLimit

%RPD **RPDLimit**

Qual

N-Hexane Extractable Material

32.8

40.00

82.0

114

Result

PQL 10.0

SPK value SPK Ref Val

SPK value SPK Ref Val %REC

78

Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix

В Analyte detected in the associated Method Blank

E Value above quantitation range

Analyte detected below quantitation limits

Page 3 of 5

P Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

QC SUMMARY REPORT

WO#:

1811383

14-Nov-18

Hall Environmental Analysis Laboratory, Inc.

Client:

Permits West

Project:

Solaris Klein SWD and Mike Honcho

Sample ID MB

SampType: MBLK

TestCode: EPA Method 300.0: Anions

Client ID:

PBW

Batch ID: **R55524**

PQL

RunNo: 55524

Prep Date:

Analysis Date: 11/8/2018

SeqNo: 1848881

Units: mg/L

HighLimit

%RPD **RPDLimit**

Qual

Analyte Chloride

Client ID:

Prep Date:

ND 0.50

Result

SampType: LCS

TestCode: EPA Method 300.0: Anions

SPK value SPK Ref Val %REC LowLimit

Sample ID LCS

LCSW

Batch ID: R55524

Analysis Date: 11/8/2018

RunNo: 55524 SeqNo: 1848882

Units: mg/L

%RPD

Analyte

Result **PQL**

SPK value SPK Ref Val 5.000

%REC 97.5

RPDLimit Qual

Page 4 of 5

Chloride

0.50

90

HighLimit

4.9

LowLimit

110

Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

Holding times for preparation or analysis exceeded H

ND Not Detected at the Reporting Limit

Practical Quanitative Limit PQL

% Recovery outside of range due to dilution or matrix S

B Analyte detected in the associated Method Blank

Value above quantitation range E

Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

QC SUMMARY REPORT

14-Nov-18

Hall Environmental Analysis Laboratory, Inc.

Client:

Permits West

Project:

Solaris Klein SWD and Mike Honcho

Sample ID MB-41454

SampType: MBLK

TestCode: SM2540C MOD: Total Dissolved Solids

Client ID: **PBW**

11/9/2018

Batch ID: 41454

RunNo: 55588 SeqNo: 1850918

Units: mg/L

Qual

Analyte

Prep Date:

Analysis Date: 11/12/2018 **PQL**

SPK value SPK Ref Val %REC

LowLimit

HighLimit %RPD **RPDLimit**

Total Dissolved Solids

ND 20.0

Sample ID LCS-41454

SampType: LCS

TestCode: SM2540C MOD: Total Dissolved Solids

Client ID: LCSW Prep Date: 11/9/2018

Batch ID: 41454

RunNo: 55588

Units: mg/L

Analysis Date: 11/12/2018

SeqNo: 1850919

Analyte

Result

Result

SPK value SPK Ref Val

%REC 101

LowLimit

HighLimit

Total Dissolved Solids

PQL

120

1010

20.0

1000

%RPD

RPDLimit

Qual

H

POL

Qualifiers: Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

Not Detected at the Reporting Limit ND Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix

Holding times for preparation or analysis exceeded

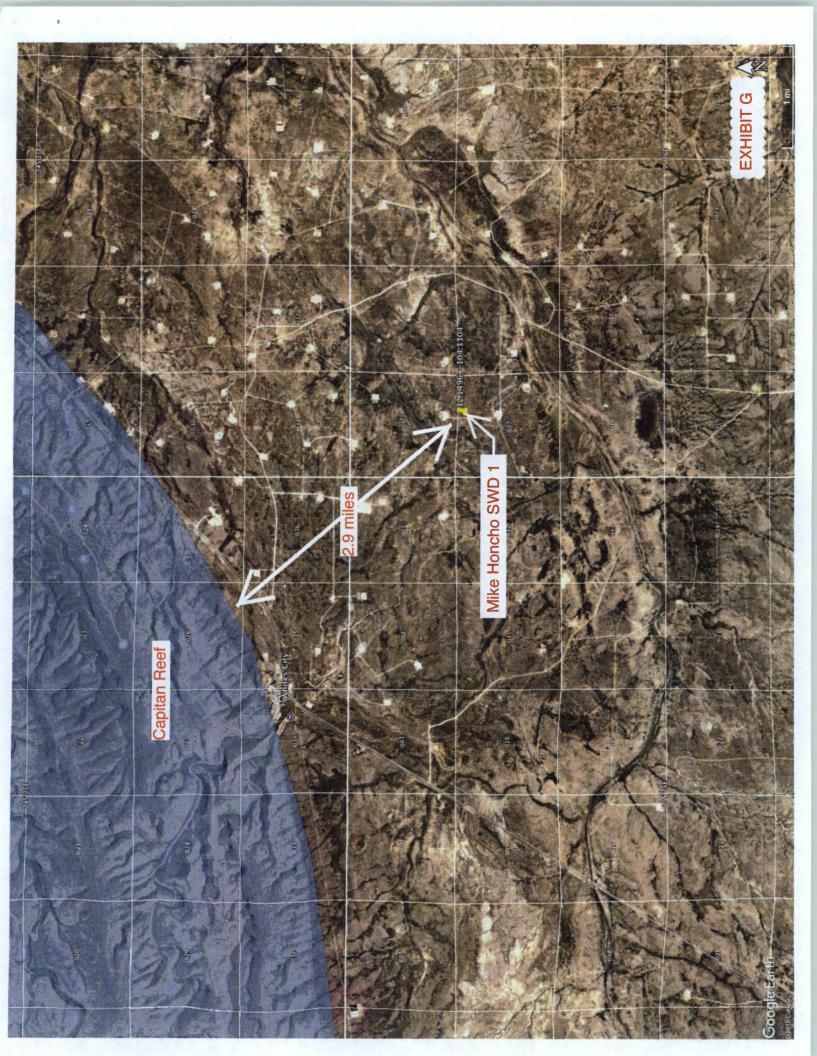
B Analyte detected in the associated Method Blank

E Value above quantitation range

Analyte detected below quantitation limits

Sample pH Not In Range

RL Reporting Detection Limit Sample container temperature is out of limit as specified Page 5 of 5







Geologic Assessment

Solaris Water Midstream, LLC

Mike Honcho SWD No. 1

Section 7, Township 25 South, Range 26 East

Eddy County, New Mexico

Cory Walk

Coy Walk

B.S., M.S.

Geologist

Permits West Inc.

November 26, 2018

Solaris Water Midstream LLC Mike Honcho SWD No. 1

GEOLOGIC ASSESSMENT PAGE 1

EXHIBIT H

Introduction

Mike Honcho SWD #1 is located in section 7, T25S, R26E, about 3 miles southeast of Whites City, NM in the Permian Basin. Solaris Water Midstream, LLC proposes the injection zone to be within the "Devonian" (Silurian Wristen Group) formation through an open hole from 12,712'- 13,715' below ground surface. This report assesses any potential concerns relating to induced seismicity along deep penetrating Precambrian faults or the connection between the injection zone and known underground potable water sources.

Groundwater Sources

Quaternary Alluvium acts as the principal aquifer used for potable ground water near the Mike Honcho SWD #1 location (Hendrickson and Jones, 1952). Nicholson and Clebsch (1961) state, "Potable ground water is not available below the Permian and Triassic unconformity but, because this boundary is not easily defined, the top of the Rustler anhydrite formation is regarded as the effective lower limit of 'potable' ground water." Around the Mike Honcho SWD #1 well, the top of a thick anhydrite unit interpreted to represent the Rustler Formation lies at a depth of ~147 feet bgs.

Faults and Fractures

Fault data from the Geologic Map of New Mexico (2003) shows the nearest surface fault to the SWD location is found 3 miles to the northwest (Figure 1). This fault is inferred based on a mapped discontinuity of stratigraphy. Greater than 30 miles southwest of the Mike Honcho well is a large accumulation of northwest trending Basin and Range style normal faults. This fault zone is interpreted to be a southeastern extension of the Rio Grande Rift zone (Muehlberger et al., 1978) and is the only area in the region in which deeply penetrating faults also penetrate the shallow aquifer systems.

A structure contour map (Fig. 2) of the Precambrian basement shows the Mike Honcho SWD #1 well is ~7 miles from a basement-penetrating fault documented by Ewing et al (1990). Montgomery (1997) indicates that these faults do not penetrate anything above the Delaware Mountain group and therefore cannot act as a conduit for transferring deeply injected fluids to the shallow aquifer systems used for domestic, municipal or livestock purposes (Figure 3).

Induced seismicity is a growing concern of deep SWD wells. Relatively new software developed by the Stanford Center for Induced and Triggered Seismicity allows for the probabilistic screening of deeply penetrating faults near the proposed injection zone (Walsh and Zoback, 2016; Walsh et al., 2017). This software uses parameters such as stress orientations, fault strike and dip, injection rates, fault friction coefficients, etc. to estimate the potential for fault slip. Using the best available data as input parameters (Table 1), fault slip potential was modeled through the year 2040. Model results give a maximum of 15 percent (0.15) probability of slip on a nearby fault to the northwest (Fig. 4).

Stratigraphy

Thick permeability barriers exist above (Woodford shale; 110 ft thick) and below (Simpson Group; 85 ft thick) the targeted Devonian-Silurian injection zone (Plate 2, Comer et al., 1991; Fig. 8, Frenzel et al., 1988). Approximately 12,500 feet of rock separate the top of the proposed injection zone from the previously stated lower limit of potable water at the top of the Rustler formation.



Solaris Water Midstream LLC Mike Honcho SWD No. 1

GEOLOGIC ASSESSMENT PAGE 2

EXHIBIT H

Conclusions

Geologic data evaluated around the Mike Honcho SWD #1 well show no potential structural or stratigraphic connection between the Devonian-Silurian injection zone and any subsurface potable water sources. Based on Fault Slip Potential modeling there is a 15% probability (0.15) of inducing seismic activity along a deeply penetrating Precambrian fault.

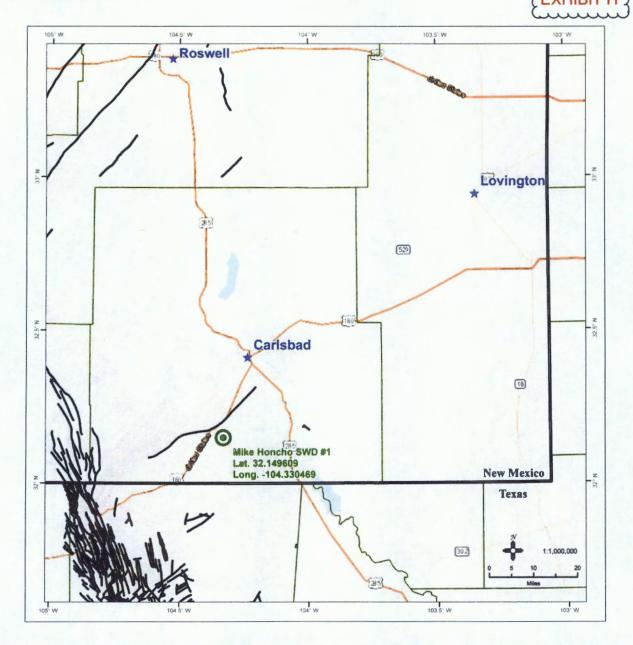


Figure 1. Shaded relief of the northwestern Permian Basin. Thick black lines represent locations of fault traces and show that the nearest faults to the proposed Mike Honcho SWD #1 well lie ~3 miles away.

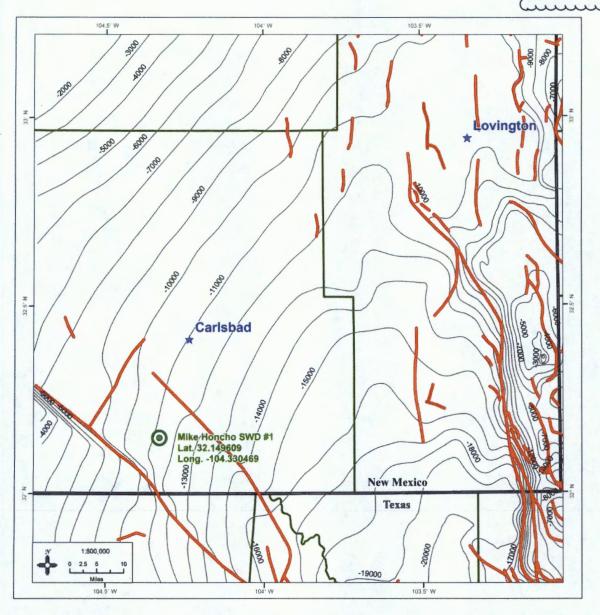


Figure 2. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). The Mike Honcho SWD #1 well lies ~7 miles between two deeply penetrating faults.

GEOLOGIC ASSESSMENT PAGE 5



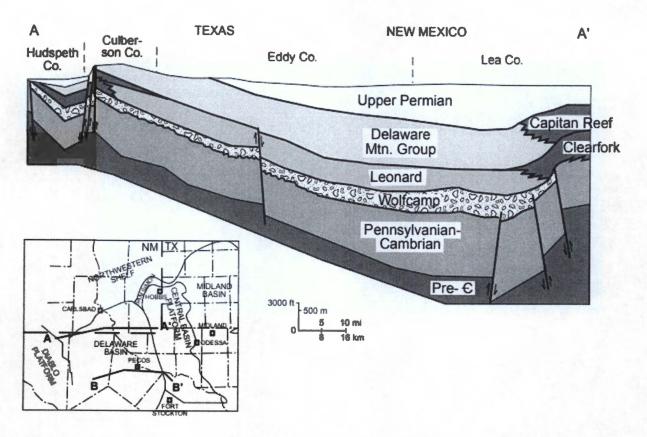


Figure 3. Cross section of the Permian Basin from Montomery (1997). Notice the majority of basement faults only penetrate through the Leonard and deeper formations and therefore cannot act as conduits to the near surface potable water sources.

Solaris Water Midstream LLC Mike Honcho SWD No. 1

GEOLOGIC ASSESSMENT PAGE 6

EXHIBIT H

Table 1: Fault Slip Potential model input parameters

Faults	Value	Notes				
Friction Coefficient	0.58	Ikari et al. (2011)				
Dip Angle (deg)	70	Snee and Zoback (2018)				
Stress						
Vertical stress gradient (psi/ft)	1.1	Hurd and Zoback (2012)				
Max Horizontal Stress Direction (deg)	35	Snee and Zoback (2018)				
Depth for calculations (ft)	13000	Proposed injection zone				
Initial Reservoir Pressure Gradient (psi/ft)	0.7	calculated from mud wt (ppg) used in drilling at these depths				
A Phi Parameter	0.52	Snee and Zoback (2018)				
Reference Friction Coefficient	0.58	Ikari et al. (2011)				
Hydrology						
Aquifer thickness (ft)	1000	Proposed injection zone				
Porosity (%)	10					
Permeability (mD)	50					
Injection Rate (bbl/day)	40000	Maximum proposed injection rate				

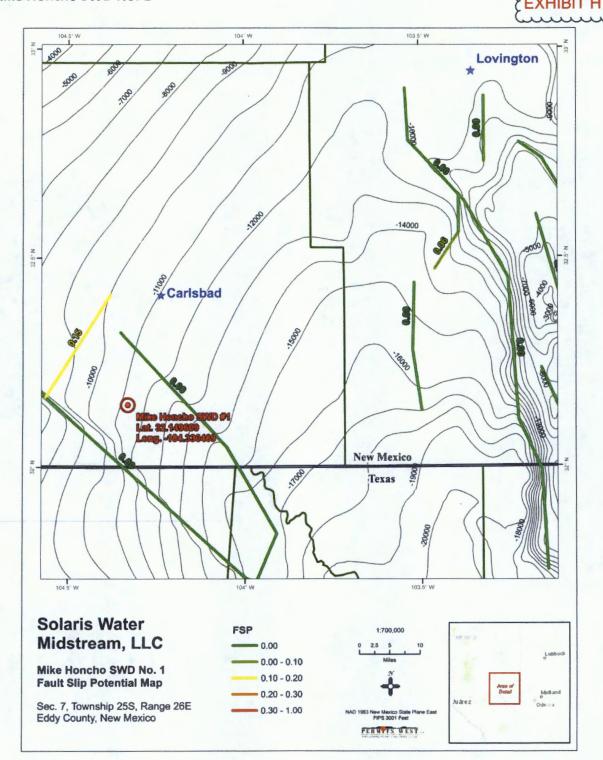


Figure 4. Precambrian fault map of southeastern New Mexico as mapped by Ewing et al. (1990). Faults are colored based on probability of fault slip as modeled using Fault Slip Potential software (Walsh and Zoback, 2016). Labeled values represent the calculated fault slip potential using the parameters indicated in Table 1. Contours show the top of the Precambrian basement in feet below sea level.

Solaris Water Midstream LLC Mike Honcho SWD No. 1

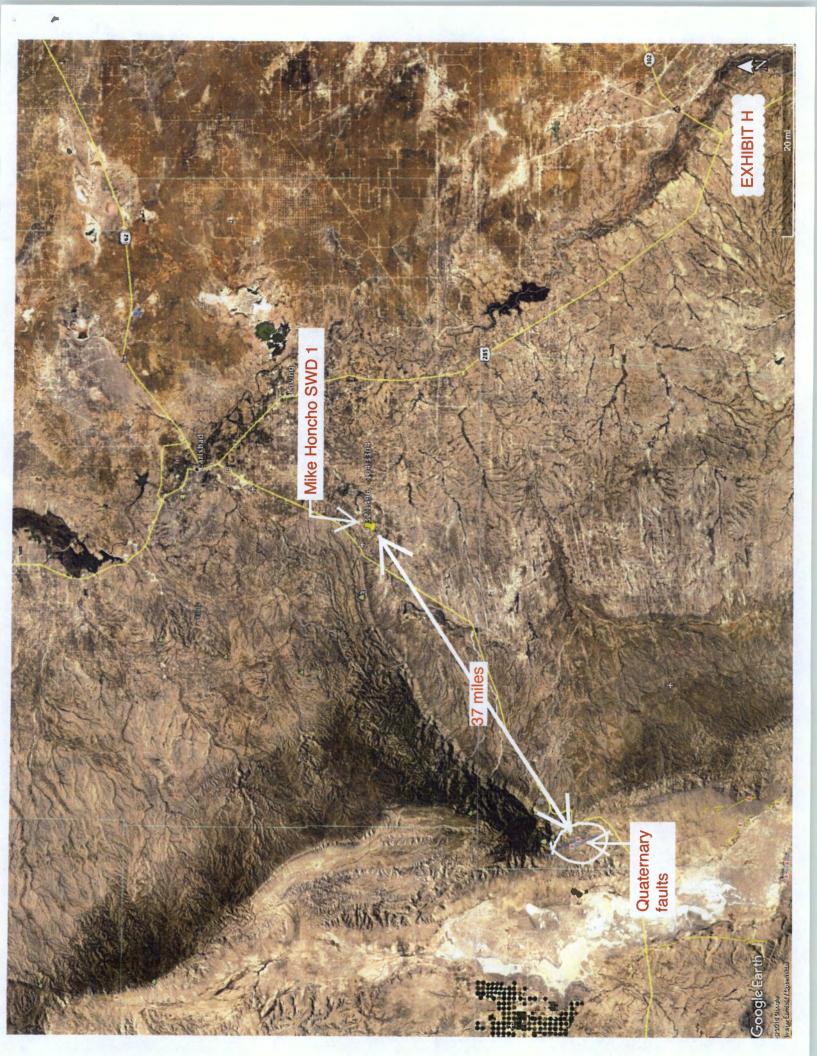
GEOLOGIC ASSESSMENT PAGE 8

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CURRENT-ARGUS

AFFIDAVIT OF PUBLICATION

Ad No. 0001280865

PERMITS WEST, INC. 37 VERANO LOOP

SANTA FE NM 87508

I, a legal clerk of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

03/22/19

Legal Werk

Subscribed and sworn before me this 22nd of March 2019.

State of WI, Gounty of Brown NOTARY PUBLIC

My Commission Expires

Solaris Water Midstream, LLC is applying to drill the Mike Honcho SWD 1 as a saltwater disposal well. The well is staked at 670 FNL & 1930 FEL Sec. 7, T. 25 S., R. 26 E., Eddy County and is 3 miles southeast of White City, NM. Disposal will be in the Devonian from 12,712' to 13,715'. Maximum injection pressure will be 2,542 psi. Maximum disposal rate will be 40,000 bwpd. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.
Pub: March 22, 2019 #1280865

NOTARY NOTARY OF WISCOMMING

EXHIBIT I





April 15, 2019

David & Eva Maley PO Box 519 Carlsbad NM 88221

TYPICAL LETTER

Solaris Water Midstrem, LLC is applying (see attached application) to drill its Mike Honcho SWD 1 well as a saltwater disposal well (SWD). As required by NM Oil Conservation Division (NMOCD) Rules, I am notifying you of the following proposed SWD. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: Mike Honcho SWD 1 $\underline{TD} = 13,715$

Proposed Disposal Zone: Devonian from 12,712' to 13,715'

Where: 670' FNL & 1930' FEL Sec. 7, T. 25 S., R. 26 E., Eddy County, NM

<u>Approximate Location:</u> 3 air miles southeast of White City, NM

<u>Applicant Name:</u> Solaris Water Midstrem, LLC (432) 203-9020

<u>Applicant's Address:</u> 907 Tradewinds Blvd., Suite B, Midland, TX 79706

<u>Submittal Information:</u> Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. NMOCD address is 1220 South St. Francis Dr., Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

Brian Wood

