

Water Committee Meeting
Wednesday, April 28, 2021 7:00 PM
Lower Platte North NRD Office
P.O. Box 126
Wahoo, NE 68066

1. UNFINISHED BUSINESS

2. REGULATORY

A. GROUND WATER MANAGEMENT AREA

1. Variance Letters for Non-Compliance

Attached are a couple of letters that staff plans on sending out to 2 producers to inform them that their variances will be voided. Gaylen Kamrath told staff the land where the well is located, is being sold and do not plan on using that well for irrigation. Jim Lamprecht has not irrigated this tract since 2016 by aerial maps, so just want to inform him that irrigation cannot continue without a new variance. Mark Young is the owner of the property that Jim Lamprecht is tenant.

2. Variance Requests Expansion with allocation

Sylvia Waters applied for an expansion of acres variances with an allocation for the S $\frac{1}{2}$ NE $\frac{1}{4}$ Section 15-21N-5W. The well that will be supplying the water is G-144086 owned by Brad Wallin. Brad is in agreement on using his well and will be supplying a letter to that effect. The allocation on this well will be 13.01 inches over a 3-year period. They both understand that they will have to commit to 3 years before reapplying for a variance that will not include an allocation. A water flow meter is already installed on this well.

Variance information:

Staff calculated it out for 65.5 acres, 371 ranking score and 8.68 Acre Feet

Depletion. Irrigated Land currently - 70.44 acres

3 years allocation for adding the extra 65.5 acres (assuming 27 inches) - 13.01 inches over a 3-year period.

3. Well Permit Program

4. Well Permit

John Larson purchased a tract of land in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 35-18N-8E. There is certified irrigated acres on this tract with water being supplied by G-051311 located in SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 34-18N-8E. John is requested a new irrigation well for this tract of land, which will irrigate about 18-23 acres.

5. Special Quantity Subareas

Tim and Dave Kastl have asked about moving irrigated land in a quantity

management area that a different producer will not be irrigating anymore. This same producer has brothers, and they are in the process of splitting up the land. This tract of land has 2 pivots supplied by 1 well. They were wondering if a well could be drilled in a special quantity area? The rules say no new wells.

Committee discussed as this tract of land has certified irrigated acres, that the Kastl's could apply for a new well permit in SQS #1 Management Area. They would like staff to inform them that conditions could be placed on the new well. The Committee would like a PVC pipe installed next to the well with a data logger, so NRD staff can obtain information during the pumping season. If this well causes conflict to other wells during the pumping season, the well could be shut down. This well would be located in the SQS #1 management area, so a water flow meter would be required with a 27-inch rolling allocation.

Letter and map attached

Katie Cameron Comments with her interpretation maps:

This area is really interesting and took more evaluation than usual. Luckily this location had a S-N line both east and west of Sec 36 plus a W-E line to the south that showed pretty consistent main aquifer material and thickness (looks partially saturated based on the static on registration and 1995 regional level). The AEM is not showing the bottom blue gravel units that are logged across the whole area as resistive but there is a consistent upper fine unit and a lower gravelly unit east west northwest and south. The aquifer also looks to be in potential connection with the DVB special management area in LPSNRD to the south and that deeper paleochannel - I don't know what to say about well interference issues and in season pumping declines in that area potentially affecting this area to the north. It appears to me that the main aquifer unit (top and bottom surfaces) spanning the District boundary dips generally down to the south (moving S-N profile images west and east of irrigation well cylinder attached as images too). LPSNRD has a monitoring well (Stava) with transducer 1.5 miles SW of this location, I checked the most recent WLs and they appear to swing down 70 ft from an elevation similar as reported for the onsite irrigation well (1395 reported on reg.) to 1331 elev. during irrigation season (Sept 2020). We can talk about that and I am sure Dick knows much more than me about his area up there but the site is "up hill" from the confined pressures in that area. If I didn't know about all the irrigation wells to the south and southwest I would say go toward the SW corner of the NW1/4 for a better spot and see how that lower sand and gravel looks thickness wise on AEM. BUT the lower thick gravel unit is not showing up to the SE, is there a high TDS problem in this area that you know of? There is a suspicious low resistivity zone plotting below the gravels on the AEM (I put question marks) AGF interpreted as shale dominant Dakota.

I really am not sure but the west S-N line shows a little more saturated thickness and the unit is not tending to dip down to the south as much as the east S-N line possibly BUT there is definitely some shape variance to the unit geometry in that area indicating a pattern of deposition that needs more study (are they indeed the same depositional event across the NRD boundary or not). The surrounding well logs also show consistent thick fine sand unit clay between and "blue or green" sand and gravel at the bottom above bedrock (not 100% if the "oaker" or shale at

bottom is Dakota - see notes on logs but likely is). I put thicknesses and elevations of units in red text on the logs for general reference because they do vary. The bottom gravel ranges from 10ft thick (G-120156 stock well) to the northwest to 58 feet thick (G-055773 irr well) in Sec 31 R5E to the east. I believe the part of the aquifer across section 36 is thinner in general than to the west and it appears on line L139601 to the east to be pretty thin near the SE corner of the NW ¼ of Sec 36 BUT is there a groundwater quality issue affecting the resistivity values? I attached one ENWRA Archive BUT-113 PDF that shows 1740 TDS but it is like 5-6 miles north. I just don't know.

There are a lot of notes on this so let me know when you have time to discuss if needed before getting back to Kasti.

6. SURFACE WATER TO GROUND WATER

Norbert Foltz is interested in converting a surface water permit to a groundwater permit by drilling a new irrigation well. The tract of land is in the NW¼ NW¼ 28-18N-1W in Platte County from Shell Creek.

Committee told staff that Nobert Foltz could apply for a groundwater well permit and relinquish the surface water permit with no increase in acres.

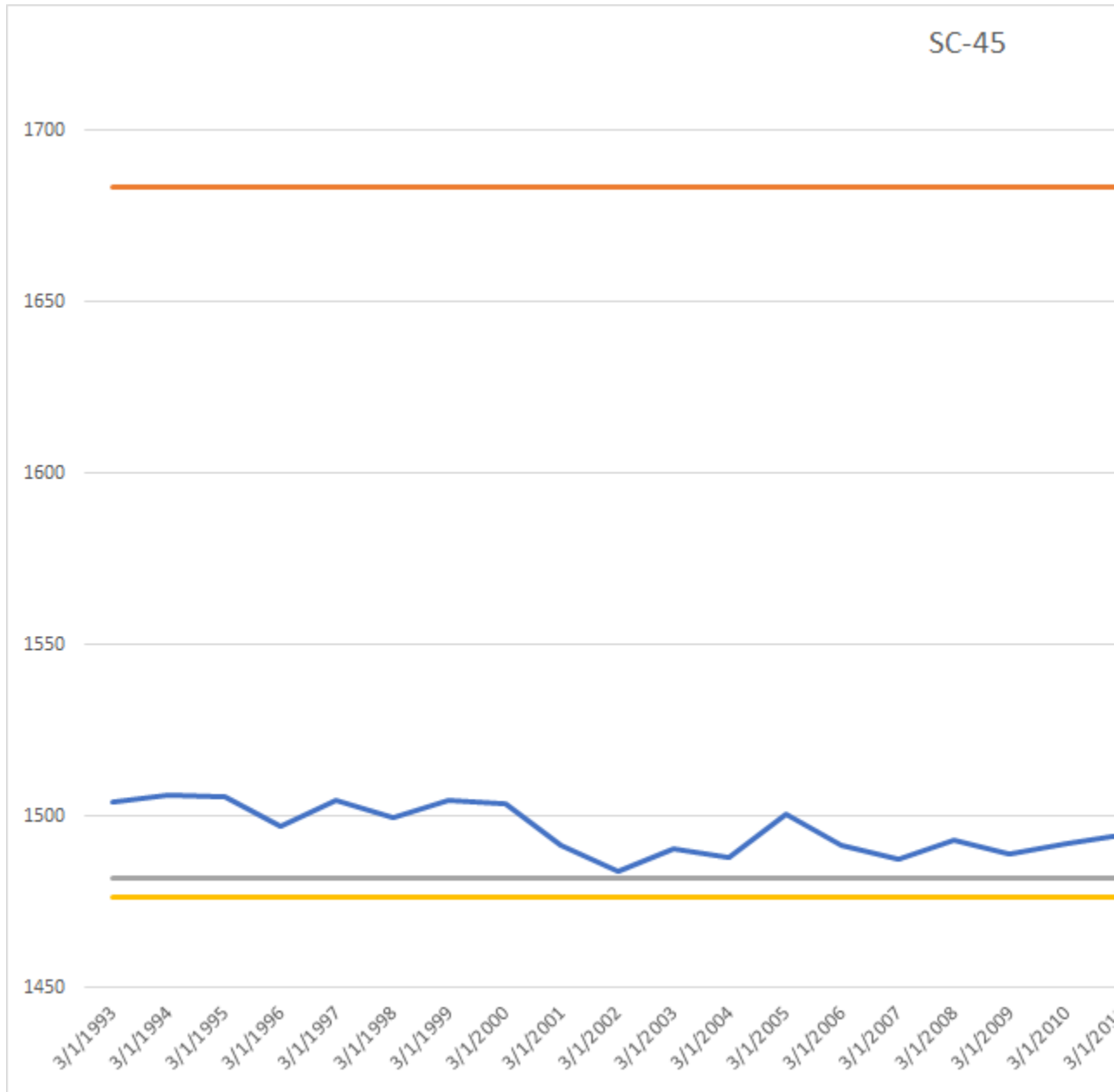
7. Lower Platte River Basin Water Management Plan Coalition (LPRBC)
Coalition directors met on April 27 with a report given at the Committee meeting showing the depletions during the first 5-year allotment from the all 7 NRDs and NeDNR. (attached) The Lower Platte North has used 48.1% of its allowable depletion leaving 51.9% remaining. The remaining amount can be carried over into the next 5 years, which will start in 2023. The Budget was approved, which will include a study from HDR and Flatwater to assist in determining the next 5-year allotment. Within the Budget (attached) are dues from each agency for \$10,000 in the upcoming year.

B. CHEMIGATION

For 2021 we have 300 renewals and 8 new permit applications for a current total of 308. Inspections for 0 renewal permits have been completed. In 2020 the LPNNRD had 748 active permits.

C. GROUND WATER ENERGY LEVELS

Spring 2021 groundwater level report is attached. Example graph is attached showing only spring readings.



D. Flow Meters

Two meter companies want their meter added to the LPN approved Meter List. Information follows on both with attachments from McCrometer.

A few quick points on the McMag2000:

Accuracy: $\pm 2\%$ of reading guaranteed throughout full range; $\pm 1\%$ over reduced range; calibrated in our NIST traceable test facilities. Repeatability of 0.25% or better.

Warranty: 5 years, Bumper to Bumper

Requirements: 5D upstream, 2D downstream - Simple installation through a 3" hole

Fitting Type: Retrofit available using Mc® Propeller saddle.

Line size: 4" to 12"

Power: Battery-powered, DC power optional
Register: Standard instantaneous flowrate indicator and nine-digit straight-reading totalizer
Hermetically sealed within a die-cast aluminum case
Includes a domed acrylic lens and a hinged lens cover with locking hasp
Pulse-out available for system integration IP67 to protect from harsh environments
Retrofit: Parts kits are available to upgrade a mechanical McProp to an McMag2000

C-Isolution is also interested in adding there meter to the meter list

Meter Specifications

MATERIALS:

Totalizer:

- Water Resistant ABS Enclosure: Dimensions - 5" x 7" x 3 ½" |
- Clear Polycarbonate S2000U Enclosure Cover
- Rate Display: Liquid Crystal Display
- Totalization Display:
 - Nonresetable Electromechanical
 - LCD display
- Battery Life: estimated 5 years
- Environmental Temperature Range:
 - Operational: -4 F to 140 F | -20 C to 60 C
 - Storage: -20 F to 165 F | -40 C to 74 C

Transducer:

- PVC: Type 1, GD 1, ASTM-D 1784, CL-12454-B, optional
- Impeller: Kynar - 720
- Shaft: Tungston-Carbide Steel: Grade C-2 (WA2), ROD-RRG-8
- Bearings: Ceramic - 99.7% Alumina

PROGRAMMING:

- Totalizers can be programmed to give the following readings:
 - Rate = GPM
 - Total = Gallons
 - Total = Acre Inch
 - Total = Acre Feet
 - Total = British Imperial Gallons

INSTALLATION:

- Full Pipe
- Straight Run
 - Minimum 10 Pipe diameters upstream
 - 5 Pipe diameters downstream
- Pipe Orientation
 - To your convenience, top half of pipe
 - 2 or 10 o'clock position only if small sticks are present in water
 - 12 o'clock orientation preferred
 - Horizontal or vertical upflows
- Pipe Sizes: 1 ½ inch to 20 inch (900R)

PERFORMANCE:

- Accuracy: + or - 2% with a proper installation
- Flow Range: 1 to 20 feet per second
- Operational Temperature: -4 F to 140 F / -20 C to 60C
- Pressure 150 PSI maximum

PIPE LINE CONNECTION:

- 2 inch NPT coupler
- Saddle mount
- Straightening tube, with or without flanges
- Ball valve

CABLE:

- 22 gauge shielded 2 conductor with drain
- PVC jacketed cable with 2 position Weather Pack
- 15 feet provided
- 1000 feet maximum

3. GROUND WATER PROGRAMS

A. DECOMMISSIONED WELL PROGRAM

1. Well Estimates

2. # new wells has been reviewed and approved for decommissioning since the last Committee meeting.

3. Well Owner	4. Type of Well	5. Cost Share Estimate	6. County
7. David Pieke	8. Irrigation	9. \$1,000	10. Madis
11. Gaylen Swartz	12. Stock	13. \$576.83	14. Saund
15.	16.	17.	18.

19. Plugged Wells

20. # wells have been plugged, reviewed, and ready for cost share payment approval this month.

21. Well Owner	22. Type of Well	23. Cost Share Estimate	24. County
25. Dwaine J Schmit & Selma S Trustees	26. Irrigation	27. \$1,000	28. Butler
29.	30.	31.	32.

33.	34.	35.	36.
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B. LOWER PLATTE NORTH NRD GROUND WATER STUDIES

1. Phase Area Update

Attached is some discussion bullets for the Committee to consider for the Nitrogen Management Areas.

Committee would like the nitrogen management areas to be a priority and the Water Department needs to re-evaluate the current department tasks and their importance. The Water Department should use the current staff to accomplish the goals for this area. The Committee would want to provide incentives to the producers to encourage practices that would improve the nitrate levels in the groundwater. They would like to continue communication with the bordering NRDs and to consider options for recycling the high nitrate water. More discussion will be held at the next Water Committee Meeting.

A draft agreement for finishing the vadose work from the Demonstration fields is attached. The amount LPN will owe is \$2,640, which will be submitted to the NET grant for reimbursement after receiving the invoice.

C. NEW MONITORING WELLS

D. Dewatering well

Attached is a map in which another sub-division has called in a complaint.

4. SURFACE WATER PROGRAMS

5. OTHER

A. COMMENTS FROM THE PUBLIC

May 11, 2021

Dear Gaylen Kamrath - Owner

Re: LPN-V-014-0396

You are receiving this letter to **Void** variance **LPN-V-014-0396**. **This variance was approved in 2014 for Section 9, Township 15N, Range 1E in the SW ¼ of the SW ¼ and water was supplied by Commercial Well G-115338.** A district approved water flow meter was not installed, which is required by Lower Platte North (LPN) NRD Groundwater (GW) Rules and Regulations. Staff has tried numerous times to have you come into compliance on this condition, that was part of the variance. The following is from LPN GW Rules and Regulations Section M.

Rule 11 Cancellation of Approved Variance

The District may cancel or void an approved variance at any time if the Board finds violation of the District's rules and regulations, including the failure to submit annual reporting information required by Section M, Rule 9(4) or Rule 10(3).

Rule 9(4) When an 'approved variance' is granted by the District, then water users must install a flow meter and report water pumped annually in acre-inches per year or total gallons per year on LPNNRD approved forms by December 15 of each following year.

Irrigation cannot occur from a well that is registered as Commercial, and no irrigation can occur starting in crop year 2021. In future years, if you desire to irrigate this tract, a new variance would be required.

For further questions, please contact LPN staff at 402-443-4397.

Respectively,

Frank Pollard
LPN Board Chairman
Lower Platte North NRD

May 11, 2021

Dear Mark J. Young - Owner

& Jim Lamprecht - Tenant

Re: LPN-V-013-0319

You are receiving this letter to **Void** variance **LPN-V-013-0319**. **This variance was approved in 2013 for Section 5, Township 15N, Range 8E in the SE ¼ of the SE ¼ and water was supplied by irrigation well G-151389.** A district approved water flow meter was not installed, which is required by Lower Platte North (LPN) NRD Groundwater (GW) Rules and Regulations. Staff has tried numerous times to have you come into compliance on this condition, that was part of the variance. The following is from LPN GW Rules and Regulations Section M.

Rule 11 Cancellation of Approved Variance

The District may cancel or void an approved variance at any time if the Board finds violation of the District's rules and regulations, including the failure to submit annual reporting information required by Section M, Rule 9(4) or Rule 10(3).

Rule 9(4) When an 'approved variance' is granted by the District, then water users must install a flow meter and report water pumped annually in acre-inches per year or total gallons per year on LPNNRD approved forms by December 15 of each following year.

Irrigation Pivot Stops need to be in place and no irrigation can occur starting in crop year 2021. In future years, if you desire to irrigate this tract, a new variance would be required.

For further questions, please contact LPN staff at 402-443-4397.

Respectively,

Frank Pollard
LPN Board Chairman
Lower Platte North NRD

VARIANCE REQUEST FOR EXPANDED WATER USE FROM EXISTING WELL IN A STAY MANAGEMENT AREA OF THE LOWER PLATTE NORTH NRD (LPNNRD)



Updated Form: August 2012

NRD USE ONLY

Date Received _____ Paid: Cash or Check # 912 1/28/21
 Initial Review by NRD Representative _____
 Certified Acres _____ by NRD Representative _____
 Date of Water Committee Recommendation to the NRD Board _____
 Date NRD Board issues Conditional Approval or Denial of Variance Request _____
 Date of Approved Variance _____ by NRD Representative _____

ALL APPLICANTS SEEKING A VARIANCE MUST COMPLETE PAGES 1 AND 2. (CLASS 1-4 VARIANCE)
VARIANCE REQUESTS FOR IRRIGATED ACRES GREATER THAN 160 ACRES IN SIZE OR TOTAL ANNUAL WATER USE BETWEEN 150 AND 300 ACRE FEET PER YEAR MUST COMPLETE PAGES 1, 2, AND 3. (CLASS 3 VARIANCE)
VARIANCE REQUESTS FOR TOTAL ANNUAL WATER USE EQUAL TO OR GREATER THAN 300 ACRE FEET PER YEAR, REGARDLESS OF NUMBER OF IRRIGATION ACRES, MUST COMPLETE PAGES 1, 2, AND 4. (CLASS 4 VARIANCE)

1. NAME AND ADDRESS OF APPLICANT:

Sylvia A. Walters
82506 534 Ave
Newman Grove NE 68758

Home Phone: () - -
 Cell Phone: (402) - 910 - 8644
 Landowner Name: _____
 (if other than applicant)

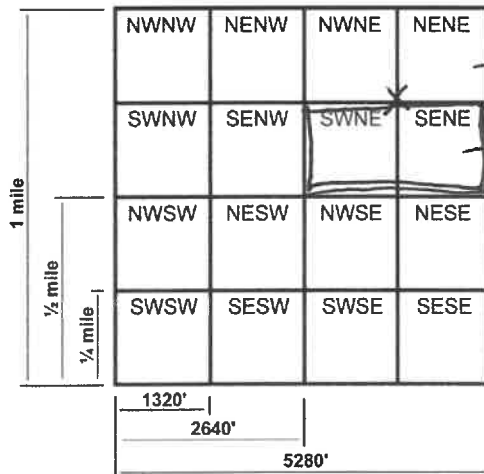
2. PURPOSE OF EXPANDED WATER USE (indicate one or more):

Irrigation _____ Dewatering (Over 30 days)
 Livestock _____ Domestic (Irrigation on one acre or larger)
 Industrial _____ Public Water Supply
 Recovery or Remediation _____ Other (specify) _____

3. LOCATION OF PROPOSED EXPANDED WATER USE:

A. Boone County, S $\frac{1}{2}$ of the NE $\frac{1}{4}$ of Section 15, Township 21 North, Range 5 East (West) (circle one)

B. The box at the right represents one square mile, (section). Indicate with an "X", the proposed location of the water source. Outline the proposed water use area. If the water is to be used outside the above written legal description, give legal description of water use area.
N $\frac{1}{2}$ of the NE $\frac{1}{4}$ of Section 15, Township 21 North, Range 5 East (West)



C. List the number of new irrigated acres 80
 D. List the number of previously irrigated acres 80

4. WATER SOURCE (fill out one or more water source categories as needed, continued on page 2):

A. Surface Water:
 Legal Description of water source _____ County, _____ $\frac{1}{4}$ of the _____ $\frac{1}{4}$ of Section _____, Township _____ North, Range _____ East/West. (circle one)
 Name of river, stream, lake, or other water body _____

Dept. of National Resources Surface Water Permit # _____
Total annual amount of consumptive water use to be delivered to proposed location in
Acre Inches / Year _____ or Total Gallons / Year _____

4. WATER SOURCE, CONTINUED:

B. Ground Water:

Legal Description of well Boone County, NE of the NE 1/4 of Section 15,
Township 21 North, Range 5 East/West (circle one) Well Registration Number G-144086

Will the well be used in a system with other wells? Yes, No. If Yes, How many _____
Attach list of well registration number and legal description for each well.

Total annual amount of consumptive water use to be delivered to proposed location in
Acre Inches / Year _____ or Total Gallons / Year _____

has not had a meter yet but will have.

C. Reuse Water:

Legal Description of water source: _____ County, _____ 1/4 of the _____ 1/4 of Section _____,
Township _____ North, Range _____ East/West. (circle one)
Landowner and Address of person(s) providing reuse water _____

Original water source of this reuse water: Ground Water, Surface Water, mark all that apply.

Total annual amount of consumptive water use to be delivered to proposed location in
Acre Inches / Year _____ or Total Gallons / Year _____

- Attach information from the operation you will be using as a source of reuse water. List amount of intake water used by this operation, description of water use within the operation, and the amount discharged.

5. OFFSET WATER USE:

A. Will proposed new water use be offset by retiring water use in this same aquifer system? Yes, No

B. If Yes, give legal description of that offsetting water use: _____ County, _____ 1/4 of the _____ 1/4
of Section _____, Township _____ North, Range _____ East/West. (circle one)

C. Landowner and Address of person(s) providing offset water _____

D. If using offset from irrigation, list number of acres at this 'offset' location _____

E. Original water source of this offset water: Ground Water, Surface Water, Reuse Water, mark all that
apply.

F. Total annual amount of consumptive water use to be retired at this 'offset' location in
Acre Inches / Year _____ or Total Gallons / Year _____

- Please provide flow records for the last five years from this 'offset' location.

6. Addition information and requirements for Lower Platte North NRD review.

- Attach current tax assessor records including map, parcel number, and current land use such as irrigated acres.
- Attach aerial photo showing location of water source(s) and area water or reuse water is to be used.
- All expanded water uses must install a District approved flow meter and report water pumped annually to the LPNNRD by January 31st of the following year.
- Additional variance conditions may be required for approval by the Lower Platte North NRD.
- Variances will be reviewed annually.

7. I certify that I am familiar with the information contained in this application, and it's restrictions, rules and regulations and that to the best of my knowledge and belief such information is true, complete and accurate.

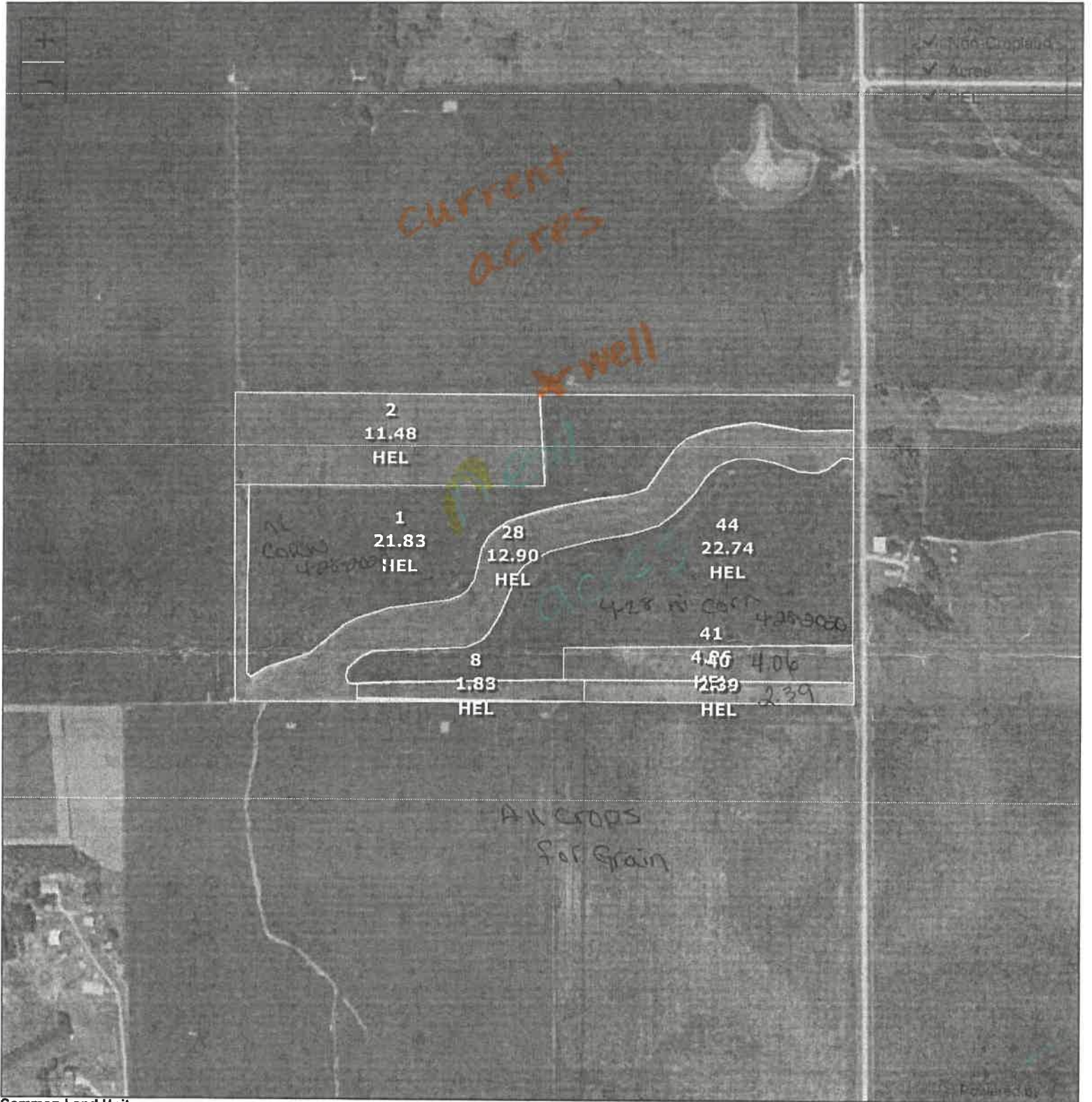
Date 11-18-20 Signature of Applicant Sylvia A. Walters
Signature of Well System Operator, if different than Applicant Brad Walsh
NRD Certification Number of Landowner or Operator _____ (Required for irrigation, livestock,
domestic (with irrigation on one acre or more of land), industrial, and public water supply wells.)

8.
If needed, Signature of Landowner providing Reuse Water _____
Date _____

If needed, Signature of Landowner providing Offset Water _____
Date _____

9. Lower Platte North NRD Use Only. Comments by District Representative.

- current
 - new



Common Land Unit
 Cropland Non-cropland CRP

Wetland Determination Identifiers
 ● Restricted Use
 ■ Limited Restrictions
 ■ Exempt from Conservation Compliance Provisions

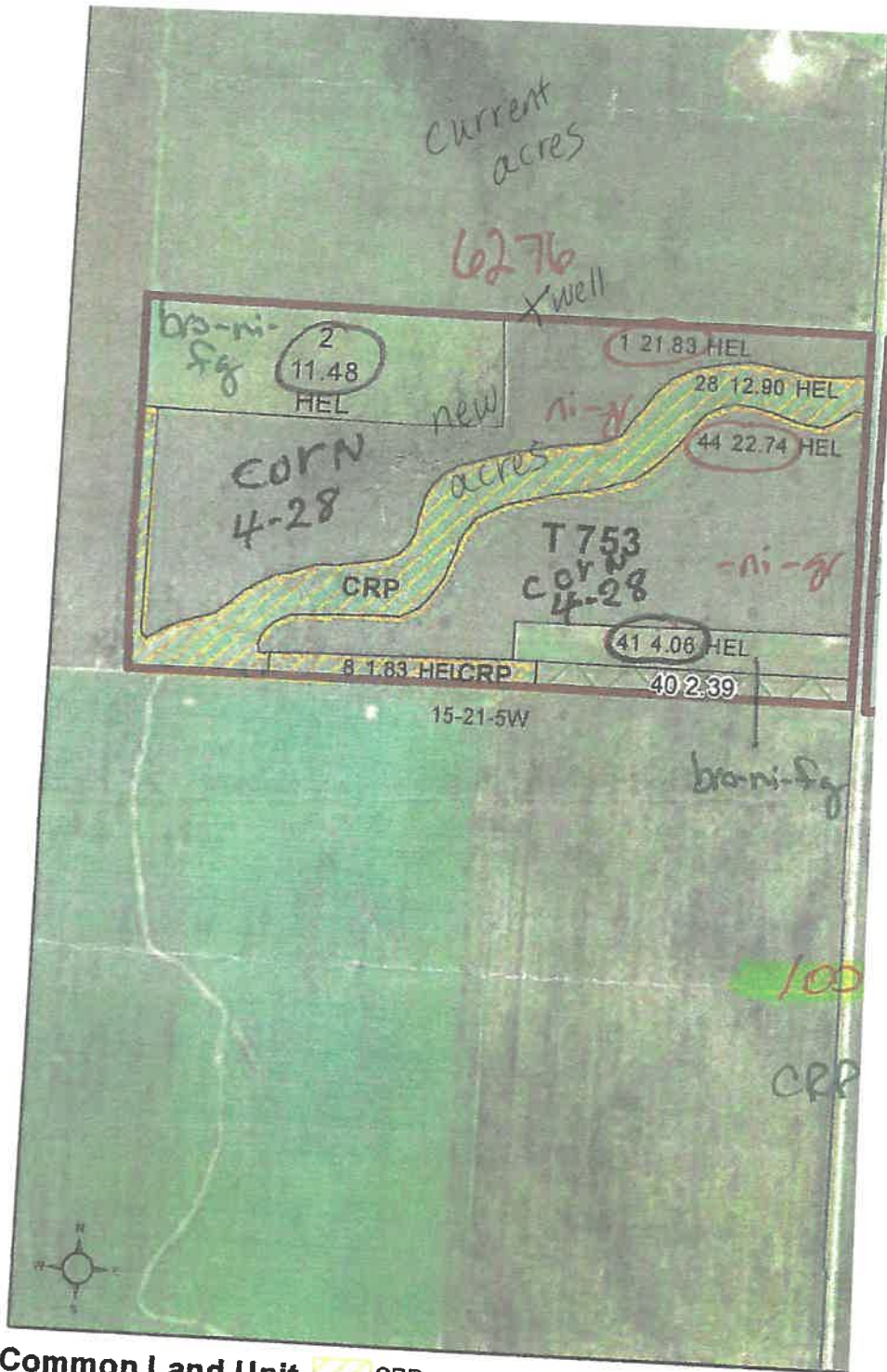
2020 Crop Year

Farm 6276
 Tract 10279



Tract 1 of 1

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).



Common Land Unit

	CRP
	Tract Boundary
	PLSS
	Non-Cropland
	Cropland

Wetland Determination Identifiers

- Restricted Use
- Limited Restrictions
- Exempt from Wetland Provisions

2018 NAIP (

ALL CROPS ARE INTENDED USE IS GR

Tract Cropland Tota

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA F ownership; rather it depicts the information provided directly from the producer and/or National Ag assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or con Programs. Wetland identifiers do not represent the size, shape, or specific determination of the a boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS

BOONE COUNTY
2020 Real Estate Breakdown Report

Parcel ID: 0069060000
Owner: HOPPE, ANGIE ET AL
3050 W RAYMOND RD
RAYMOND, NE 68428-4384

Legal: #89060 S 1/2 NE 1/4 15-21-5
80 ACRES, MN 2016
S-T-R: 15-21-05 Acres: 80.000

Card File: 0049210.00
Situs

County Area	1	AREA ONE	Class Code	02-05-05-03-00-09	Value	Buildings	Improvement	Land / Lots	Previous	Current
Neighborhood	7	RURAL	State GEO	1843-15-0-00000-000-0000					0	0
Location / Group	7	RURAL	Cadastral	2-59-5					0	0
Valuation / Group	0	N/A	Book / Page	120 / 713 Ext: 715					266,675	266,675
District	702	M13C	Sale Date	06/05/2020						
School	59-0013		Sale Amount	0					266,675	266,675
Irrigation	00	No Irrigation								

Date Added Notes: 08/20/2019 2020 Land use update, more grass per AgriData

Soil	Use	LCGLVG	Soil Description	LVG Description	Spot Code	Acres	Value/Acre	Assessed	Sub	Market/Acre	Market	Sub
3561	DRY	2D1	HOBBES SILT LOAM	2D1 (2D1)	N	23.070	4,760	109,815	0			
6694	DRY	4D1	CROFTON-NORA COMPLEX	4D1 (4D1)	N	0.010	4,760	50	0			
6756	DRY	3D	NORA SILT LOAM 6-11%	3D (3D)	N	8.160	4,760	38,840	0			
6789	DRY	4D	CROFTON-NORA COMPLEX	4D (4D)	N	9.420	4,760	44,840	0			
7230	DRY	1D1	JUDSON SILT LOAM	1D1 (1D1)	N	4.090	4,860	19,875	0			
3561	GRASS	1G	HOBBES SILT LOAM	1G (1G)	N	13.950	1,555	21,690	0			
6694	GRASS	2G	CROFTON-NORA COMPLEX	2G (2G)	N	4.010	1,555	6,235	0			
6756	GRASS	1G1	NORA SILT LOAM 6-11% SLOP	1G1 (1G1)	N	10.110	1,555	15,720	0			
6789	GRASS	2G	CROFTON-NORA COMPLEX	2G (2G)	N	5.700	1,555	8,865	0			
7230	GRASS	1G1	JUDSON SILT LOAM	1G1 (1G1)	N	0.480	1,555	745	0			
ROADS	ROADS	ROADS	ROADS (RD)		N	1.000	0	0	0			
						34,250		53,255	0			
						80.000		266,675	0			

Sale Date	Book	Page	Extend	Ownership History	Land	Total	Exempt	Taxable	Total Tax	Penalty Tax	Amount
06/05/2020	120	707	709	WOODARD, JODI & BOSE, JULIE	266,675	266,675	0	266,675	2,342.06	0	0
06/05/2020	120	710	712	WOODARD, JODI & BOSE, JULIE	305,445	305,445	0	305,445	2,403.60	0	0
03/30/2020	47	241	242	HOPPE, ANGIE ET AL	305,445	305,445	0	305,445	2,125.70	0	0
04/29/1994	103	7		HOPPE, ANGIE ET AL	280,070	280,070	0	280,070	1,737.38	0	0
2020	2043	702	0		287,820	287,820	0	287,820	1,697.14	0	0
2019	2061	702	0		281,155	281,155	0	281,155	1,839.80	0	0
2018	2035	702	0		233,435	233,435	0	233,435	1,801.46	0	0
2017	2021	702	0		168,205	168,205	0	168,205	1,660.00	0	0
2016	1996	702	0		118,230	118,230	0	118,230	1,351.60	0	0
2015	1975	710	0		0	0	0	0	1,324.64	0	0
2014	1975	710	0		0	0	0	0	1,272.52	0	0
2013	1835	710	0		0	0	0	0		0	0
2012	1814	710	0		0	0	0	0		0	0
2011	5787	710	0		0	0	0	0		0	0
2010	5776	710	0		0	97,360	0	97,360		0	0



Highway 275

275

Highway 275

County Road S

Highway 275

County Road S

County Road S

N Somers Ave

US-30 W

US-275 E

77

**APPLICATION FOR A PERMIT TO CONSTRUCT A WATER WELL
IN THE LOWER PLATTE NORTH NATURAL RESOURCES DISTRICT**

DNR & NRD USE ONLY			
Permit No. _____	Date Approved/Denied _____	NRD Representative _____	
Permit Type: New, Replacement or Late _____	Date Received _____	Paid: Cash or Check _____	
Date Post-inspected _____	Registration No. _____		

ALL APPLICANTS SEEKING A WATER WELL PERMIT MUST COMPLETE PAGES 1 AND 2, AND THE APPROPRIATE SECTION BASED ON THE PURPOSE OF THE WELL. (CLASS 1 - 4 WELL PERMIT)
 WATER WELL PERMITS FOR IRRIGATED ACRES GREATER THAN 160 ACRES IN SIZE OR TOTAL ANNUAL WATER USE BETWEEN 150 AND 300 ACRE FEET PER YEAR MUST COMPLETE PAGES 1, 2, AND 3, AND THE APPROPRIATE SECTION BASED ON THE PURPOSE OF THE WELL. (CLASS 3 WELL PERMIT)
 WATER WELL PERMITS FOR TOTAL ANNUAL WATER USE EQUAL TO OR GREATER THAN 300 ACRE FEET PER YEAR, REGARDLESS OF NUMBER OF IRRIGATION ACRES, MUST COMPLETE PAGES 1, 2, AND 4, AND THE APPROPRIATE SECTION BASED ON THE PURPOSE OF THE WELL. (CLASS 4 WELL PERMIT)

1. NAME AND ADDRESS OF LAND OWNER: <u>John Larsen</u> <u>1732 Caliente Cove</u> <u>Fremont NE 68025</u> Phone: <u>402 637 8091</u>	NAME AND ADDRESS OF CONTACT: <u>John Larsen - 402-637-8091</u> <u>Jack Larsen - 402-637-5843</u> Phone: _____
---	---

2. PURPOSE OF NEW WATER WELL (indicate one):

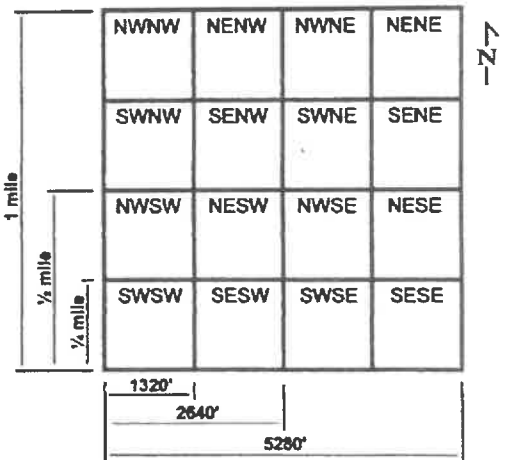
<input checked="" type="checkbox"/> Irrigation (Complete section A)	<input type="checkbox"/> Dewatering (Over 30 days. Complete section B)
<input type="checkbox"/> Livestock (Complete section C)	<input type="checkbox"/> Domestic (Irr. on one acre or larger, Complete section D)
<input type="checkbox"/> Industrial (Complete section E)	<input type="checkbox"/> Public Water Supply (Complete section F)
<input type="checkbox"/> Recovery or Remediation (Complete section G)	<input type="checkbox"/> Other (specify) _____ (Complete section H)

3. IDENTIFY LOCATION OF PROPOSED WELL:

A. Dodge County, SW 1/4 of the SW 1/4 of Section 38, Township 18 North, Range 8 East/West (circle one) Tax ID 270141301

B. The box at the right represents one square mile, (section). Indicate with an "X", the proposed location of the well. Outline the proposed water use area. If the water is to be used outside the above written legal description, give legal description of water use area, _____ 1/4 of the _____ 1/4 of Section _____, Township _____ North, Range _____ East/West.

C. The well will be located ~ 100 feet from the North/South section line, and will be 100 feet from the East/West section line. Or enter Lat. / Long. Latitude Degree 41 Minute 483 Second 621 Longitude Degree 96 Minute 502 Second 285



4. REPLACEMENT AND ABANDONED WELL INFORMATION:

A. Is this a replacement well? Yes, No If yes, fill out the rest of this section.

B. Registration number of well to be replaced: _____

C. Well to be replaced was last operated (month/year): _____

D. Replacement well is _____ feet from original well.

E. Decommissioning of Original well on (month/day/year): _____

F. If water use is for irrigation, list the number of acres watered by the original well: _____

G. If water use is for irrigation, will replacement well, water the same tract of land as the decommissioned well? Yes, No: If No, list the number of additional acres _____ and legal description _____ 1/4 of the _____ 1/4 of Section _____, Township _____ North, Range _____ East/West. (circle one)

- A replacement water well must deliver water to the same tract of land as the original water well, pump from a comparable aquifer, and yield approximately the same gallons per minute and total annual water use as the original water well.

5. SPECIFICATIONS OF INTENDED WELL AND PUMP:

- A. Approximate date when construction will begin (month/day/year): Sept. 10, 2021
B. Expected total well depth: 75 feet.
C. Well Casing Diameter: 16 inches.
D. Pump Column Diameter: 6 inches.
E. Estimated pumping capacity: 500 GPM.
F. Expected total annual water use in Acre Inches / Year 12 or Total Gallons / Year _____
G. The system is to be powered by Electric Fuel
H. Will the well be used in a system with other wells? Yes, No. If Yes, How many _____
List well registration number and legal description of each well in Section 6 below.
I. Name of Well Driller: Grosch Irrigation (Please attach test hole log, if available.)

6. List additional information requested in this Section or attached additional sheet.

7. Addition information and requirements for Lower Platte North NRD review.

- Attach current tax assessor records including map, parcel number, and current land use such as irrigated acres.
- Attach aerial photo showing location of water source(s) and area water or reuse water is to be used.
- All new and replacement water wells must install a District approved flow meter and report water pumped annually to the LPNNRD by January 31st of the following year.
- Water well permit conditions may be required for approval by the Lower Platte North NRD for each individual well.

8. I certify that I am familiar with the information contained in this application, and it's restrictions, rules and regulations and that to the best of my knowledge and belief such information is true, complete and accurate.

Date 4-8-2021 Signature of Applicant [Signature]
Signature of Well System Operator, if different than Applicant _____
NRD Certification Number of Landowner or Operator _____ (Required for irrigation, livestock, domestic (with irrigation on one acre or more of land), industrial, and public water supply wells.)

9. Lower Platte North NRD Use Only. Comments by District Representative.

**APPLICATION FOR A PERMIT TO CONSTRUCT A WATER WELL
IN THE LOWER PLATTE NORTH NATURAL RESOURCES DISTRICT**

**WATER WELL PERMIT FOR IRRGATED ACRES GREATER THAN 160 ACRES IN SIZE OR TOTAL
ANNUAL WATER USE BETWEEN 150 AND 300 ACRE FEET PER YEAR, PROVIDE INFORMATION
REQUESTED ON PAGES 1, 2, AND 3. (CLASS 3 WELL PERMIT)**

10. WATER SOURCE INFORMATION:

In a TWO-mile radius around the water source location, provide the following information to the LPNNRD in both paper copy and electronically in Excel Spreadsheet (Microsoft) or Access Database (Microsoft) format.

- A. List of all registered wells in this area giving registration number, well identification number, legal description, latitude / longitude or UTM coordinates in NAD 83, elevation in feet above mean sea level, and well log for each well.
 - B. List of all test holes in the area that have been published by Conservation and Survey Division of the University of Nebraska.
 - C. List of all surface water rights in this area giving appropriation number, priority date, legal description, use, status, current total acres (if applicable), and grant amount.
-

11. WATER USE LOCATION INFORMATION:

In the location where the water will be used, provide the following information to the LPNNRD in both paper copy and electronically in Word (Microsoft) format.

- A. Description of expanded water use including: latitude / longitude or UTM coordinates in NAD 83 of water use location and timeframe or schedule when water will be used.
 - B. Amount of water that will be reused or recycled at this new location.
 - C. Description of how water will be used at this new location, i.e. process water vs. cooling water, etc. and estimated total annual water use for each purpose.
-

**APPLICATION FOR A PERMIT TO CONSTRUCT A WATER WELL
IN THE LOWER PLATTE NORTH NATURAL RESOURCES DISTRICT**

WATER WELL PERMIT FOR TOTAL ANNUAL WATER USE EQUAL TO OR GREATER THAN 300 ACRE FEET PER YEAR, REGARDLESS OF NUMBER OF IRRIGATED ACRES, PROVIDE INFORMATION REQUESTED ON PAGES 1, 2, AND 4. (CLASS 4 WELL PERMIT)

12. WATER SOURCE INFORMATION:

In a FIVE-mile radius around the water source location, provide the following information to the LPNNRD in both paper copy and electronically in Excel Spreadsheet (Microsoft) or Access Database (Microsoft) format.

- A. List of all registered wells in this area giving registration number, well identification number, legal description, elevation in feet above mean sea level, latitude / longitude or UTM coordinates in NAD 83, and well log for each well.
 - B. List of all test holes in the area that have been published by Conservation and Survey Division of the University of Nebraska.
 - C. List of all surface water rights in this area giving appropriation number, priority date, legal description, use, status, current total acres (if applicable), and grant amount.
-

13. WATER USE LOCATION INFORMATION:

In the location where the water will be used, provide the following information to the LPNNRD in both paper copy and electronically in Word (Microsoft) format.

- A. Description of expanded water use including: latitude / longitude or UTM coordinates in NAD 83 of water use location and timeframe or schedule when water will be used.
 - B. Amount of water that will be reused or recycled at this new location.
 - C. Description of how water will be used at this new location, i.e. process water vs. cooling water, etc. and estimated total annual water use for each purpose.
-

14. AQUIFER PUMP TEST:

In the location of the proposed water source a District approved aquifer pump test is to be performed to obtain geologic data that will be used in the ensuing ground water modeling effort. Data from the pump test is to be reported to the LPNNRD in both paper copy and electronically in Excel Spreadsheet (Microsoft) or Access Database (Microsoft) format.

- A. Description of pumping well should include legal description of well, latitude / longitude or UTM coordinates in NAD 83, elevation of well in feet above mean sea level, total amount of water pumped, gallons per minute during pump test, duration of pump test, well construction, well log, water discharge location and method.
 - B. Description of each monitoring well should include legal description of well, latitude / longitude or UTM coordinates in NAD 83, spacing in feet and direction from pumping well, elevation of well in feet above mean sea level, well log, and well construction.
 - C. Depth to bedrock, bedrock material, and name of geologic formation.
-

15. GROUNDWATER MODEL:

In a FIVE-mile radius of the location of the proposed water source a ground water model using MODFLOW software, or similar software approved by LPNNRD, is to be done. Data from the ground water model is to be reported to the LPNNRD in both paper copy and electronically using the appropriate software.

- A. Model should list boundary conditions used, grid size, include all high capacity wells in modeled area, streams and rivers in the modeled area, expected recharge rates, location and flow amounts, hydrologic conductivity and transmissivity values used.
 - B. At least one iteration, reviewed and approved by LPNNRD, should model steady state conditions over a five-year period with a no flow boundary, and little or no recharge to simulate drought conditions.
-

APPLICATION FOR A PERMIT TO CONSTRUCT A WATER WELL
IN THE LOWER PLATTE NORTH NATURAL RESOURCES DISTRICT

PURPOSE OF WELL

IRRIGATION WELLS (SECTION A)

- A. How many acres will be irrigated? 18-23 acres Approx.
- B. Crops to be planted: Corn/Soybeans Crop rotation schedule Annual
- C. Type of irrigation system. Center Pivot, Gravity, Other (specify) _____
- D. The irrigation system is to be powered by Electric Fuel
- E. Expected total annual consumptive water use in Acre Inches / Year 12 or
Total Gallons / Year _____
- F. Will Fertilizer, Chemicals or Animal waste be applied through the system? Yes, No

DEWATERING WELLS OVER 30 DAYS (SECTION B)

- A. Purpose of dewatering well, such as installation of building foundation, etc. _____
- B. Expected total number of days the dewatering well will be in use _____
- C. Approximate dates (month/day/year) in operation: Start _____ End _____
- D. Legal description of water discharge location: _____ 1/4 of the _____ 1/4 of Section _____, Township _____ North, Range _____ East/West and name of river, stream or water body _____
- E. Will discharge water be used for another purpose, such as livestock, irrigation, etc.? Yes, No
If Yes, list purpose, location and expected total amount of water use in acre-inches / year or total gallons / year.

LIVESTOCK WELLS (SECTION C)

- A. Name of facility _____
- B. Type of Livestock: Feeder Cattle, Dairy Cattle, Swine over 55 lbs., Swine under 55 lbs.,
 Sheep, Poultry, Horses
- C. Average number of livestock per year _____ and average weight per animal _____ lbs.
- D. Peak number of livestock _____ and time of year _____
- E. Is facility approved by Nebraska Department of Environmental Quality? Yes, No. If Yes, list NDEQ certification IIS number _____ If No, complete the rest of this section.
- F. Type of facility: Open lot, Covered Building
- G. If facility is Open lot, list soil type _____
- H. Estimated depth to ground water under feedlot _____ ft.
- I. Describe manure collection system of feedlot _____
- J. Name and distance of nearest surface watercourse from feedlot _____
- K. For each manure land application site, list legal description and size in acres, method of application, and distance from feedlot operation.

DOMESTIC WELLS WITH IRRIGATION ON ONE ACRE OR MORE (SECTION D)

- A. Check all that apply:
 - a. Water use: Lawn and number of acres to be irrigated _____ acres.
 - b. Water use: Commercial garden and number of acres to be irrigated _____ acres.
 - c. Water use: Tree Farm and number of acres to be irrigated _____ acres.
 - d. Water use: Type of livestock _____ and number _____
- B. Type of irrigation system. Sprinkler, Drip Tape, Other (specify) _____
- C. If applicable, give Street address and town _____

* One acre equals 43,560 square feet.

INDUSTRIAL AND COMMERCIAL WELLS**(SECTION E)**

- A. Name of facility _____
- B. Products produced by facility _____
- C. In Section 6 or on a separate sheet of paper, list well registration number and legal description of current wells supplying water to this facility.
- D. In Section 6 or on a separate sheet of paper, provide a short description how water is used within the facility and the expected annual amount of water for each use. For example: "The manufacturing plant will use 45% of total annual water use, or 1.45 million gallons per year, for electroplating of galvanized pipe and the remaining 55% of total annual water use, or 1.77 million gallons per year, will be used for non-contact cooling water throughout the plant".
- E. Will any of the used water or waste water from this facility be re-used for another purpose? Yes, No.
If Yes, list purpose, location and expected total amount of water use in acre-inches / year or total gallons / year.

PUBLIC WATER SUPPLY WELLS**(SECTION F)**

- A. On a separate sheet of paper, list the well registration numbers and legal description of current wells supplying water to this community.
- B. Attach a list of the five largest industrial water users that your community supplies water to, and the total annual amount of water supplied to each of these industries for the last five years.
- C. For these same industries list the total annual amount of water returned to the community as waste water for each of the last five years.
- D. Will waste water be used for another purpose, such as livestock, irrigation, etc.? Yes, No
If Yes, list purpose, location and expected total amount of water use in acre-inches / year or total gallons / year.

- E. Attach a list of the golf courses that the community supplies water to and list the location and number of acres for each one.

RECOVERY OR REMEDIATION WELLS**(SECTION G)**

- A. Reason for recovery or remediation well, i.e. leaking underground storage tank. _____
- B. Contaminates of concern _____
- C. Treatment method of contaminants _____
- D. Approximate dates (month/day/year) in operation: Start _____ End _____
- E. Legal description of water discharge location: _____ ¼ of the _____ ¼ of Section _____, Township _____ North, Range _____ East/West and name of river, stream or water body _____
- F. Will cleanup water be used for another purpose, such as livestock, irrigation, etc.? Yes, No
If Yes, list purpose, location and expected total amount of water use in acre-inches / year or total gallons / year.

OTHER WELLS**(SECTION H)**

- A. Purpose of water use _____
 - B. Will the well be used for one calendar year or less? Yes, No
 - a. If Yes, list approximate dates (month/day/year) the well will be in operation: Start _____
End _____
 - b. If No, list the approximate dates (months) or seasons of the calendar year that well is expected to be in peak or highest use. _____
 - C. Legal description of water discharge location: _____ ¼ of the _____ ¼ of Section _____, Township _____ North, Range _____ East/West and name of river, stream or water body _____
-

This form must be completed in full and accompanied by a non-refundable \$50.00 filing fee (payable to the Lower Platte North Natural Resources District). In addition, for Class 3 well permits an added fee of \$250.00 is required for District review. For Class 4 well permits an added fee of \$500.00 is required for District review. Forward this application and filing fees to:

**Lower Platte North Natural Resources District
P.O. Box 126
Wahoo, NE 68066
Phone: (402) 443-4675**

Please take the time and fill out the information correctly. The District will return an incomplete or defective application, with 60 days being allowed for resubmission. The District shall issue all permits with conditions attached, or denied not later than 30 days after receipt of a complete and properly prepared application.

WATER WELL PERMIT RESTRICTIONS

1. A well permit is required prior to the construction of a water well. If construction of a water well is commenced prior to obtaining a permit, a late permit must be completed and accompanied by a \$250.00 application fee. Construction or operation of a new water well without an approved water well permit shall result in the District issuing a 'cease and desist order' against further construction or use of that water well.
2. An irrigation well shall not be constructed within 1000 feet of any registered industrial or public water supply well or within 600 feet of a registered irrigation well; A public water supply well shall not be constructed within 1000 feet of any registered irrigation, industrial or other public water supplier's well; An industrial well shall not be constructed within 1000 feet of any registered irrigation, industrial or public water supply well pursuant to §46-609 and §46-651. These spacing restrictions shall not apply to water wells owned by the same person. Any person may apply to the Nebraska Department of Natural Resources for a special permit to drill a water well without regard to the spacing requirements pursuant to §46-653. The District may adopt stricter well spacing requirements based on different aquifer subareas. Check with the District office if you have any questions.
3. This permit does not register the well with the Department of Natural Resources. All wells are required to be registered by the well driller with the Nebraska Department of Natural Resources within 60 days after the well is completed.
4. A replacement water well is one, which replaces an abandoned water well that has been operated within the last three years, and is constructed to water the same tract of land as the abandoned water well that is being replaced. A replacement water well must be pumping from a comparable aquifer and yield approximately the same gallons per minute and total annual water uses as the original water well it is replacing. As of January 1, 1997, both new and replacement wells need a permit from the Lower Platte North Natural Resources District.
5. Consumptive water use in acre-inches is determined from the Department of Natural Resources (DNR) Net Corn Crop Irrigation Requirement map or a similar map produced by the University of Nebraska.
6. If the well is being replaced it must be properly abandoned according to state guidelines. A copy of these guidelines is available from the Lower Platte North NRD.
7. If the water well is not constructed within a one-year period from the date of approval, a new permit is needed.
8. Water wells may not be drilled within 50 feet of a stream bank without first obtaining a surface water right for that water withdrawal from the Department of Natural Resources pursuant to §46-637.
9. Any person who, on or after January 1, 1997, commences or causes construction of such a well for which the required permit has not been obtained, or who knowingly furnishes false information regarding such a permit, shall be guilty of a Class IV misdemeanor pursuant to §46-602.01 and §46-613.02.
10. Permits are not required for test holes or temporary dewatering wells (30 days or less). Permits are needed for water wells designed to pump 50 gallons per minute or less in Level 3 and Stay management areas.
11. Tax assessor records submitted with water well permit must include map, parcel number and an accurate account of current land use, such as irrigated acres.
12. With the well permit application, submit an aerial photograph with markings to show the location of the water source(s) and the location of where the water is to be used.
13. Any person, who knowingly furnishes false information regarding a water well permit, shall be subject to the imposition of penalties imposed through the controls adopted by the District pursuant to §46-746.
14. All new or replacement water wells must install a District approved flow meter and report water pumped annually in acre-inches per year or total gallons per year on LPNNRD approved forms by January 31st of each following year.
15. If multiple water sources are used, landowner must supply flow records from each water source in acre-inches per year or total gallons per year on LPNNRD approved forms by January 31st of each following year.
16. Water well permit applications require that the applicant or operator of irrigation, livestock, domestic (with irrigation on one acre or more of land), industrial, and public water supply wells by NRD certified.

**** Landowners must list new irrigated acres with the County Assessor, update the DNR well registration, and comply with any additional conditions within 90 days of LPNNRD approval of this water well permit. LPNNRD staff may perform a site visit to verify information provided in the well permit application. ****

Go gle Maps Waterloo

Fremont, NE

N
V — E
S



Imagery ©2021 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 500 ft

• = proposed location of New Well.

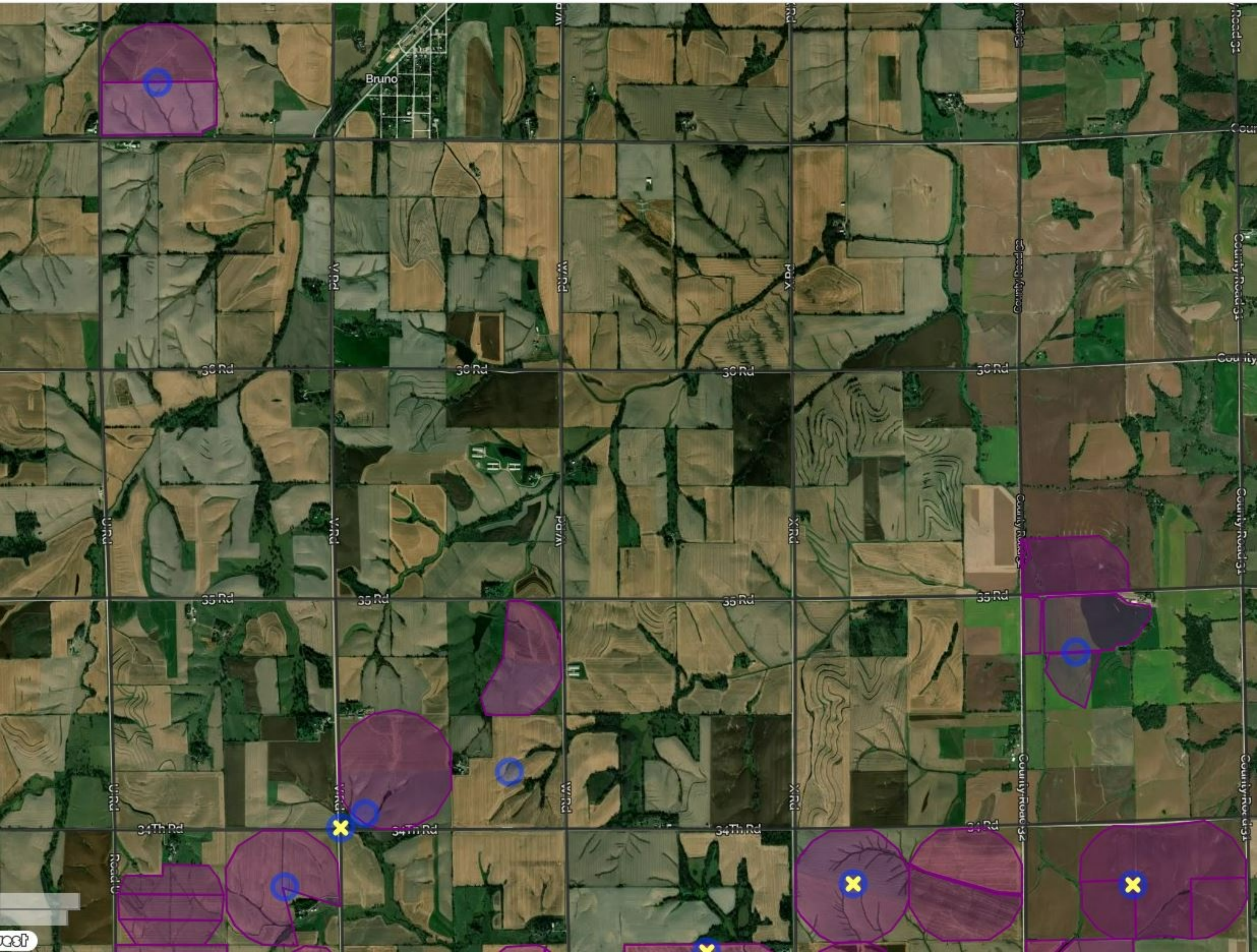
D = land

NRD LPN

Dear Sirs:

We KASL Brothers
DAVE - BEN - TIM ARE SPLITTING our
FARMING OPERATION. IN SECTION
36-15-4 SKOLL CREEK, WE HAVE
AN EXISTING Irr. WELL IN the
N-W 1/4. WE HAVE UNDERGROUND
PIPE + WIRING GOING to the N-E 1/4.
ARE WE ABLE to DRILL A WELL
IN the N-E 1/4 it WAS Irr BY
the WELL in the N-W 1/4. DO to
CHANGE OF OWNERSHIP WILL WE
BE ABLE to DRILL IN the N-E 1/4?

402-367-2390 Tom R Kasl
402-541-6723 Dave Kasl



Bruno

34th Rd

34th Rd

34th Rd

34th Rd

35th Rd

35th Rd

35th Rd

35th Rd

35th Rd

35th Rd

35th Rd

35th Rd

URd

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County Road 31

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County Road 31

County Road 31

URd

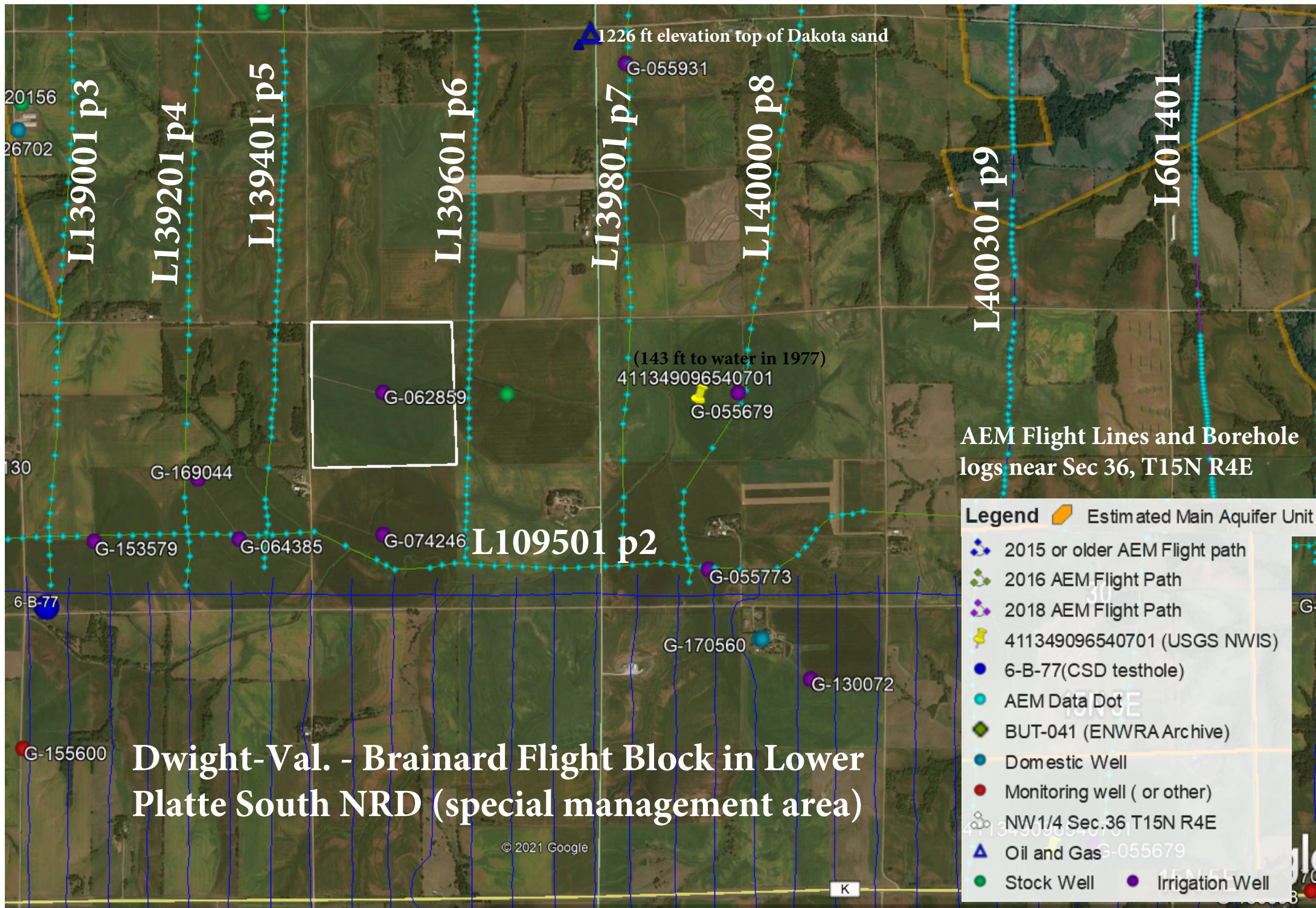
VRd

WRd

XRd

County Road 32

County Road 32

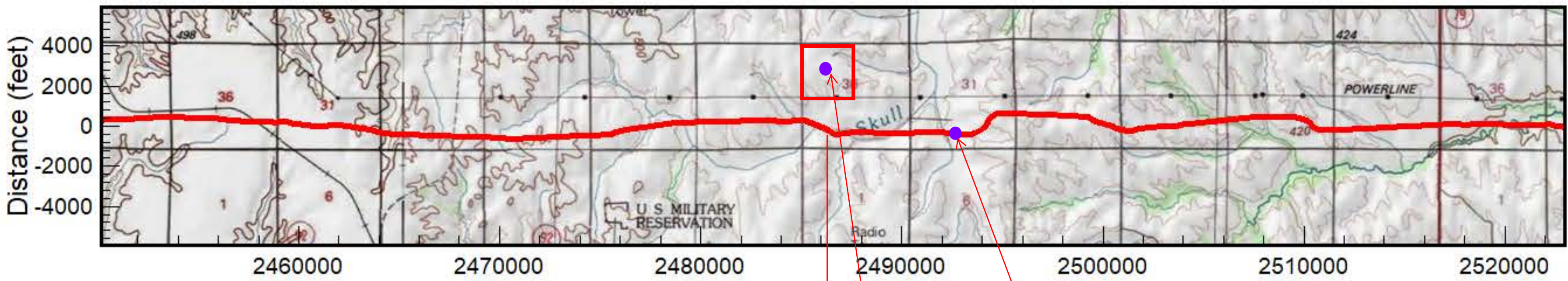


Dwight-Val. - Brainard Flight Block in Lower Platte South NRD (special management area)

AEM Flight Lines and Borehole logs near Sec 36, T15N R4E

- Legend**
- Estimated Main Aquifer Unit
 - 2015 or older AEM Flight path
 - 2016 AEM Flight Path
 - 2018 AEM Flight Path
 - 411349096540701 (USGS NWIS)
 - 6-B-77(CSD testhole)
 - AEM Data Dot
 - BUT-041 (ENWRA Archive)
 - Domestic Well
 - Monitoring well (or other)
 - NW1/4 Sec.36 T15N R4E
 - Oil and Gas
 - Stock Well
 - Irrigation Well

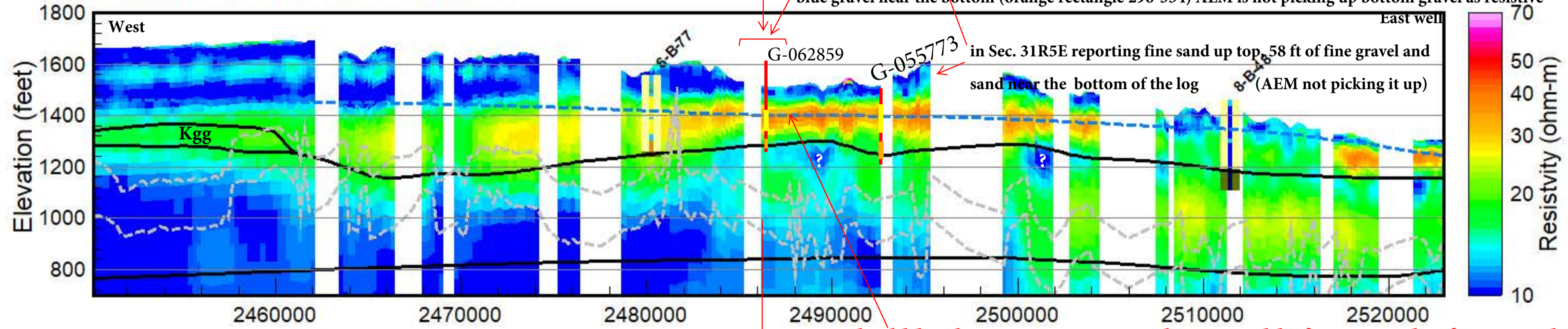
Flight Line Position Line L109501



**West to East oriented Flight Line
1/4 mile south of site**

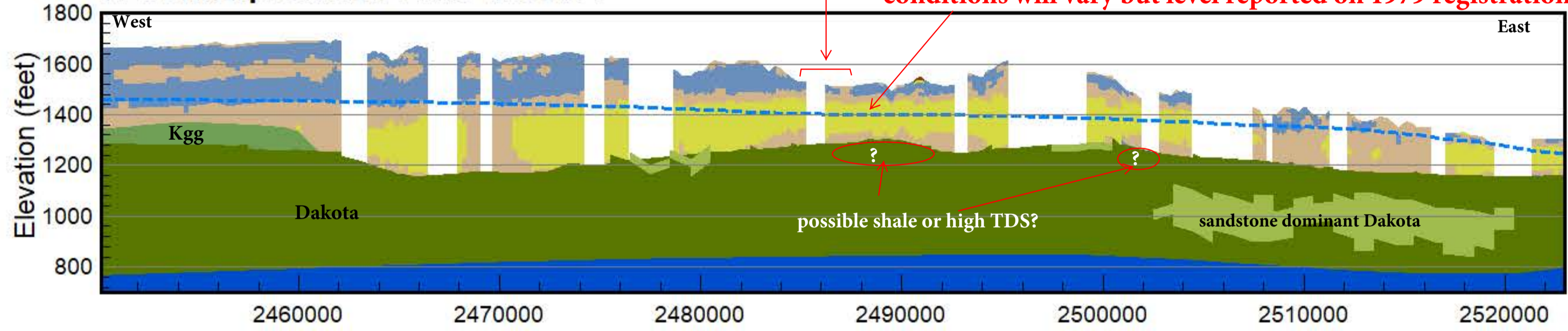
Results of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNNRD) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

AEM Inversion Line L109501 matches



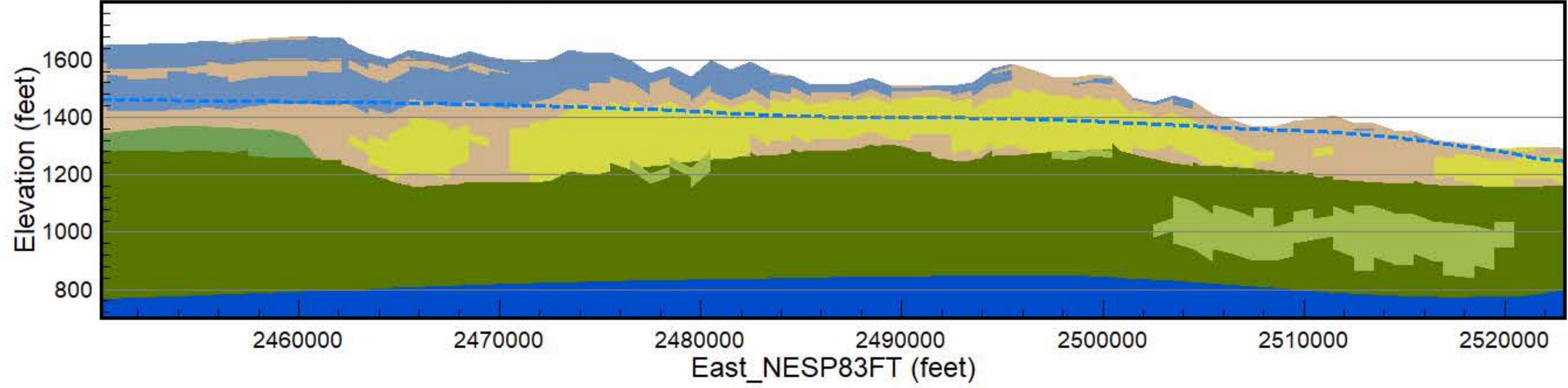
The AEM inversions shown are Spatially-Constrained using the Aarhus Geo Software Workbench version 5.8.3 in the indicated electrical resistivity color scale. Boreholes displayed on the AEM inversion profile are within 1/2 mile of the flight line and are from the Conservation Survey Division (CSD) public website downloaded on September 9, 2018. Lithology and stratigraphy are indicated by the legends. Gray-dashed lines when visible on the AEM inversions profile indicate the estimated depth of investigation (DOI). White gaps in the AEM inversion profile indicate gaps in data coverage due to electromagnetic coupling or areas that were not flown due to infrastructure. Solid-black lines on the AEM Inversion profile indicate interpreted stratigraphic contacts (Kc= Cretaceous Carlile Shale; Kgg= Cretaceous Greenhorn Limestone and Graneros Shale; Kd= Cretaceous Dakota Group; and IP= undifferentiated Pennsylvanian formations/groups). The 1995 CSD water table is represented by a dashed blue line.

AEM Interpretation Line L109501



The AEM interpretation profiles shows Q=Quaternary materials classified into the four groups indicated by the legend. Gaps in the Quaternary materials are due to electromagnetic coupling or areas that were not flown due to infrastructure. Cretaceous units as well as the undifferentiated Pennsylvanian are indicated as continuous formations and are colored as indicated in the legend.

AEM Voxel Interpretation Line L109501



material above bedrock legend:

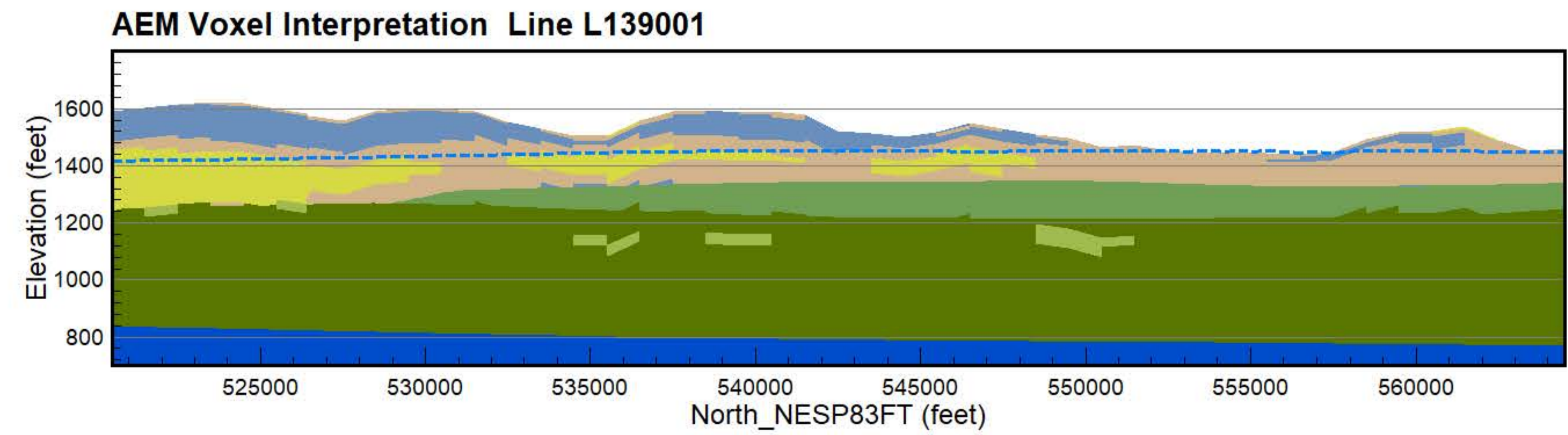
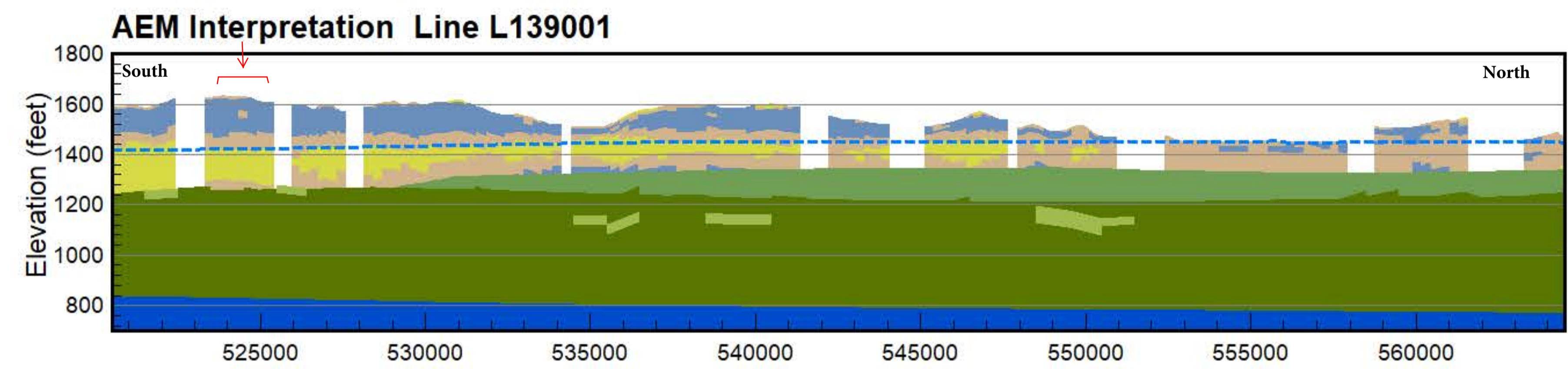
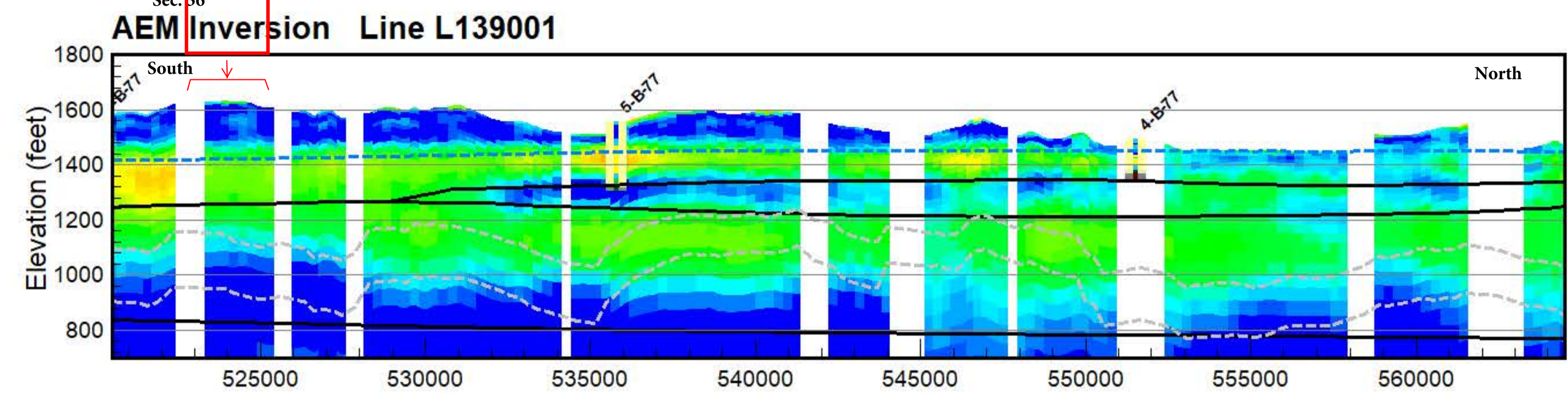
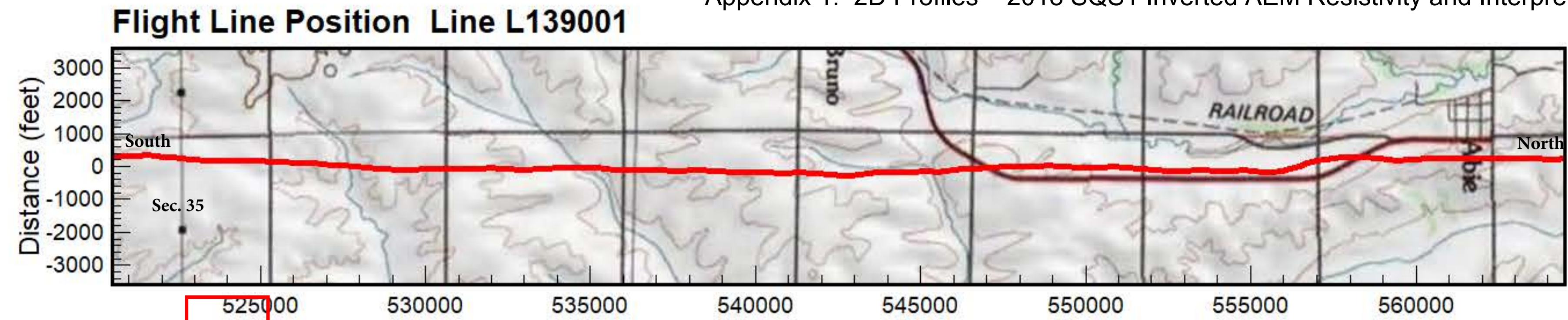
Bedrock legend:

Quaternary/Ogallala Aquifer Material Legend	Kd Aquifer Material	CSD Stratigraphy	CSD Lithology
Coarse	Sandstone/Sand Dominant	Q	No Sample
Aquifer	Shale/Clay Dominant	Kc	Igneous/Metamorphics
Marginal		Kgg	Limestone, Shale and Sandstone
Non		Kd	Limestone and Shale
		IP	Dolomite and Limestone
			Ironstone
			Sandstone and Shale
			Conglomerate
			Sandstone
			Siltstone
			Marl
			Chert
			Gypsum
			Chalk or chalk with interbedded fines
			Shale
			Clayey Shale/Claystone
			Coal and/or Peat
			Volcanic Ash/Bentonite
			Gravel/Boulders
			Sand and Gravel
			Sand
			Silty Sand
			Silty Clay
			Sandy Clay
			Silt/Loess
			Clay
			Till
			Roadfill and/or Topsoil





South to North oriented Flight Line
3/4 mile west of NW 1/4 of Sec. 36
T15NR4E



Results of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNNRD) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

The AEM inversions shown are Spatially-Constrained using the Aarhus Geo Software Workbench version 5.8.3 in the indicated electrical resistivity color scale. Boreholes displayed on the AEM inversion profile are within 1/2 mile of the flight line are from the Conservation Survey Division (CSD) public website downloaded on September 9, 2018. Lithology and stratigraphy are indicated by the legends. Gray-dashed lines when visible on the AEM inversions profile indicate the estimated depth of investigation (DOI). White gaps in the AEM inversion profile indicate gaps in data coverage due to electromagnetic coupling or areas that were not flown due to infrastructure. Solid-black lines on the AEM Inversion profile indicate interpreted stratigraphic contacts (Kc= Cretaceous Carlile Shale; Kgg= Cretaceous Greenhorn Limestone and Graneros Shale; Kd= Cretaceous Dakota Group; and IP= undifferentiated Pennsylvanian formations/groups). The 1995 CSD water table is represented by a dashed blue line.

The AEM interpretation profiles shows Q=Quaternary materials classified into the four groups indicated by the legend. Gaps in the quaternary materials are due to electromagnetic coupling or areas that were not flown due to infrastructure. Cretaceous units as well as the undifferentiated Pennsylvanian are indicated as continuous formations and are colored as indicated in the legend.

The AEM Voxel Interpolation Profile indicates a 1,000-foot cell size interpolation of the Quaternary materials classified into the four groups indicated by the legend. In addition to the interpreted 1,000-foot cell size interpolation, sand/sandstone-dominant sections of the Cretaceous Dakota Group are indicated in the legend.

Prepared for the LPNNRD and the Eastern Nebraska Water Resources Assessment (ENWRA) by Aqua Geo Frameworks, LLC.

Quaternary/Ogallala Aquifer Material Legend

- Coarse
- Aquifer
- Marginal
- Non

Kd Aquifer Material

- Sandstone/Sand Dominant
- Shale/Clay Dominant

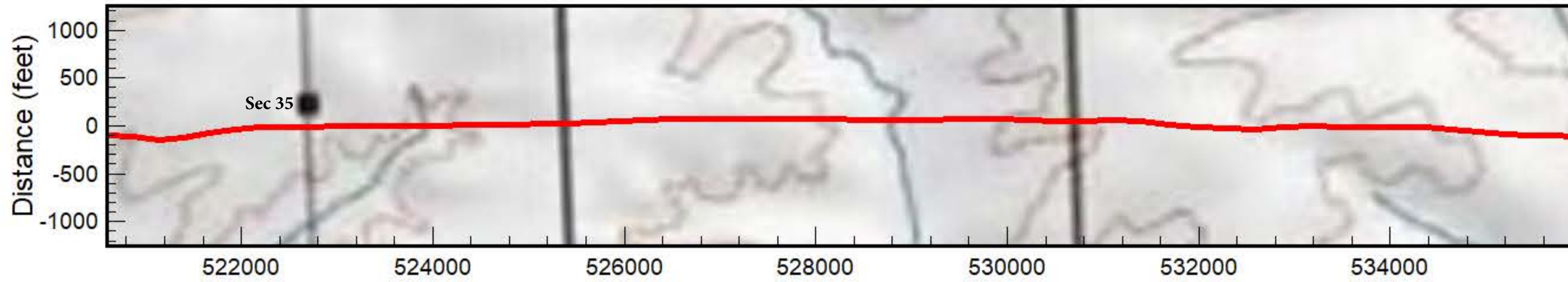
CSD Stratigraphy

- Q
- Kc
- Kgg
- Kd
- IP

CSD Lithology

- No Sample
- Igneous/Metamorphics
- Limestone, Shale and Sandstone
- Limestone and Shale
- Limestone
- Dolomite and Limestone
- Dolomite
- Ironstone
- Sandstone and Shale
- Conglomerate
- Sandstone
- Siltstone
- Marl
- Chert
- Gypsum
- Chalk or chalk with interbedded fines
- Shale
- Clayey Shale/Claystone
- Coal and/or Peat
- Volcanic Ash/Bentonite
- Gravel/Boulders
- Sand and Gravel
- Sand
- Silty Sand
- Silty Clay
- Sandy Clay
- Silt/Loess
- Clay
- Till
- Roadfill and/or Topsoil

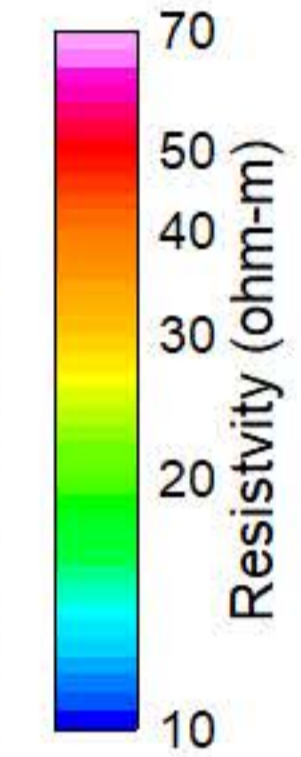
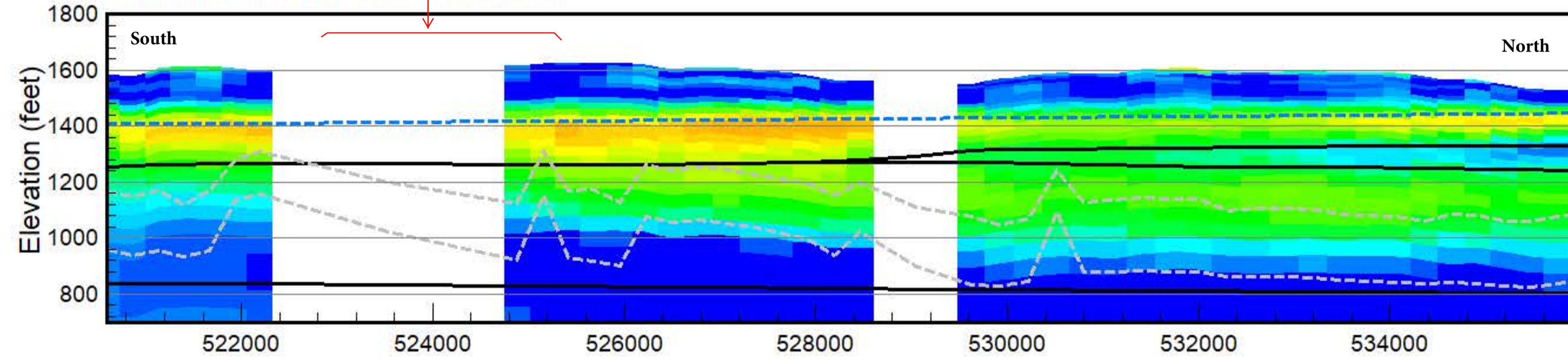
Flight Line Position Line L139201



**South to North oriented Flight Line
1/2 mile west of NW1/4 of Sec. 36
T15NR4E**

AEM Inversion Line L139201

NW 1/4 of Sec. 36 is 1/2 mile east of here



Results of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNNRD) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

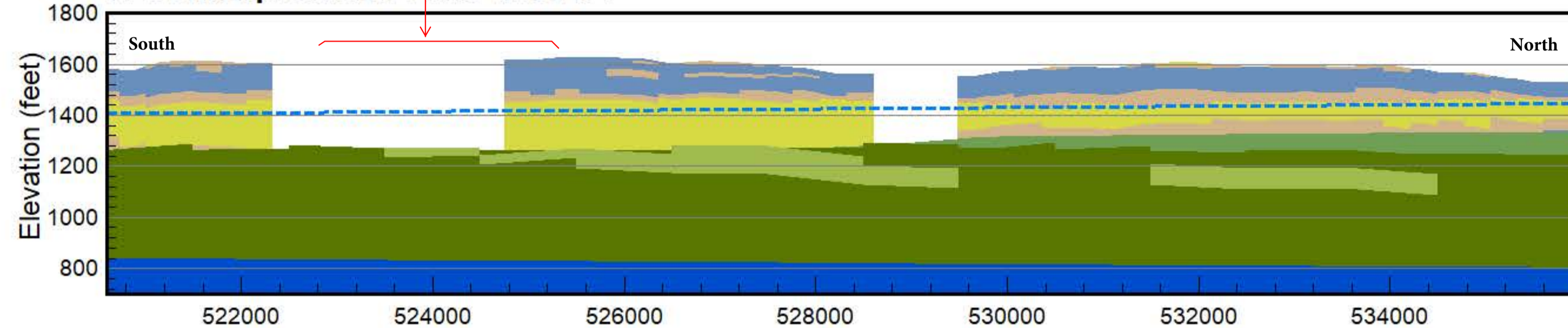
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The AEM interpretation profiles shows Q=Quaternary materials classified into the four groups indicated by the legend. Gaps in the quaternary materials are due to electromagnetic coupling or areas that were not flown due to infrastructure. Cretaceous units as well as the undifferentiated Pennsylvanian are indicated as continuous formations and are colored as indicated in the legend.

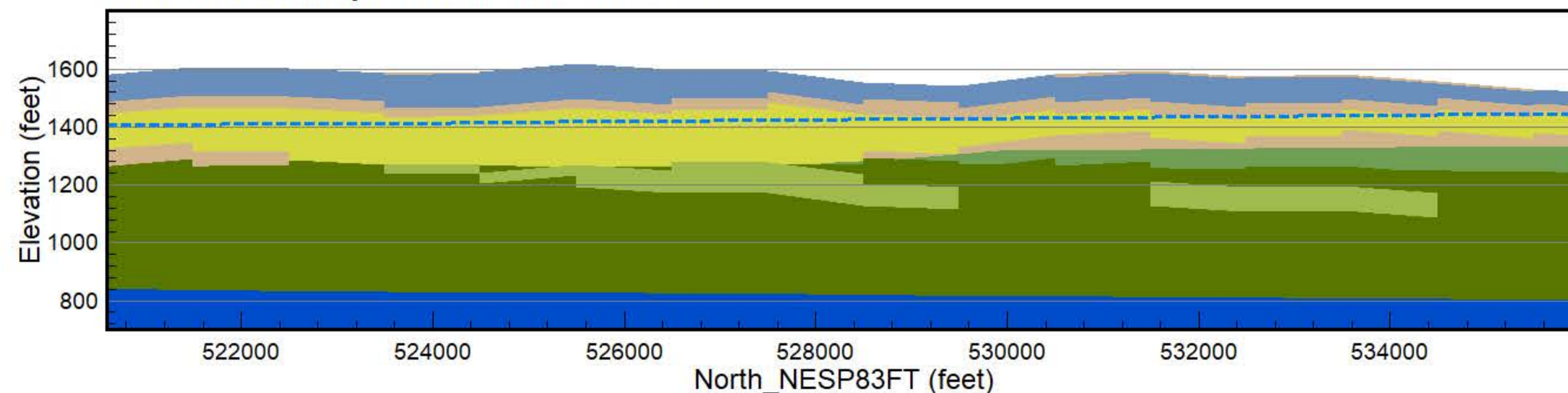
The AEM Voxel Interpolation Profile indicates a 1,000-foot cell size interpolation of the Quaternary materials classified into the four groups indicated by the legend. In addition to the interpreted 1,000-foot cell size interpolation, sand/sandstone-dominant sections of the Cretaceous Dakota Group are indicated in the legend.

Prepared for the LPNNRD and the Eastern Nebraska Water Resources Assessment (ENWRA) by Aqua Geo Frameworks, LLC.

AEM Interpretation Line L139201



AEM Voxel Interpretation Line L139201



Quaternary/Ogallala Aquifer Material Legend

- Coarse
- Aquifer
- Marginal
- Non

Kd Aquifer Material

- Sandstone/Sand Dominant
- Shale/Clay Dominant

CSD Stratigraphy

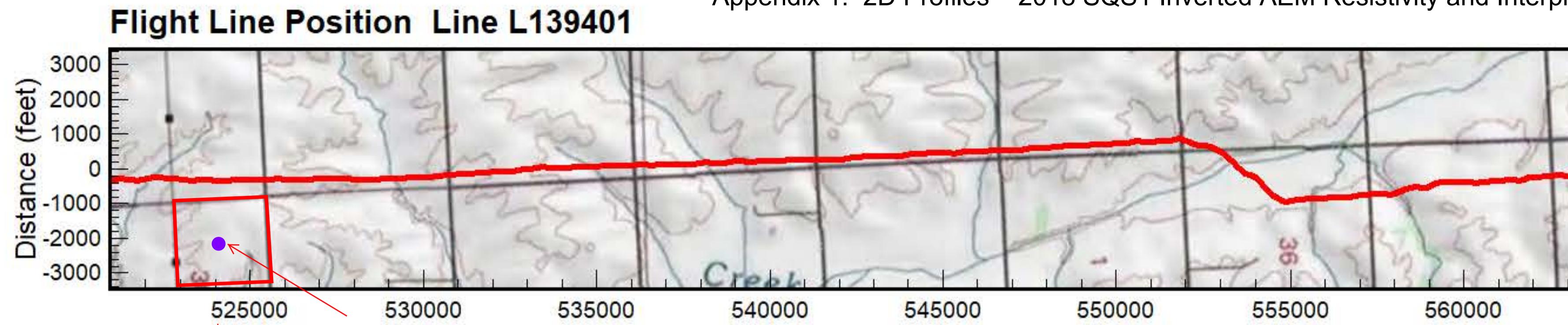
- Q
- Kc
- Kgg
- Kd
- IP

CSD Lithology

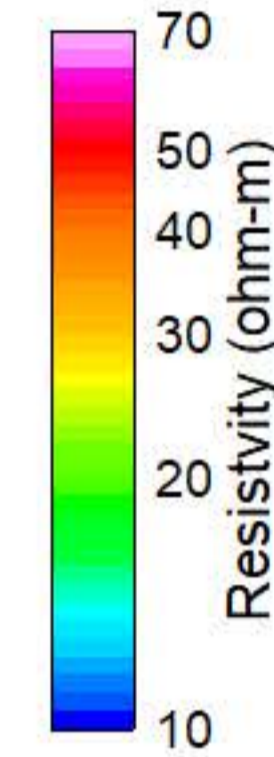
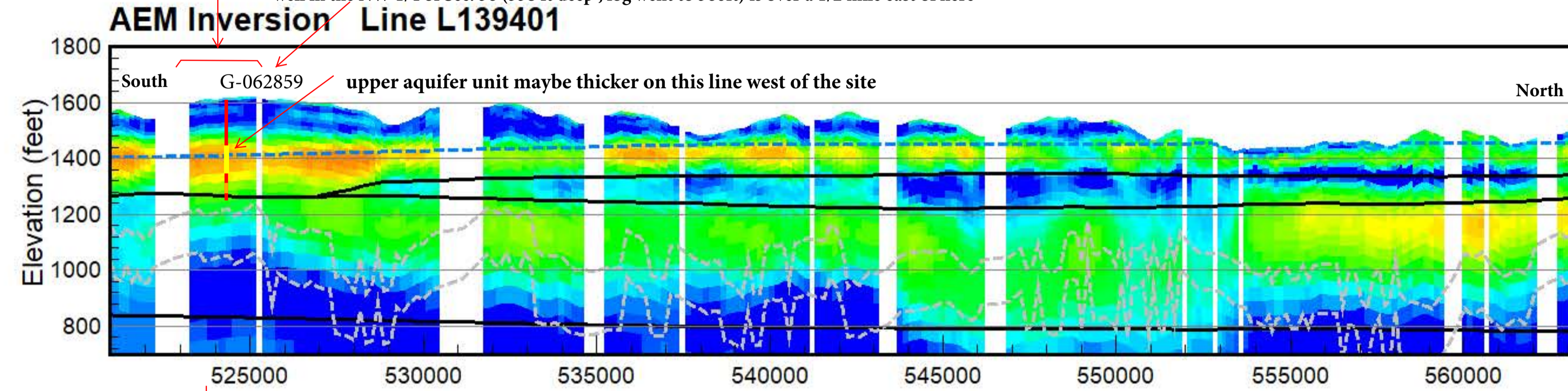
- No Sample
- Igneous/Metamorphics
- Limestone, Shale and Sandstone
- Limestone and Shale
- Limestone
- Dolomite and Limestone
- Dolomite
- Ironstone
- Sandstone and Shale
- Conglomerate
- Sandstone
- Siltstone
- Marl
- Chert
- Gypsum
- Chalk or chalk with interbedded fines
- Shale
- Clayey Shale/Claystone
- Coal and/or Peat
- Volcanic Ash/Bentonite
- Gravel/Boulders
- Sand and Gravel
- Sand
- Silty Sand
- Silty Clay
- Sandy Clay
- Silt/Loess
- Clay
- Till
- Roadfill and/or Topsoil



South to North oriented Flight Line just west of the NW1/4 of Sec. 36 T15NR4E



well in the NW 1/4 of Sec. 36 (338 ft deep, log went to 360ft) is over a 1/2 mile east of here



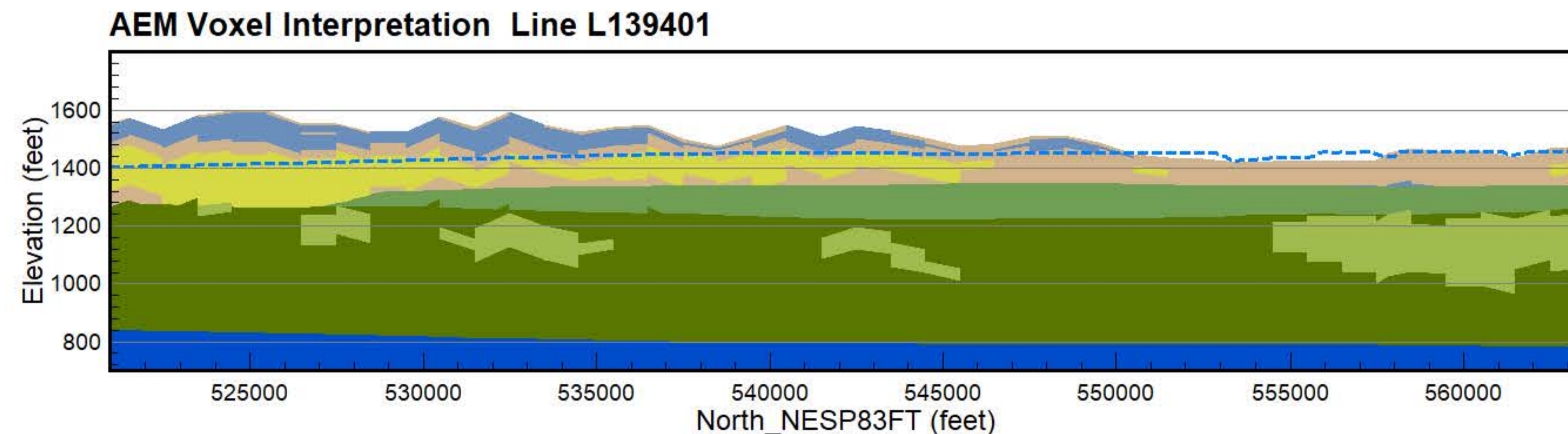
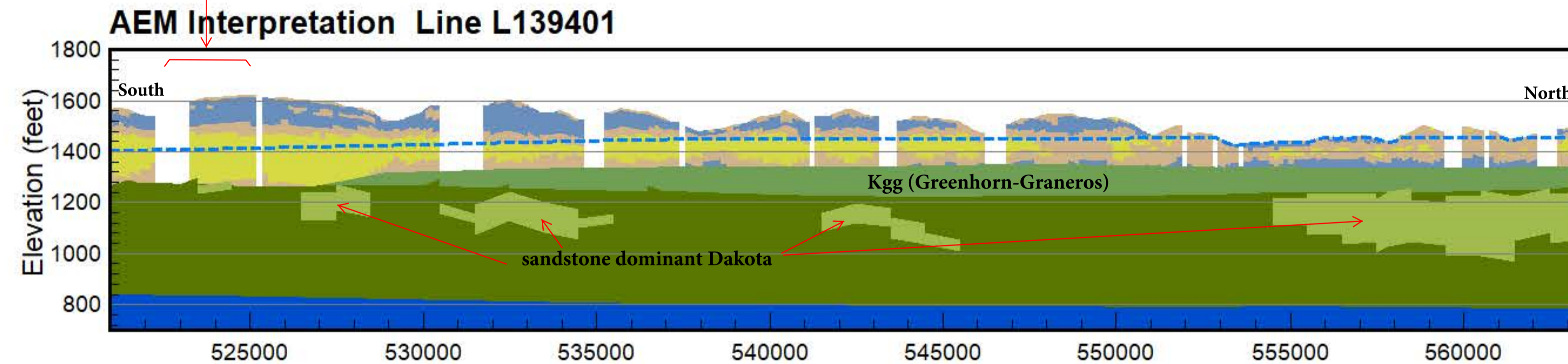
Results of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNND) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

The AEM inversions shown are Spatially-Constrained using the Aarhus Geo Software Workbench version 5.8.3 in the indicated electrical resistivity color scale. Boreholes displayed on the AEM inversion profile are within 1/2 mile of the flight line are from the Conservation Survey Division (CSD) public website downloaded on September 9, 2018. Lithology and stratigraphy are indicated by the legends. Gray-dashed lines when visible on the AEM inversions profile indicate the estimated depth of investigation (DOI). White gaps in the AEM inversion profile indicate gaps in data coverage due to electromagnetic coupling or areas that were not flown due to infrastructure. Solid-black lines on the AEM Inversion profile indicate interpreted stratigraphic contacts (Kc= Cretaceous Carlile Shale; Kgg= Cretaceous Greenhorn Limestone and Graneros Shale; Kd= Cretaceous Dakota Group; and IP= undifferentiated Pennsylvanian formations/groups). The 1995 CSD water table is represented by a dashed blue line.

The AEM interpretation profiles shows Q=Quaternary materials classified into the four groups indicated by the legend. Gaps in the quaternary materials are due to electromagnetic coupling or areas that were not flown due to infrastructure. Cretaceous units as well as the undifferentiated Pennsylvanian are indicated as continuous formations and are colored as indicated in the legend.

The AEM Voxel Interpolation Profile indicates a 1,000-foot cell size interpolation of the Quaternary materials classified into the four groups indicated by the legend. In addition to the interpreted 1,000-foot cell size interpolation, sand/sandstone-dominant sections of the Cretaceous Dakota Group are indicated in the legend.

Prepared for the LPNND and the Eastern Nebraska Water Resources Assessment (ENWRA) by Aqua Geo Frameworks, LLC.

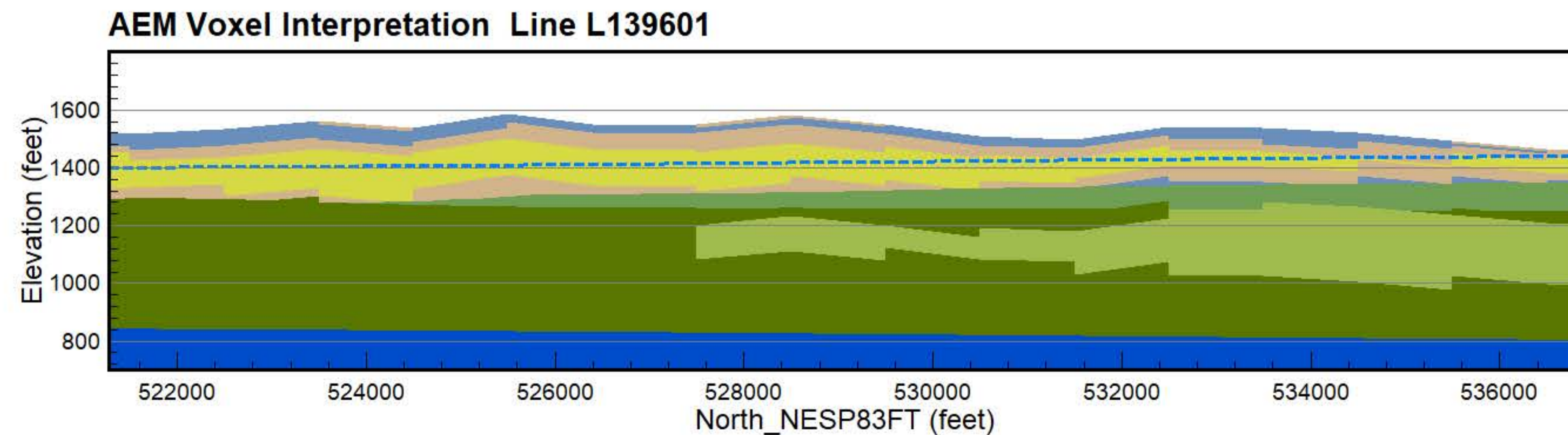
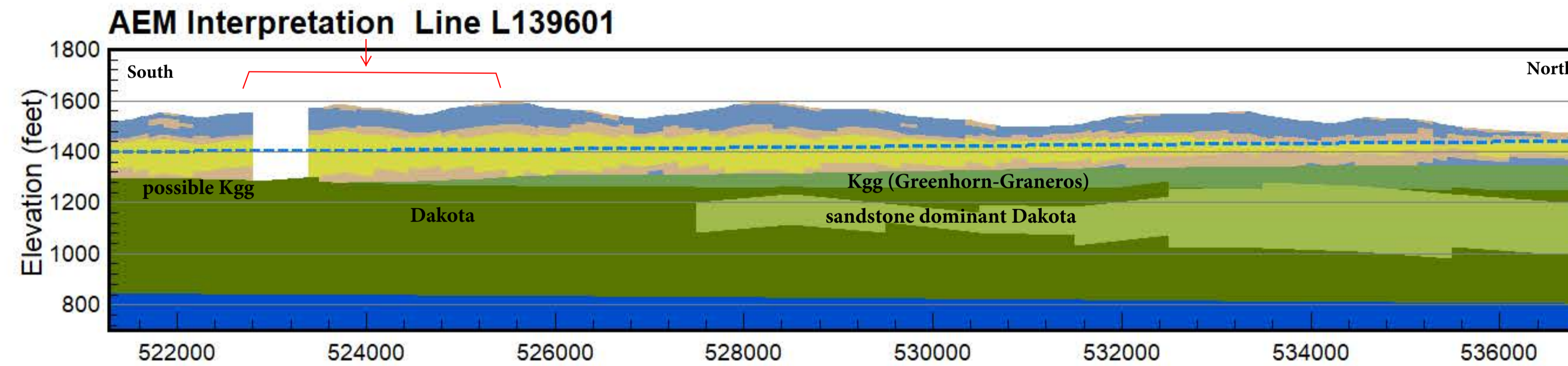
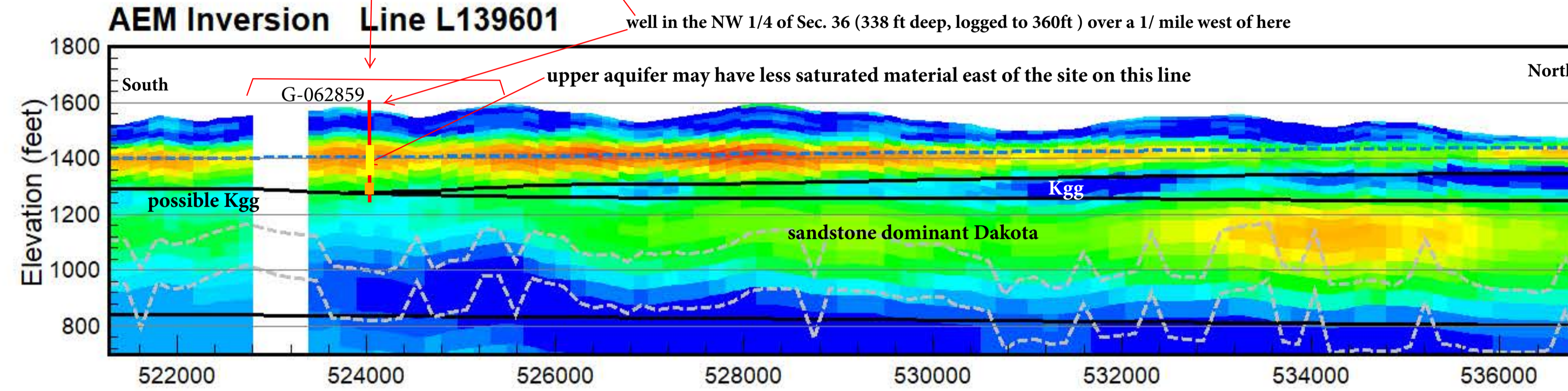
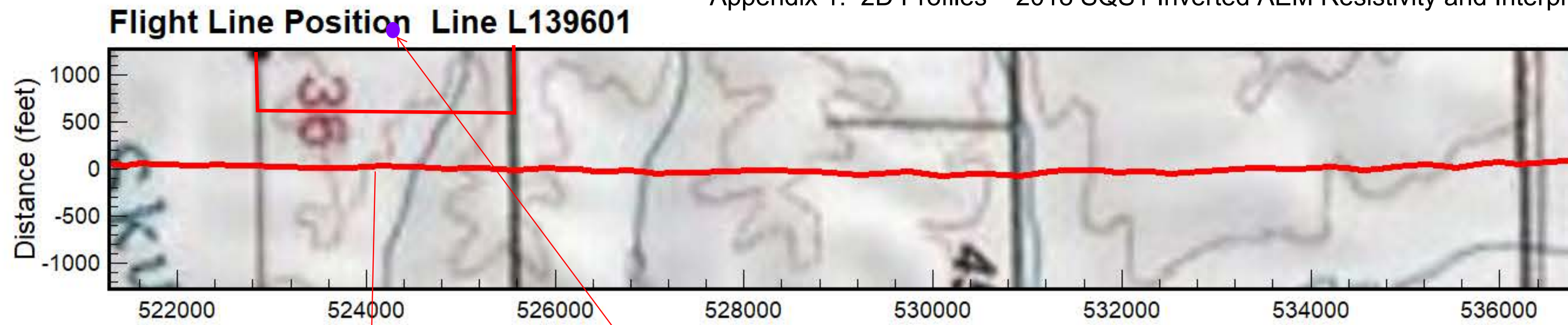


Quaternary/Ogallala Aquifer Material Legend Coarse Aquifer Marginal Non		Kd Aquifer Material Sandstone/Sand Dominant Shale/Clay Dominant		CSD Stratigraphy Q Kc Kgg Kd IP	CSD Lithology No Sample Igneous/Metamorphics Limestone, Shale and Sandstone Limestone and Shale Limestone Dolomite and Limestone Dolomite Ironstone Sandstone and Shale Conglomerate Sandstone Siltstone Marl Chert Gypsum Chalk or chalk with interbedded fines Shale Clayey Shale/Claystone Coal and/or Peat Volcanic Ash/Bentonite Gravel/Boulders Sand and Gravel Sand Silty Sand Silty Clay Sandy Clay Silt/Loess Clay Till Roadfill and/or Topsoil
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South to North oriented Flight Line just east of the NW1/4 of Sec. 36 T15NR4E



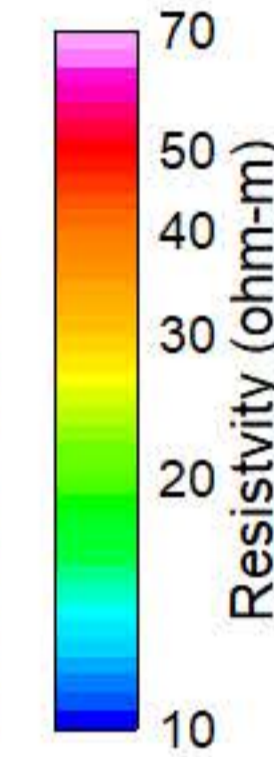
Results of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNNRD) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

The AEM inversions shown are Spatially-Constrained using the Aarhus Geo Software Workbench version 5.8.3 in the indicated electrical resistivity color scale. Boreholes displayed on the AEM inversion profile are within 1/2 mile of the flight line are from the Conservation Survey Division (CSD) public website downloaded on September 9, 2018. Lithology and stratigraphy are indicated by the legends. Gray-dashed lines when visible on the AEM inversions profile indicate the estimated depth of investigation (DOI). White gaps in the AEM inversion profile indicate gaps in data coverage due to electromagnetic coupling or areas that were not flown due to infrastructure. Solid-black lines on the AEM Inversion profile indicate interpreted stratigraphic contacts (Kc= Cretaceous Carlile Shale; Kgg= Cretaceous Greenhorn Limestone and Graneros Shale; Kd= Cretaceous Dakota Group; and IP= undifferentiated Pennsylvanian formations/groups. The 1995 CSD water table is represented by a dashed blue line.

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The AEM Voxel Interpolation Profile indicates a 1,000-foot cell size interpolation of the Quaternary materials classified into the four groups indicated by the legend. In addition to the interpreted 1,000-foot cell size interpolation, sand/sandstone-dominant sections of the Cretaceous Dakota Group are indicated in the legend.

Prepared for the LPNNRD and the Eastern Nebraska Water Resources Assessment (ENWRA) by Aqua Geo Frameworks, LLC.



Quaternary/Ogallala Aquifer Material Legend

- Coarse
- Aquifer
- Marginal
- Non

Kd Aquifer Material

- Sandstone/Sand Dominant
- Shale/Clay Dominant

CSD Stratigraphy

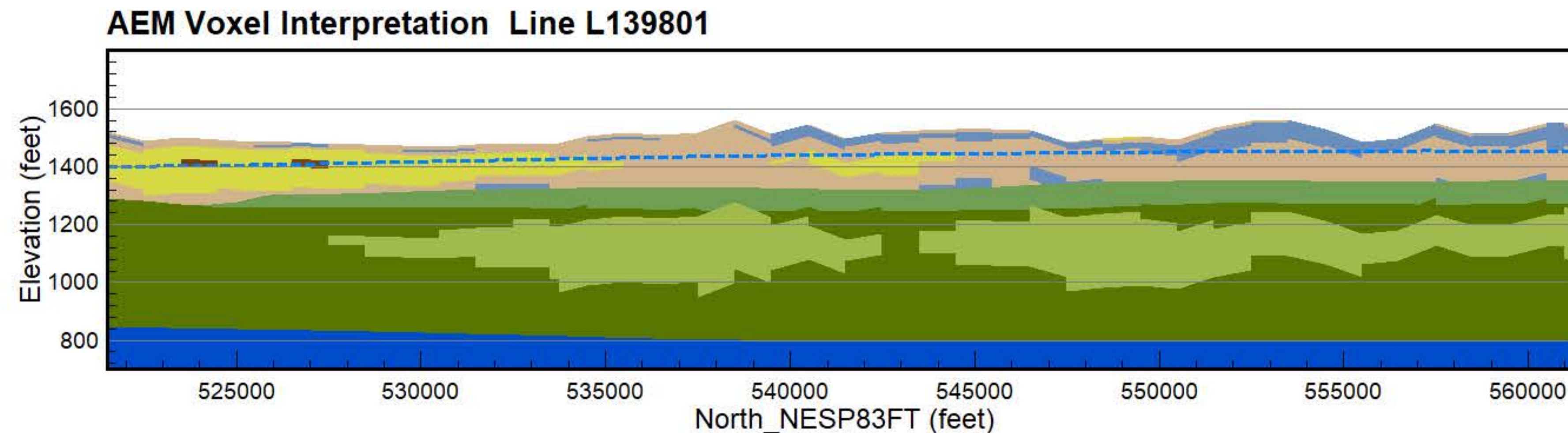
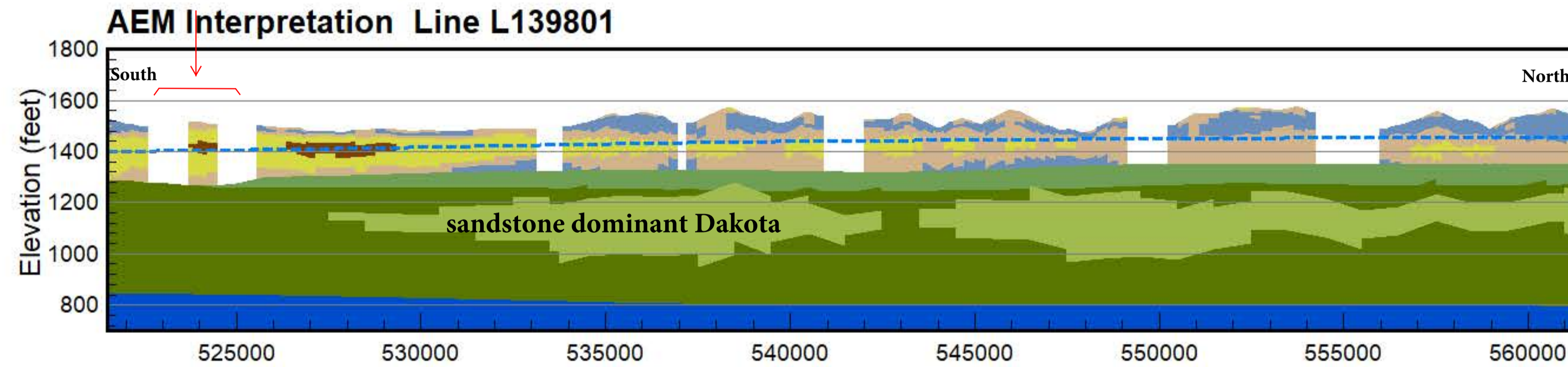
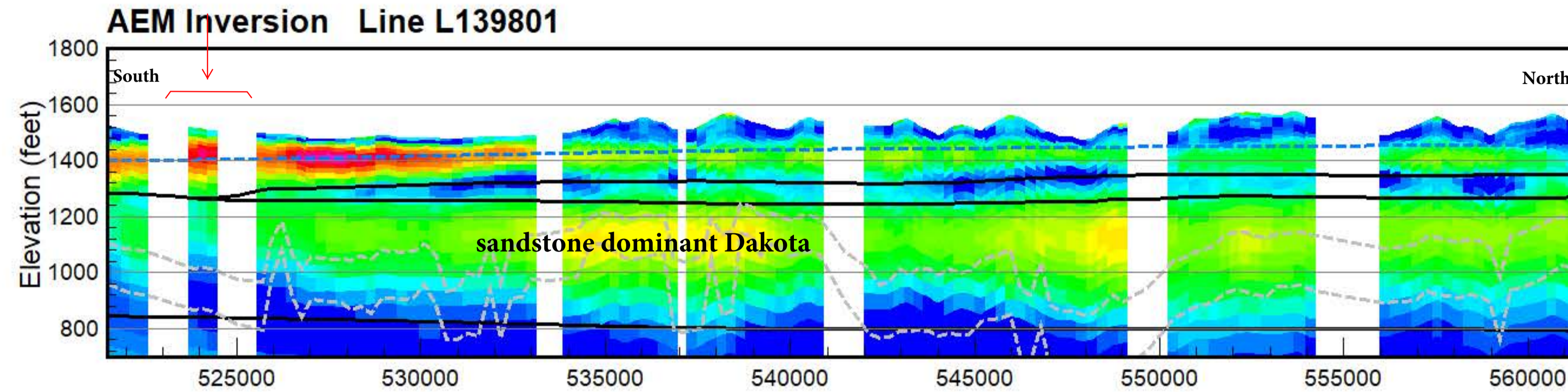
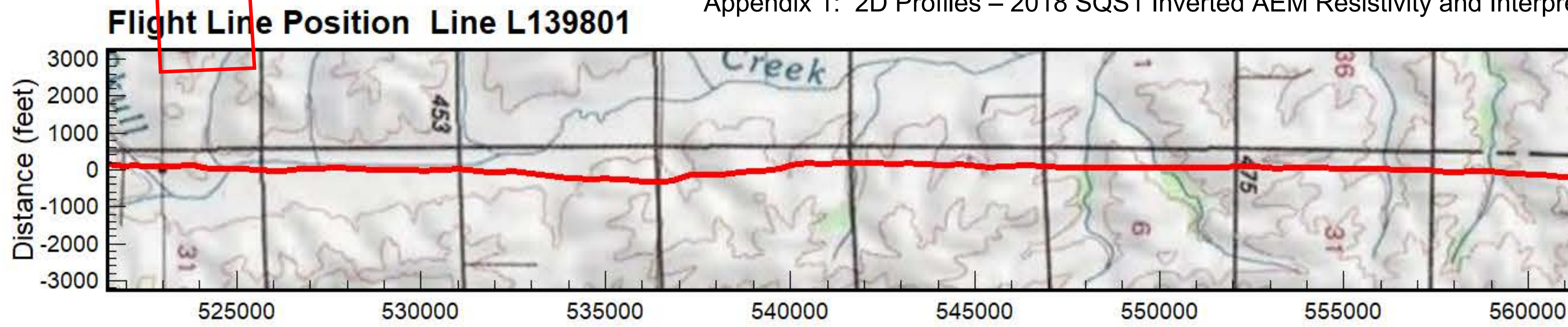
- Q
- Kc
- Kgg
- Kd
- IP

CSD Lithology

- No Sample
- Igneous/Metamorphics
- Limestone, Shale and Sandstone
- Limestone and Shale
- Limestone
- Dolomite and Limestone
- Dolomite
- Ironstone
- Sandstone and Shale
- Conglomerate
- Sandstone
- Siltstone
- Marl
- Chert
- Gypsum
- Chalk or chalk with interbedded fines
- Shale
- Clayey Shale/Claystone
- Coal and/or Peat
- Volcanic Ash/Bentonite
- Gravel/Boulders
- Sand and Gravel
- Sand
- Silty Sand
- Silty Clay
- Sandy Clay
- Silt/Loess
- Clay
- Till
- Roadfill and/or Topsoil



**South to North oriented Flight Line
 ~1/2-3/4 mile east of NW1/4 of Sec. 36
 T15NR4E**



Results of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNNRD) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

The AEM inversions shown are Spatially-Constrained using the Aarhus Geo Software Workbench version 5.8.3 in the indicated electrical resistivity color scale. Boreholes displayed on the AEM inversion profile are within 1/2 mile of the flight line are from the Conservation Survey Division (CSD) public website downloaded on September 9, 2018. Lithology and stratigraphy are indicated by the legends. Gray-dashed lines when visible on the AEM inversions profile indicate the estimated depth of investigation (DOI). White gaps in the AEM inversion profile indicate gaps in data coverage due to electromagnetic coupling or areas that were not flown due to infrastructure. Solid-black lines on the AEM Inversion profile indicate interpreted stratigraphic contacts (Kc= Cretaceous Carlile Shale; Kgg= Cretaceous Greenhorn Limestone and Graneros Shale; Kd= Cretaceous Dakota Group; and IP= undifferentiated Pennsylvanian formations/groups. The 1995 CSD water table is represented by a dashed blue line.

The AEM interpretation profiles shows Q=Quaternary materials classified into the four groups indicated by the legend. Gaps in the quaternary materials are due to electromagnetic coupling or areas that were not flown due to infrastructure. Cretaceous units as well as the undifferentiated Pennsylvanian are indicated as continuous formations and are colored as indicated in the legend.

The AEM Voxel Interpolation Profile indicates a 1,000-foot cell size interpolation of the Quaternary materials classified into the four groups indicated by the legend. In addition to the interpreted 1,000-foot cell size interpolation, sand/sandstone-dominant sections of the Cretaceous Dakota Group are indicated in the legend.

Prepared for the LPNNRD and the Eastern Nebraska Water Resources Assessment (ENWRA) by Aqua Geo Frameworks, LLC.

Quaternary/Ogallala Aquifer Material Legend

- Coarse
- Aquifer
- Marginal
- Non

Kd Aquifer Material

- Sandstone/Sand Dominant
- Shale/Clay Dominant

CSD Stratigraphy

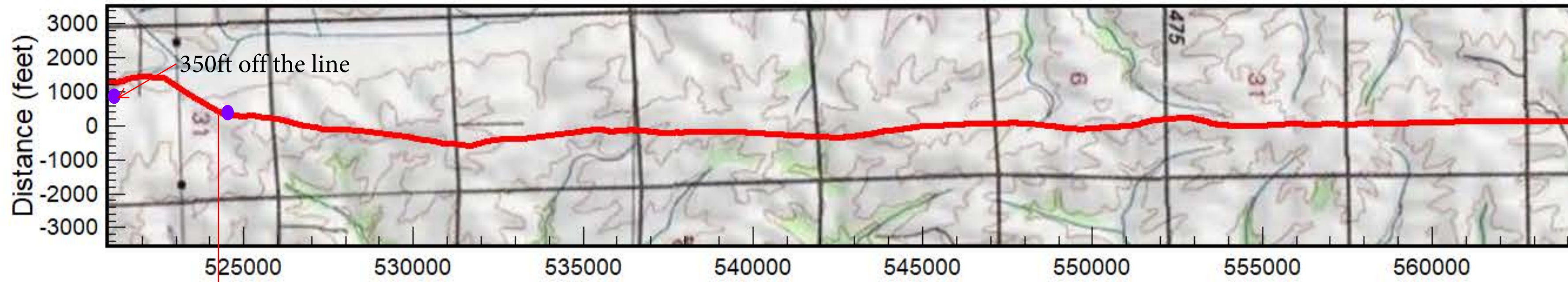
- Q
- Kc
- Kgg
- Kd
- IP

CSD Lithology

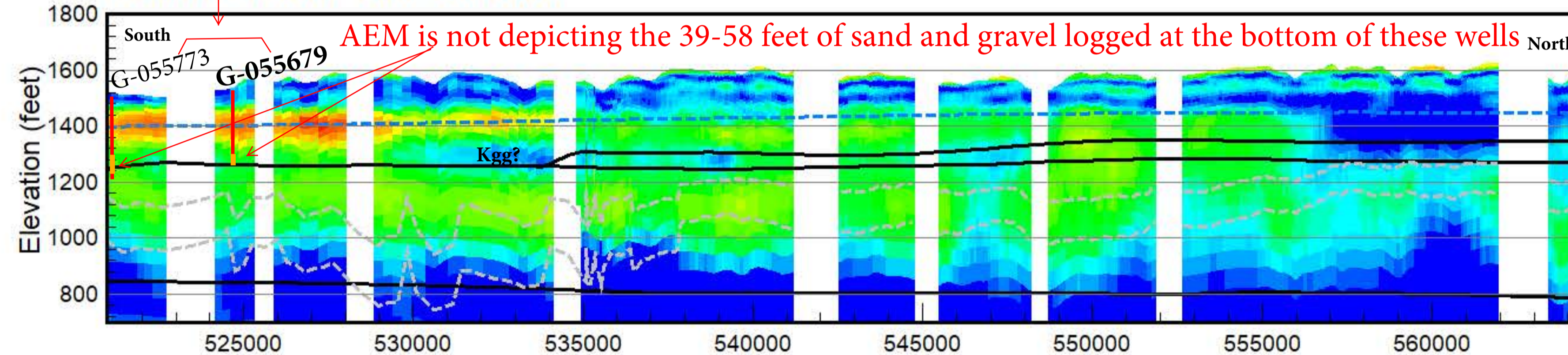
- No Sample
- Igneous/Metamorphics
- Limestone, Shale and Sandstone
- Limestone and Shale
- Limestone
- Dolomite and Limestone
- Dolomite
- Ironstone
- Sandstone and Shale
- Conglomerate
- Sandstone
- Siltstone
- Marl
- Chert
- Gypsum
- Chalk or chalk with interbedded fines
- Shale
- Clayey Shale/Claystone
- Coal and/or Peat
- Volcanic Ash/Bentonite
- Gravel/Boulders
- Sand and Gravel
- Sand
- Silty Sand
- Silty Clay
- Sandy Clay
- Silt/Loess
- Clay
- Till
- Roadfill and/or Topsoil

AGF
Aqua Geo Frameworks

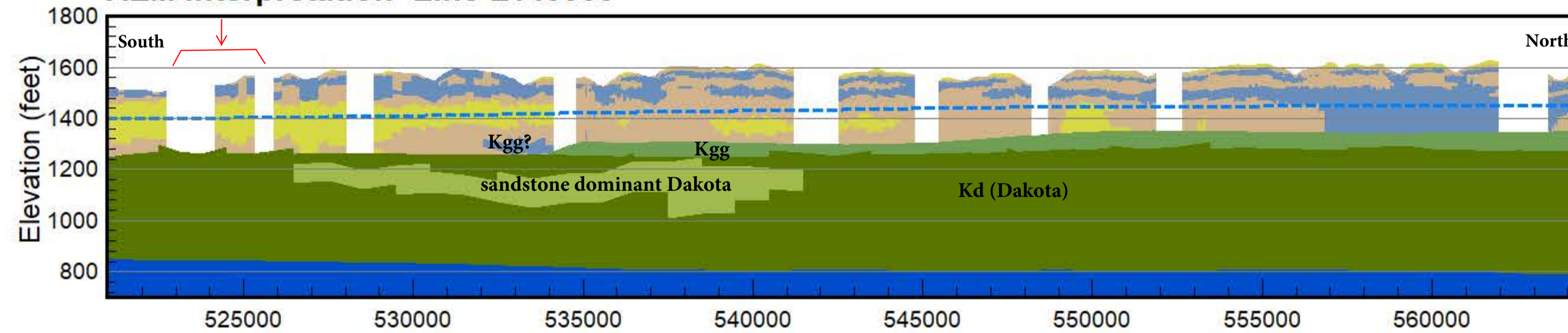
Flight Line Position Line L140000



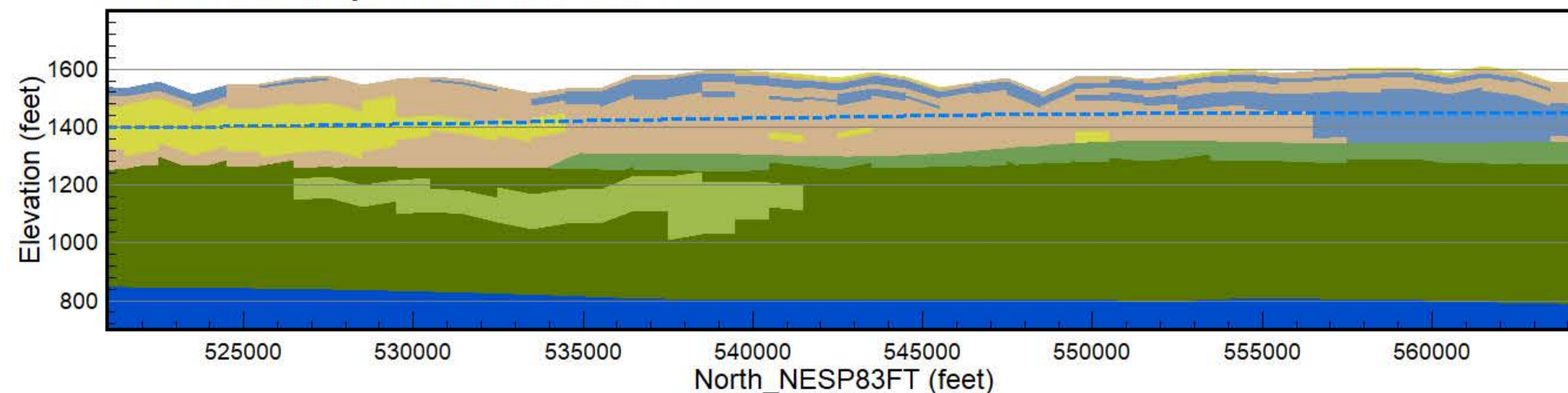
AEM Inversion Line L140000



AEM Interpretation Line L140000



AEM Voxel Interpretation Line L140000



South to North oriented Flight Line 3/4 to 1 mile east of NW1/4 of Sec. 36 T15N R4E

Figure 1 of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNNRD) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

The AEM inversions shown are Spatially-Constrained using the Aarhus Geo Software Workbench version 5.8.3 in the indicated electrical resistivity color scale. Boreholes displayed on the AEM inversion profile are within 1/2 mile of the flight line are from the Conservation Survey Division (CSD) public website downloaded on September 9, 2018. Lithology and stratigraphy are indicated by the legends. Gray-dashed lines when visible on the AEM inversions profile indicate the estimated depth of investigation (DOI). White gaps in the AEM inversion profile indicate gaps in data coverage due to electromagnetic coupling or areas that were not flown due to infrastructure. Solid-black lines on the AEM Inversion profile indicate interpreted stratigraphic contacts (Kc= Cretaceous Carlile Shale; Kgg= Cretaceous Greenhorn Limestone and Graneros Shale; Kd= Cretaceous Dakota Group; and IP= undifferentiated Pennsylvanian formations/groups). The 1995 CSD water table is represented by a dashed blue line.

The AEM interpretation profiles shows Q=Quaternary materials classified into the four groups indicated by the legend. Gaps in the quaternary materials are due to electromagnetic coupling or areas that were not flown due to infrastructure. Cretaceous units as well as the undifferentiated Pennsylvanian are indicated as continuous formations and are colored as indicated in the legend.

The AEM Voxel Interpolation Profile indicates a 1,000-foot cell size interpolation of the Quaternary materials classified into the four groups indicated by the legend. In addition to the interpreted 1,000-foot cell size interpolation, sand/sandstone-dominant sections of the Cretaceous Dakota Group are indicated in the legend.

Prepared for the LPNNRD and the Eastern Nebraska Water Resources Assessment (ENWRA) by Aqua Geo Frameworks, LLC.

Quaternary/Ogallala Aquifer Legend

- Coarse
- Aquifer
- Marginal
- Non

Kd Aquifer Material

- Sandstone/Sand Dominant
- Shale/Clay Dominant

CSD Stratigraphy

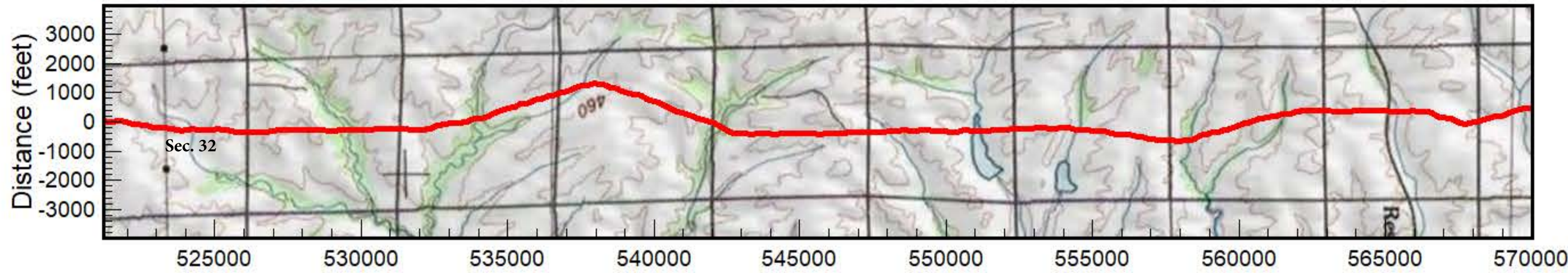
- Q
- Kc
- Kgg
- Kd
- IP

CSD Lithology

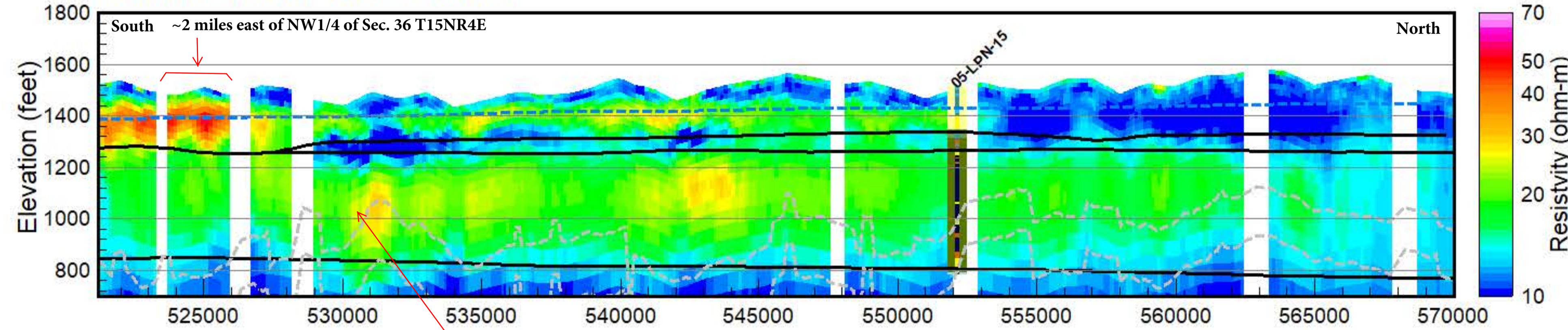
- No Sample
- Igneous/Metamorphics
- Limestone, Shale and Sandstone
- Limestone and Shale
- Limestone
- Dolomite and Limestone
- Dolomite
- Ironstone
- Sandstone and Shale
- Conglomerate
- Sandstone
- Siltstone
- Marl
- Chert
- Gypsum
- Chalk or chalk with interbedded fines
- Shale
- Clayey Shale/Claystone
- Coal and/or Peat
- Volcanic Ash/Bentonite
- Gravel/Boulders
- Sand and Gravel
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- Silty Clay
- Sandy Clay
- Silt/Loess
- Clay
- Till
- Roadfill and/or Topsoil



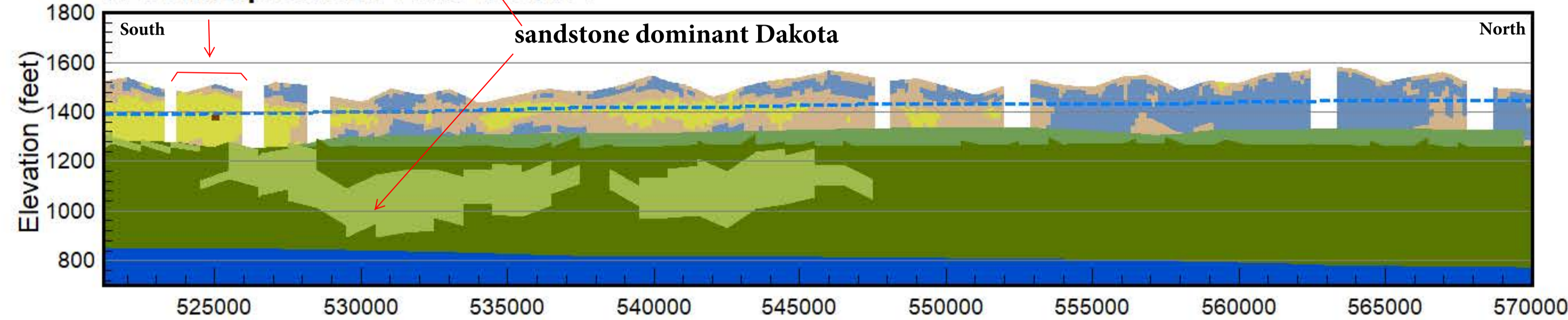
Flight Line Position Line L400301



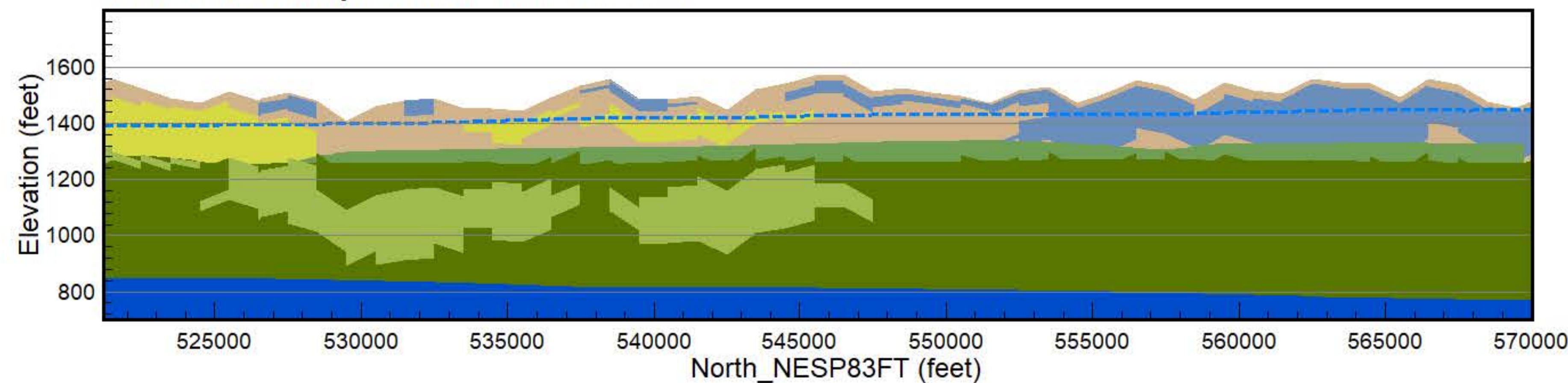
AEM Inversion Line L400301



AEM Interpretation Line L400301



AEM Voxel Interpretation Line L400301



**South to North oriented Flight Line
~2 miles east of NW1/4 of Sec. 36
T15NR4E**

Results of the final inversion of Airborne Electromagnetic (AEM) data collected along flight lines within the Lower Platte North Natural Resources District (LPNNRD) June 22-July 14, 2018 Combined with AEM data from 2014, 2015, and 2016. The red line on the Flight Path Map (US Geological Survey 100K Topo) indicates the location of the data collection.

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Prepared for the LPNNRD and the Eastern Nebraska Water Resources Assessment (ENWRA) by Aqua Geo Frameworks, LLC.

Quaternary/Ogallala Aquifer Material Legend

- Coarse
- Aquifer
- Marginal
- Non

Kd Aquifer Material

- Sandstone/Sand Dominant
- Shale/Clay Dominant

CSD Stratigraphy

- Q
- Kc
- Kgg
- Kd
- IP

CSD Lithology

- No Sample
- Igneous/Metamorphics
- Limestone, Shale and Sandstone
- Limestone and Shale
- Limestone
- Dolomite and Limestone
- Dolomite
- Ironstone
- Sandstone and Shale
- Conglomerate
- Sandstone
- Siltstone
- Marl
- Chert
- Gypsum
- Chalk or chalk with interbedded fines
- Shale
- Clayey Shale/Claystone
- Coal and/or Peat
- Volcanic Ash/Bentonite
- Gravel/Boulders
- Sand and Gravel
- Sand
- Silty Sand
- Silty Clay
- Sandy Clay
- Silt/Loess
- Clay
- Till
- Roadfill and/or Topsoil

AGF
Aqua Geo Frameworks

Well logs in Sec 36 T15N R4E

Registration# Well ID Permit Number	Use Status	County Name NRD Name Well Location Footage Latitude Longitude	Completion Date Filing Date Decommission Date Times Replaced Online Registration ID (NOLID)	Acres Irrigated Gallons/Minute Static Level Pumping Level Series	Pump Column Diameter Pump Depth Well Depth	Owner's Name Owner's ID Address
G-062859 WellID: 70738 View Details View Logs View Scans	I A	Butler Lower Platte North 15N 4E 36 NENW 1310N 1330W Map It	12/14/1979 12/19/1979 ---	280 1250 gpm 215 ft 270 ft PRO	8 in --- 338 ft	David K Ben L & Tim R Kastl OwnerID: 26417 Box 45 Bruno NE 68014 page after next
G-074246 WellID: 82591 View Details View Logs View Scans	I A	Butler Lower Platte North 15N 4E 36 1320S 1304W Map It	5/1/1991 12/31/1991 ---	152 1000 gpm 84 ft 119 ft PRO	8 in --- 267 ft	Larry Duane & Lavena Ratkovec Farms OwnerID: 36840 RR 1 Box 70A Weston NE 68070 page after next
WellID: 224978 View Details View Logs View Scans	S U	Butler Lower Platte North 15N 4E 36 SWNE Map It 41°13' 52.020" -98°54' 53.010"	5/16/2013 ---	--- --- --- --- PRO	--- --- 27 ft	Tim Kastl OwnerID: 123834 3341 Y Road Bruno NE 68014 no log

Found old log for an unregistered well in the NE1/4 of the SE1/4 of Sec 36:

114 ft of very fine sand, a 15ft clay layer then 20 ft of sand and gravel above shale at bottom (265 ft deep, 1540ft ground elevation estimated for "northwest of the house") - see next page



WATER WELLS
TEST DRILLING & SAMPLING
CLOSED LOOP HEAT PUMPS
P.O. BOX 9
ITHACA, NE 68033
(402) 623-4293



DWIGHT HANSON
CERTIFIED PUMP INSTALLER*
CERTIFIED WELL DRILLER*
VICTOR HANSON
CERTIFIED MASTER WATER
WELL CONTRACTOR*
*Certification by National Water Well Assn.

Date: 4/14/88
Owner: David Kastl
Driller: Victor Hanson
Well location: NW of House
NE 1/4 of the SE 1/4 of Section 36
Township 15 North, Range 4 East West,
Butler County.
Test Hole Depth _____ Well Depth 265'
Test Hole Dia. 5" Bore Hole Dia. 9"

Casing O.D. 4.5/4.026 I.D. Material PVC Weight Sch 40
Length 225 Wall Thickness .237
Screen O.D. 4.5/4.026 I.D. Material PVC Weight Sch 40
Length 40' Slot .032 Type Gator
Gravel Pack material Grits 265 to 215
Bentinite Sea(s) 215, 90, 60
Top Seal, length 30' material Clay
Static water level 135' elevation _____
Pumping water level _____ at _____ gpm
Capacity 25+ Estimate Actual

DRILLING LOG

DEPTH IN FEET FROM	TO	MATERIAL DRILLED	DEPTH IN FEET FROM	TO	MATERIAL DRILLED
0	1	Top Soil	165	175	Fine Sand
1	10	Redish Brown clay	175	210	Very Fine sand + s.s. 1"
10	20	Tan clay	210	225	DK Gray clay
20	25	Sand	225	265	Sand + Gravel
25	42	gray clay (soft)	265		Shale
42	60	Blue Gray clay			
60	62	Tan clay			
62	63	Rock			
63	67	Tan clay			
67	78	Up. Fine Sand			
78	78.5	Rock			
78.5	90	white clay (soft)			
90	96	white clay			
96	155	Fine Sand			
155	165	Very Fine Sand			

BUTLER 15N 4E Sec. 36

Assumed 1540 ft ground elevation
NW of house in NE of SE 1/4, Sec
36 T15N R4E

1330 to 1444 fine sand to silt
1275 to 1315 sand and gravel

onsite well, 1610 ft elevation above mean sea level

Registration Number G-062859, Well ID 70736

Geo Logs

FromDepth	ToDepth	Description
0	21	BROWN CLAY
21	24	SAND STREAKS
24	128	BROWN CLAY
128	157	BROWN CLAY & SAND STREAKS
157	185	MEDIUM RED SAND ROCK AT 157'
185	187	CLAY LAYER
187	272	FINE SAND PEPPERED 85ft thick
272	296	BLUE CLAY
296	334	BLUE GRAVEL 38 ft thick
334	360	CLAY TO OAKER

1423 215' (1395 ft elev)
was SWL on reg.
1338 272 1338 elev
1314 296 1276
1276 334 1250

Casing and Screen ?

Grout and Gravel

was this yellow?
If red or red white and gray or sandy gray its likely
Dakota

Registration Number G-074246, Well ID 82591

Geo Logs

FromDepth	ToDepth	Description
0	3	TOPSOIL
3	25	SOFT BROWN CLAY
25	40	VERY SOFT BLUE CLAY
40	42	DRY GRAVEL
42	58	GRAY CLAY
58	75	FINE & MEDIUM SAND & CLAY LAYERS
75	105	MEDIUM TO COARSE PEPPER SAND
105	120	FINE TO MEDIUM PEPPER SAND
120	135	MEDIUM TO COARSE LOOKED GOOD
135	150	COARSE PEPPER SAND
150	165	MEDIUM PEPPER SAND
165	180	MEDIUM SAND
180	199	VERY FINE SAND
199	205	VERY SOFT SANDY CLAY
205	225	SOFT CLAY & BLUE CLAY SOFT
225	235	SOFT BLUE CLAY
235	260	FINE TO MEDIUM BLUE & GREEN GRAVEL 25ft thick
260	280	OAKER

124 ft thick

Casing and Screen

Grout and Gravel

Well logs in Sec 35 T15N R4E west of Sec 36

Registration# Well ID Permit Number	Use Status	County Name NRD Name Well Location Footage Latitude Longitude	Completion Date Filing Date Decommission Date Times Replaced Online Registration ID (NOLID)	Acres Irrigated Gallons/Minute Static Level Pumping Level Series	Pump Column Diameter Pump Depth Well Depth	Owner's Name Owner's ID Address
G-064385 WellID: 72331 View Details View Logs View Scans	I A	Butler Lower Platte North 15N 4E 35 SESE Map It 41°13' 25.940" -96°55' 57.070"	12/20/1979 9/22/1980 --	135 1000 gpm 185 ft 230 ft PRO	8 in 260 ft 340 ft	Larry Duane & Lavena Ratkovec Farms OwnerID: 36840 RR 1 Box 70A Weston NE 68070
G-153579 WellID: 199920 LPN-0091058 View Details View Logs View Scans	I A	Butler Lower Platte North 15N 4E 35 SWSW 1300S 1300W Map It	5/15/2009 8/6/2009 124949644722789	135 1000 gpm 190 ft 265 ft Car	8 in 335 ft 346 ft	Duane Ratkovec OwnerID: 56769 3152 County Road L Weston NE 68070
G-169044 WellID: 226892 LPN-0131363 View Details View Logs View Scans	I A	Butler Lower Platte North 15N 4E 35 NWSE 2392S 2064E Map It 41°13' 36.800" -96°56' 6.900"	4/3/2013 9/30/2013 137901412411336	135 1000 gpm 219 ft 258 ft Car	8 in 350 ft 360 ft	Duane Ratkovec OwnerID: 124721 3150 Co Road L Weston NE 68070

logs of wells in Sec 35 T15N R4E west of Sec 36

Registration Number G-153579, Well ID 199920

Geo Logs

FromDepth	ToDepth	Description
0	2	top soil
2	5	yellow clay
5	35	sticky brown clay
35	73	sticky tan clay with lime sand strips
73	92	hard gray clay
92	116	hard tan clay
116	137	tan clay with lime sand strips
137	210	medium peppered sand 137 ft thick
210	224	fine to medium peppered sand
224	255	very fine peppered sand with clay strips
255	274	fine peppered sand
274	295	sandy clay
295	310	gray clay
310	343	coarse blue sand and fine gravel 33ft thick
343	346	gray shale

Casing and Screen

FromDepth	ToDepth	CaseOrScreen	InsideDiam	OutsideDiam	CaseThickness	Material	ScrnSlotSize	ScreenTname	Scrn
0	306	casing	14.77	16	0.62	PVC		Certainteed	
306	346	screen	14.77	16	0.62	PVC	0.041	Certainteed	

Grout and Gravel

FromDepth	ToDepth	GroutOrGravel	Material	Quantity	Volume	SubTableN
0	8	gravel	Armor Coat			1
8	11	grout	Bentonite Chips			1
11	346	gravel	Armor Coat			1

Registration Number G-169044, Well ID 226892

Geo Logs

FromDepth	ToDepth	Description	Color	Density	Composition
0	40		Brown	Soft	Clay
40	140		Brown	Hard	Clay
140	160	sticky	Brown	Soft	Clay
160	278	w/ clay layers	Brown	Loose	Fine Sand 118 ft thick
278	292		Brown	Soft	Clay
292	310		Blue	Hard	Clay
310	351		Blue	Loose	Sand with gravel 41 ft thick
351	360	w/ brown clay	Blue	Soft	Clay

Casing and Screen

FromDepth	ToDepth	CaseOrScreen	InsideDiam	OutsideDiam	CaseThickness	Material	ScrnSlotSize	ScreenTname	ScrnGuides	SubTableNo
0	310	casing	14.77	16	0.62	PVC		Certainteed		1
310	360	screen	14.77	16	0.62	PVC	0.041	Certainteed		1

Grout and Gravel

FromDepth	ToDepth	GroutOrGravel	Material
0	6	gravel	armor coa
6	10	grout	bentontie
10	360	gravel	armor coa

Registration Number G-064385, Well ID 72331

Geo Logs

FromDepth	ToDepth	Description
0	42	BROWN CLAY
42	82	GRAY CLAY & LIMEROCK LAYER
82	135	BLUE TO BROWN CLAY
135	219	FINE SAND 84 ft thick
219	256	FINE SAND & CLAY LAYERS 37ft w/ clay
256	299	BLUE CLAY
299	337	BLUE GRAVEL 38 ft thick
337	360	CLAY TO OAKER color?

Casing and Screen

Grout and Gravel

Sec 31 wells East of Sec 36

Registration #

Registration# Well ID Permit Number	Use Status	County Name NRD Name Well Location Footage Latitude Longitude	Completion Date Filing Date Decommission Date Times Replaced Online Registration ID (NOLID)	Acres Irrigated Gallons/Minute Static Level Pumping Level Series	Pump Column Diameter Pump Depth Well Depth	Owner's Name Owner's ID Address
G-055679 WellID: 63288 View Details View Logs View Scans	I A	Saunders Lower Platte North 15N 5E 31 SENW Map It 41°13' 52.170" -98°53' 57.550"	3/24/1977 4/4/1977 ---	212 1250 gpm 148 ft 180 ft PRO	8 in --- 262 ft	David K Kastl OwnerID: 26418 716 West 18th Street Wahoo NE 68066
G-055773 WellID: 63385 View Details View Logs View Scans	I A	Saunders Lower Platte North 15N 5E 31 SESW Map It	3/23/1977 4/11/1977 ---	150 1250 gpm 137 ft 152 ft PRO	8 in --- 285 ft	Larry Duane & Lavena Ratkovec Farms OwnerID: 36840 RR 1 Box 70A Weston NE 68070

Registration Number G-055679, Well ID 63288 1528 ft elev.

Geo Logs

FromDepth	ToDepth	Description
0	57	CLAY
57	80	FINE SAND SOME CLAY
80	100	COARSE SAND dry
100	181	FINE SAND SOME CLAY
181	205	SANDY CLAY
205	226	BLUE CLAY
226 1302	265 1263	MEDIUM BLUE GRAVEL 39ft thick
265 1263 elev	275 1253 elev	CLAY TO SHALE

Registration Number G-055773, Well ID 63385

1516 ft ground elev above sea level

Geo Logs

FromDepth	ToDepth	Description
0	33	CLAY
33	60	BLUE CLAY
60	68	BROWN CLAY
68 1448	173 1343	FINE SAND 36ft sat. sand
173 1343	174 1342	HARD LIMESTONE
174 1342	184 1332	SAND 10ft thick
184	208	SANDY CLAY
208	224	BLUE CLAY
224 1292	282 1234	FINE BLUE GRAVEL AND SAND 58 ft thick
282 1234	305 1211	CLAY TO OCHRE TO SHALE

this is likely Dakota

Sec 26 wells northwest of Sec 36

Registration# Well ID Permit Number	Use Status	NRD Name Well Location Footage Latitude Longitude	Completion Date Filing Date Decommission Date Times Replaced Online Registration ID (NOLID)	Acres Irrigated Gallons/Minute Static Level Pumping Level Series	Pump Column Diameter Pump Depth Well Depth	Owner's Name Owner's ID Address																																																																																															
G-120156 WellID: 147587 View Details View Logs View Scans	S A	Butler Lower Platte North 15N 4E 26 SWNW 1342N 98W Map It 41°14' 44.300" -96°58' 49.000"	1/3/2003 2/20/2003 ---	--- 20 gpm 231 ft 300 ft PRO	1.25 in 310 ft 332 ft 1.25 in 310 ft 330 ft	PPK LLC OwnerID: 87705 1044 West 23rd Street Fremont NE 68025																																																																																															
G-126702 WellID: 157969 View Details View Logs View Scans	D A	Butler Lower Platte North 15N 4E 26 SWNW 1827N 30W Map It 41°14' 39.500" -96°58' 49.800"	10/14/2003 4/8/2004 ---	--- 20 gpm 197 ft 300 ft PRO	<p>Registration Number G-126702, Well ID 157969</p> <table border="1"> <thead> <tr> <th>FromDepth</th> <th>ToDepth</th> <th>Description</th> <th>Color</th> <th>Density</th> </tr> </thead> <tbody> <tr><td>0</td><td>2</td><td>topsoil</td><td></td><td></td></tr> <tr><td>2</td><td>30</td><td>brown clay medium soft</td><td></td><td></td></tr> <tr><td>30</td><td>34</td><td>reddish brown clay-harder</td><td></td><td></td></tr> <tr><td>34</td><td>45</td><td>brown sticky clay</td><td></td><td></td></tr> <tr><td>45</td><td>55</td><td>brown clay</td><td></td><td></td></tr> <tr><td>55</td><td>60</td><td>dark brown clay</td><td></td><td></td></tr> <tr><td>60</td><td>110</td><td>medium gray clay soft, slight rock #82'</td><td></td><td></td></tr> <tr><td>110</td><td>120</td><td>light medium gray clay</td><td></td><td></td></tr> <tr><td>120</td><td>124</td><td>hard brown clay layer</td><td></td><td></td></tr> <tr><td>124</td><td>160</td><td>medium brown clay medium hard</td><td></td><td></td></tr> <tr><td>160</td><td>170</td><td>hard sand clay medium brown</td><td></td><td></td></tr> <tr><td>170</td><td>235</td><td>medium coarse sand tight-hard</td><td></td><td></td></tr> <tr><td>235</td><td>267</td><td>medium coarse w/a few clay layers</td><td></td><td></td></tr> <tr><td>267</td><td>274</td><td>clay medium hard</td><td></td><td></td></tr> <tr><td>274</td><td>280</td><td>sand w/clay layers</td><td></td><td></td></tr> <tr><td>280</td><td>312</td><td>gray clay</td><td></td><td></td></tr> <tr><td>312</td><td>327</td><td>gravel</td><td></td><td></td></tr> <tr><td>327</td><td>357</td><td>clay gray medium-hard</td><td></td><td></td></tr> </tbody> </table>		FromDepth	ToDepth	Description	Color	Density	0	2	topsoil			2	30	brown clay medium soft			30	34	reddish brown clay-harder			34	45	brown sticky clay			45	55	brown clay			55	60	dark brown clay			60	110	medium gray clay soft, slight rock #82'			110	120	light medium gray clay			120	124	hard brown clay layer			124	160	medium brown clay medium hard			160	170	hard sand clay medium brown			170	235	medium coarse sand tight-hard			235	267	medium coarse w/a few clay layers			267	274	clay medium hard			274	280	sand w/clay layers			280	312	gray clay			312	327	gravel			327	357	clay gray medium-hard		
FromDepth	ToDepth	Description	Color	Density																																																																																																	
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312	327	gravel																																																																																																			
327	357	clay gray medium-hard																																																																																																			

Registration Number G-120156, Well ID 147587

Geo Logs

FromDepth	ToDepth	Description
0	2	topsoil
2	30	brown clay
30	36	reddish brown clay - harder
36	149	lt brown clay/sticky from 85-130', 93' small rock
149	155	sandy clay or sand, 115' small rock
155	191	lt brown ?
191	276	med - med coarse sand 85 ft thick
276	300	med gray clay
300	320	blue gray clay
320	330	gravel 10 ft thick
330	351	gray clay

Casing and Screen

FromDepth	ToDepth	CaseOrScreen	InsideDiam	OutsideDiam	CaseThickness	Material	ScrnSlotSize	Screen
0	319	casing	4	4.5	0.25	pvc		
319	332	screen	4	4.5		pvc	0.032	

Grout and Gravel

FromDepth	ToDepth	GroutOrGravel	Material	Quantity
6	11	grout	chunk bentonite	
11	150	gravel	80% - #10	
150	155	grout	chunk bentonite	
155	332	gravel	80% - #10	

Casing and Screen

FromDepth	ToDepth	CaseOrScreen	InsideDiam	OutsideDiam	CaseThickness	Material	ScrnSlotSize	Screen
0	310	casing	4	4.5	0.25	pvc		eagle
310	330	screen	4	4.5	0.25	pvc	0.032	titan

TEST WELL #2



WATER WELLS
 TEST DRILLING & SAMPLING
 CLOSED LOOP HEAT PUMPS
 P.O. BOX 9
 ITHACA, NE 68033
 (402) 623-4293



DWIGHT HANSON
 CERTIFIED PUMP INSTALLER*
 CERTIFIED WELL DRILLER*
 VICTOR HANSON
 CERTIFIED MASTER WATER
 WELL CONTRACTOR*
 *Certification by National Water Well Assn.

Date: October 17, 1991

Owner: Herman Ostry

Driller: Victor Hanson

Well location: 20' south of North Fence
NE 1/4 of the SE Top of Hill 4 line
 1/4 of Section 4

Township 15 North, Range 4 East/West,
Butler County.

Test Hole Depth 318 Well-Depth _____

Test Hole Dia. 4.5" Bore-Hole-Dia. _____

Casing O.D. 1 I.D. Material _____ Weight _____

Length _____ Wall Thickness _____

Screen O.D. 1 I.D. Material _____ Weight _____

Length _____ Slot _____ Type _____

Gravel Pack material _____ to _____

Bentinite Seal(s) _____

Top Seal, length _____, material _____

Static water level _____ elevation _____

Pumping water level _____ at _____ gpm

Capacity _____ Estimate
 Actual

DRILLING LOG

DEPTH IN FEET FROM	TO	MATERIAL DRILLED	DEPTH IN FEET FROM	TO	MATERIAL DRILLED
<u>0</u>	<u>1</u>	<u>Top soil</u>	<u>156</u>	<u>190</u>	<u>Sand</u>
<u>1</u>	<u>29</u>	<u>Tan silty clay</u>	<u>190</u>	<u>192</u>	<u>Black Clay</u>
<u>29</u>	<u>40</u>	<u>Brown clay</u>	<u>192</u>	<u>235</u>	<u>Soft Gray Clay</u>
<u>40</u>	<u>45</u>	<u>Reddish brown clay</u>	<u>235</u>	<u>270</u>	<u>Brown Clay</u>
<u>45</u>	<u>50</u>	<u>Tan clay</u>	<u>270</u>	<u>280</u>	<u>Yellow & Gray Clay</u>
<u>50</u>	<u>85</u>	<u>Tan clay</u>	<u>280</u>	<u>300</u>	<u>Gray Clay</u>
<u>85</u>	<u>90</u>	<u>Soft yellow till</u>	<u>300</u>	<u>301</u>	<u>Limestone</u>
<u>90</u>	<u>100</u>	<u>Dark Gray clay</u>	<u>301</u>	<u>305</u>	<u>Gray shale</u>
<u>100</u>	<u>105</u>	<u>Silty Green Clay</u>	<u>305</u>	<u>318</u>	<u>Rock Chips</u>
<u>105</u>	<u>108</u>	<u>Gray Clay</u>			
<u>108</u>	<u>136</u>	<u>Hard Lt. Gray clay</u>			
<u>136</u>	<u>139</u>	<u>Tan sand</u>			
<u>139</u>	<u>150</u>	<u>off white clay</u>			
<u>150</u>	<u>153</u>	<u>Medium sand</u>			
<u>153</u>	<u>156</u>	<u>Clay</u>			

BUTLER 15N 4E Sec. 4

REPORT NUMBER
1-281-1811
REPORT DATE
10/08/91

A & L MID WEST LABORATORIES, INC.

13611 "B" Street • Omaha, NE 68144 • (402) 334-7770 • FAX (402) 334-9121
Rev. 1.01-135-dem

SUBMITTED BY:
13602

HANSON WELL DRILLING
DWIGHT HANSON
PO BOX 10
ITHACA NE 68033-0010

CLIENT:

WATER ANALYSIS

DOMESTIC WATER ANALYSIS

SAMPLE IDENTIFICATION: OSTRY

LABORATORY NUMBER: 11458

ELEMENT	SODIUM Na ppm	CALCIUM Ca ppm	MAGNESIUM Mg ppm	pH	NITRATE NITROGEN NO ₃ -N ppm	SULFATE SO ₄ ppm	CONDUCTIVITY mmhos/cm	TOTAL DISSOLVED SOLIDS (TDS) corr	HARDNESS gr/gallon	PURITY Bacteria	IRON Fe ppm	MANGANESE Mn ppm	CHLORIDE Cl ppm	COPPER Cu ppm
LEVEL FOUND	131	490	157	7.9	<.20	1866	2.76	1794	109.46		.21	2.07	5	
PROBLEMS LIKELY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
POTENTIAL PROBLEMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NO APPARENT PROBLEMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ELEMENT	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE-N	SULFATE	CONDUCTIVITY	TDS	HARDNESS	PURITY	IRON	MANGANESE	CHLORIDE	COPPER
LEVEL FOUND	131	490	157	7.9	<.20	1866	2.76	1794	109.46		.21	2.07	5	
CRITICAL LEVEL	100	80	30	6.5/9	10		.75	500	20		.3	.5	200	
ELEMENT	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE-N	SULFATE	CONDUCTIVITY	TDS	HARDNESS	PURITY	IRON	MANGANESE	CHLORIDE	COPPER
PROBLEM AREAS	****	****	****	****	****	****	****	****	****	****	****	****	****	****

ADDITIONAL ELEMENTS

ELEMENT	LEVEL FOUND	COMMENTS:
Fluoride		
LEVEL FOUND	.3 ppm	

COMMENTS:

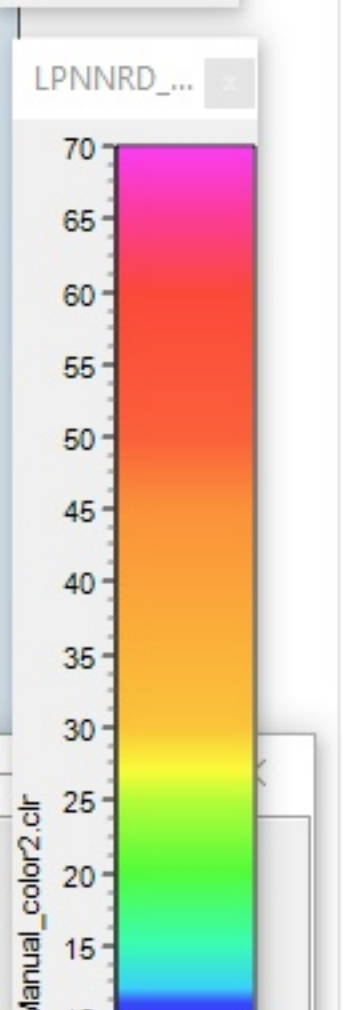
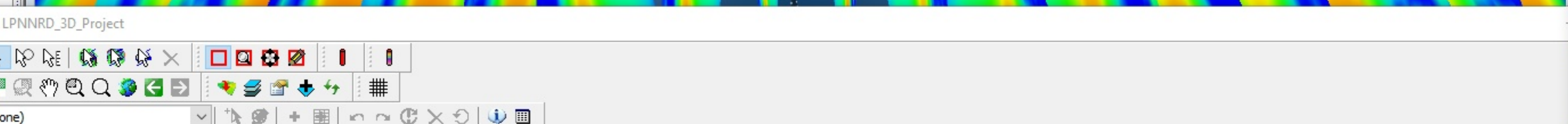
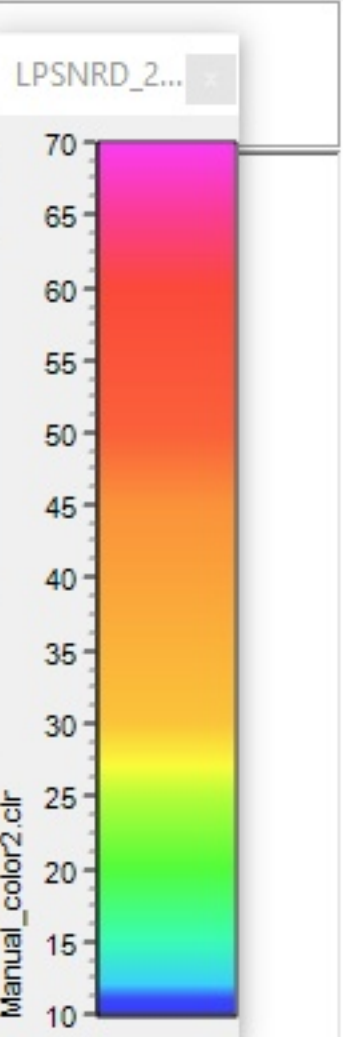
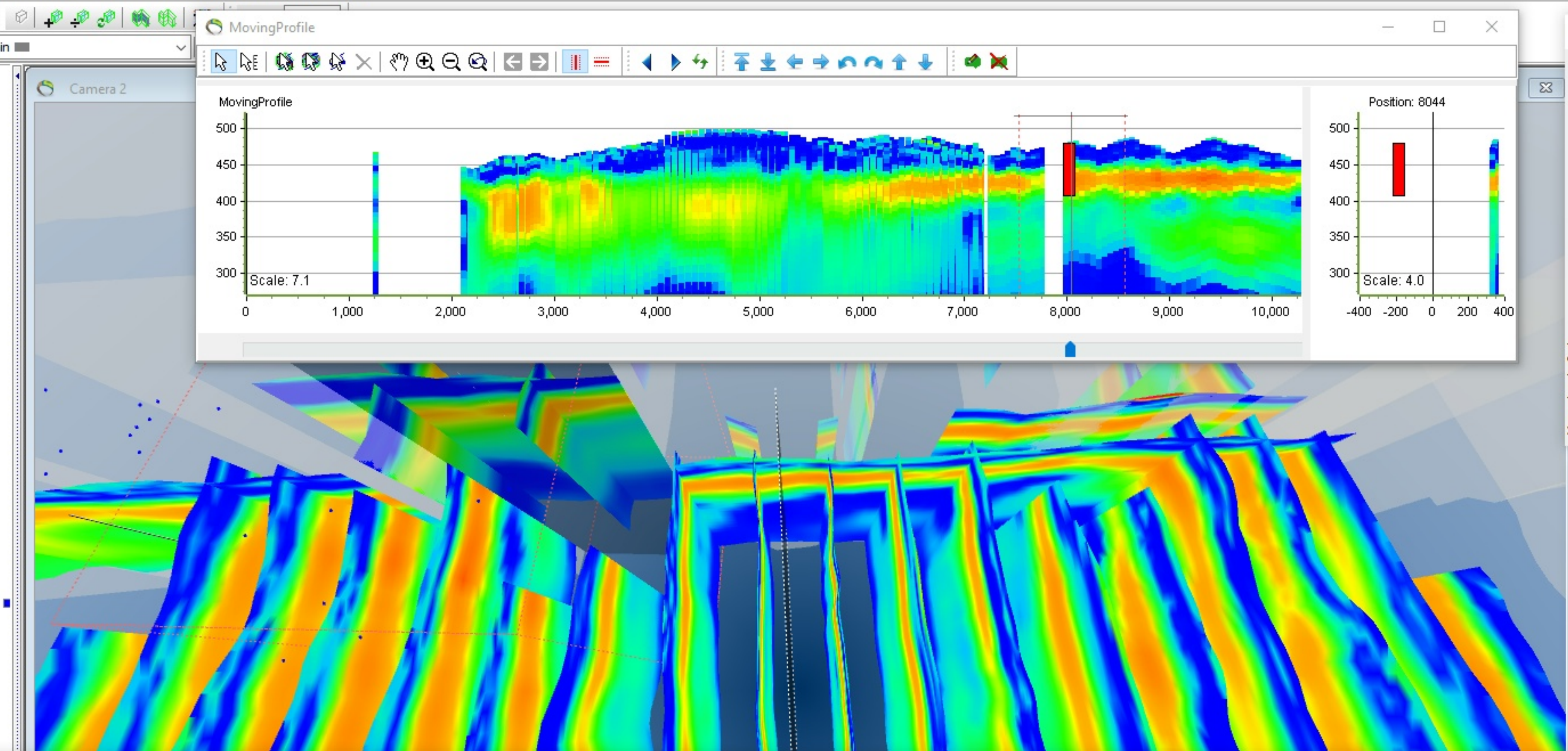
See reverse for interpretation guidelines.

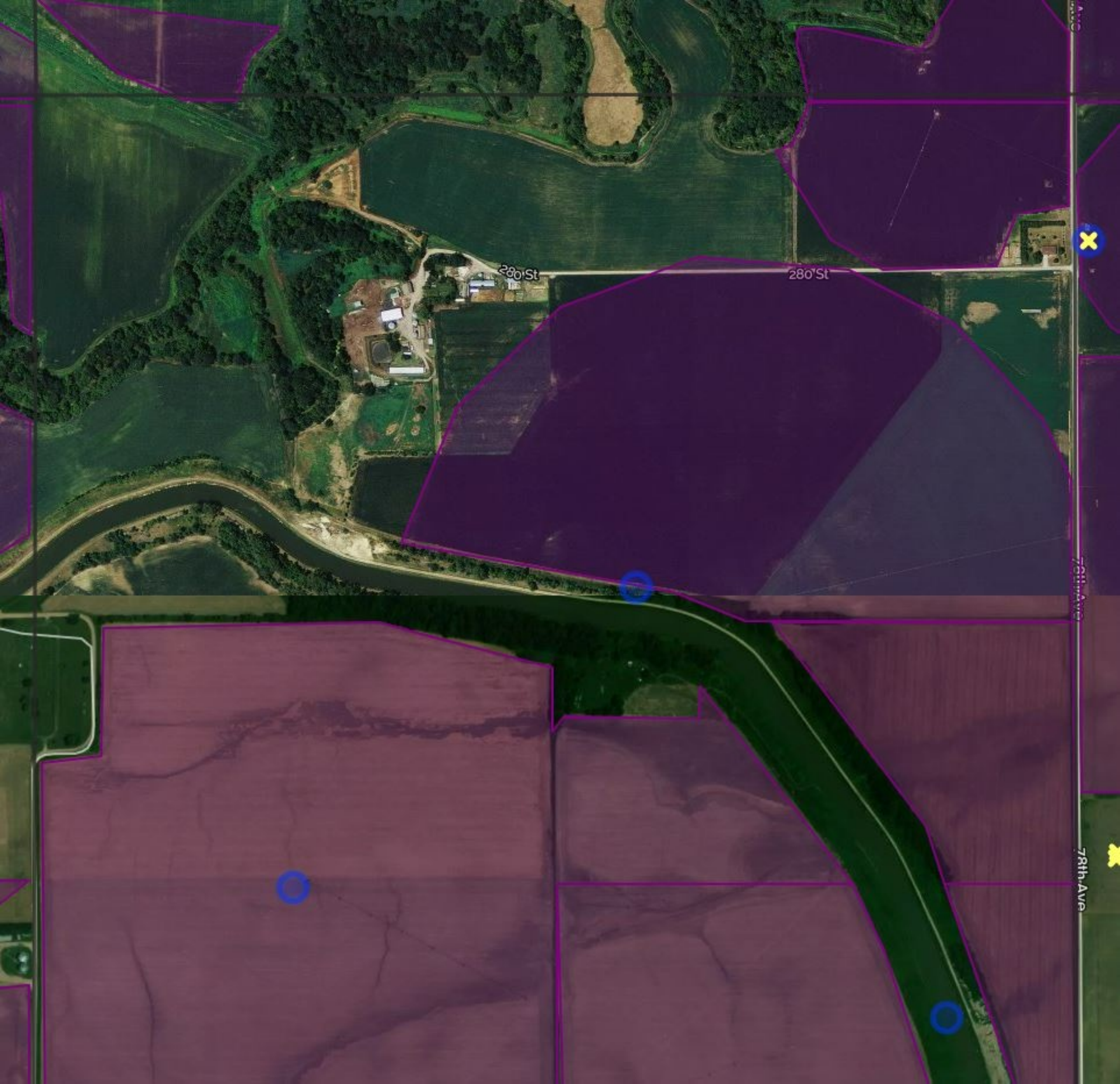
Signed

A & L Mid West Laboratories, Inc.



- Objects
 - Sec36T15NR4E
 - MovingProfile
 - Cylinder3
 - Cylinder2
 - Cylinder
 - Cylinder1
 - LPNNRD_2018_Profiles
 - LPNNRD_2016_Profiles
 - Ashland_2006_Profiles
 - Swedeburg_2009_Profiles
 - USACE_2012_Profiles
 - ClarksonHowells_2013_Profiles
 - LPSNRD_2013_Profiles
 - ENWRA_2014_Profiles
 - ENWRA_2015_3DexportProfiles1
 - PMRNRD_2016_Profiles
 - PMRNRD_2018_3DexportProfiles1
 - LENRD_2018_Profiles
 - Regions
 - Surfaces
 - Terrain
 - Boreholes
 - CSD_Testhole
 - CSD_testholes_Provisional
 - 2D Grids
 - 3D Grids
 - Points
 - Upper_DOI_LPNNRD2018_part1
 - LPSNRD_2013_AEM_SkyTEM304_29layers_DOI
 - Layers
 - AEM_Data
 - Ashland_2006_AEM_Fugro_24layers
 - LPNNRD_2009_SWE_AEM_Fugro_22layers
 - USACE_2012_Fugro_3layers_LIVE
 - LENRD_2013_AEM_CH_304M_18layers_LIVE
 - ENWRA_2015_AEM_508_30layers_LIVE
 - LPNNRD_2016_AEM_304M_29layers_LIVE
 - PMRNRD_2016_AEM_304M_29layers_LIVE
 - LPNNRD_2018_AEM_304M_39layers_part1
 - LPNNRD_2018_AEM_304M_39layers_part2
 - LPNNRD_2018_AEM_304M_39layers_part3
 - PMRNRD_2018_AEM_304M_39layers_LIVE
 - LPNNRD_2018_AEM_304M_39layers_LIVE
 - LPSNRD_2013_AEM_SkyTEM304_29layers
 - Lights
 - Camera 1
 - Camera 2
 - Sky
 - Maps
 - LPNNRD_3D_Project





280 St

280 St

78th Ave

78th Ave

Sort Order Of Output

Right ID

Help

Search

Clear

Home

1 Records

Surface Water Rights - Advanced Search Result

App Number Priority Date Water Division RightID	Use Status Date Can / Dism Downstream	Source POD Facility Name County	Cur Tot Acres Grant Rate GPM	Footnotes Annotation	App Name Additional Names/POD
A-10560 03/08/1965 2A 6532	IR Active 08/20/1992 662300	Shell Creek Sec: 29 T: 18 R: 1 West MapIt Pump Platte	53.5 0.76 CFS 70 341	K	Norbert & Dianne Foltz Additional Names/POD

Showing 1 to 1 of 1 records

LOWER PLATTE BASIN WATER MANAGEMENT COALITION
FOURTH REPORTING PERIOD: JAN 1, 2020 TO DECEMBER 31, 2020

TABLE 1 - PEAK SEASON DEPLETIONS

NRD	PEAK SEASON 5-YR ALLOWABLE DEPLETION (AF)	NRD Prior Years Reported Depletion (AF)	2020 NRD Reported NET Depletion (AF)	NRD Total Reported Depletion (AF)	NRD - Percent of Allowable	Peak Season					Combined Percent of Allowable	New Groundwater Acres Allocated - TOTAL	New Surface Water Acres Allocated- TOTAL	New Acres Allocated - TOTAL
						Prior Years NeDNR Reported Depletion (AF)	2020 NeDNR Reported Depletion (AF)	Total NeDNR Reported Depletion (AF)	NeDNR - Percent of Allowable					
Upper Loup NRD	2768	425.7	-7.9	417.9	15.1%	398.6	-29.0	369.6	13.4%	28.4%	4,268	715	4,983	
Lower Loup NRD	5883	693.2	-330.8	362.4	6.2%	435.0	46.0	481.0	8.2%	14.3%	10,475	1,486	11,962	
Upper Elkhorn NRD	1504	166.8	53.3	220.0	14.6%	0.0	85.0	85.0	5.7%	20.3%	2,916	156	3,072	
Lower Elkhorn NRD	4514	807.3	286.4	1093.7	24.2%	284.0	-103.6	180.4	4.0%	28.2%	14,029	611	14,640	
Papio-Missouri River NRD	869	1.5	28.5	30.0	3.5%	77.3	-10.3	67.0	7.7%	11.2%	216	143	359	
Lower Platte South NRD	993	23.6	0.0	23.6	2.4%	65.0	2.0	67.0	6.7%	9.1%	134	149	283	
Lower Platte North NRD	2276	896.7	197.0	1093.8	48.1%	0.0	0.0	0.0	0.0%	48.1%	7,566	0	7,566	
TOTALS	18,807	3,015	227	3,241	17%	1259.9	-9.9	1,250	7%	24%	39,604	3,261	42,865	

TABLE 2 - PEAK SEASON DEPLETIONS AND CONSUMPTIVE USE

NRD	PEAK SEASON 5-YR ALLOWABLE DEPLETION (AF)	NRD - Peak Season Depletion (AF)	NeDNR Reported Depletion (AF)	NRD Prior Years Peak Season Consumptive Use (AF)	2020 NRD Peak Season Consumptive Use (AF)	NRD Total Peak Season Consumptive Use (AF)	NeDNR Total Peak Season Consumptive Use (AF)	Total New Peak Season Depletions	Total New Peak Season Consumptive Use	Remaining 5- YR Allowable Depletion (AF)	Percent of Remaining 5- YR Allowable Depletion
Upper Loup NRD	2768	417.9	369.6	1033.8	35.7	1069.5	369.6	787.5	1439.1	1980.5	71.6%
Lower Loup NRD	5883	362.4	481.0	1619.6	-69.1	1550.5	481.0	843.4	2031.5	5039.7	85.7%
Upper Elkhorn NRD	1504	220.0	85.0	398.4	111.4	509.8	85.0	305.0	594.8	1199.0	79.7%
Lower Elkhorn NRD	4514	1093.7	180.4	1619.3	596.8	2216.2	180.4	1274.1	2396.6	3239.9	71.8%
Papio-Missouri River NRD	869	30.0	67.0	1.8	51.8	53.6	67.0	97.0	120.6	772.0	88.8%
Lower Platte South NRD	993	23.6	67.0	30.2	0.0	30.2	67.0	90.6	97.2	902.4	90.9%
Lower Platte North NRD	2276	1093.8	0.0	1292.2	328.0	1620.2	0.0	1093.8	1620.2	1182.2	51.9%
TOTALS	18,807	3,241	1,250	5,995	1,055	7,050	1,250	4,491	8,300	14,316	76%

Lower Platte River Basin Coalition Proposed Draft FY 21-22 Budget

FY 21-22 REVENUE				
REVENUE	Account	Sub Account	Actual	Difference
Beginning Cash Balance	\$ 172,267.05		\$ -	\$ (172,267.05)
Member Dues (\$10K)	\$ 80,000.00		\$ -	\$ (80,000.00)
Affiliate Dues	\$ -		\$ -	\$ -
Coalition Programs	\$ -		\$ -	\$ -
Grants	\$ -		\$ -	\$ -
Total:	\$ 252,267.05		\$ -	\$ (252,267.05)

FY 21-22 EXPENSES				
EXPENSES	Account	Sub Account	Actual	Difference
Professional Services	\$ 129,500.00		\$ -	\$ (129,500.00)
Analysis Completion (TFG)		\$ 79,900.00	\$ -	\$ (79,900.00)
2nd Increment Plan (HDR)		\$ 49,600.00	\$ -	\$ (49,600.00)
Other		\$ -	\$ -	\$ -
Meetings	\$ 100.00		\$ -	\$ (100.00)
Advertisement		\$ 100.00	\$ -	\$ (100.00)
Other				\$ -
Special Projects	\$ -		\$ -	\$ -
Plan Implementation		\$ -	\$ -	\$ -
Grant Match		\$ -	\$ -	\$ -
Outreach			\$ -	\$ -
Total: Expenses	\$ 129,600.00		\$ -	\$ (129,600.00)
Budgeted Ending Cash Balance				\$ 122,667.05
Actual Current Cash Balance				\$ -

CHEMIGATION – APRIL 2021

TOTAL CHEMIGATION RENEWAL APPLICATIONS –

NEW CHEMIGATION APPLICATIONS – 8

() Boone) Butler (5) Colfax (1) Dodge () Madison (1) Platte (1) Saunders

RENEWALS: 300

BOONE COUNTY – 24

BUTLER COUNTY – 24

COLFAX COUNTY – 16

DODGE COUNTY – 71

MADISON COUNTY – 6

PLATTE COUNTY – 79

SAUNDERS COUNTY – 80

RENEWAL INSPECTIONS:

() Boone () Butler () Colfax () Dodge () Madison () Platte () Saunders

NEW INSPECTIONS:

() Boone () Butler () Colfax () Dodge () Madison () Platte () Saunders

NEW CANCELLATIONS:

EMERGENCY: 0

Cancellations –Total 4

() Boone () Butler () Colfax (2) Dodge (1) Madison () Platte (1) Saunders

Ground Water Level Summary Comparison of Spring 2020 to Spring 2021

Aquifer Subarea	Number of Wells Measured	Median Change (Feet)	Mean Change (Feet)	Number of Wells Increased	Number of Wells	
					Unchanged (+ or - 0.3 Feet)	Number of Wells Decreased
Platte Valley	58	-0.69	-0.90	4	14	40
Bellwood	5	-0.35	-1.04	0	2	3
Fremont	7	-0.97	-0.95	0	3	4
Fremont East	3	-2.98	-2.54	0	0	3
Leshara Platte Valley	1	-0.94	-0.94	0	0	1
North Bend	9	-0.36	-0.46	1	3	5
Octavia	5	-0.32	-0.50	0	2	3
Platte River Uplands	4	-1.85	-2.02	0	0	4
Schuyler	6	-0.50	-0.81	1	1	4
Wann	18	-0.68	-0.69	2	3	13
Shell Creek	46	-1.49	-2.36	1	2	43
Lower Newman Grove	2	[-2.64, -1.65]	-2.14	0	0	2
Lower Shell Creek	6	-1.49	-1.32	0	0	6
Middle Shell Creek	17	-2.67	-3.58	1	0	16
Newman Grove	3	-0.80	-0.81	0	1	2
Platte Center	6	-1.19	-1.07	0	1	5
Shell Creek Uplands	2	[-13.47, -0.84]	-7.16	0	0	2
Upper Newman Grove	9	-1.25	-1.17	0	0	9
Upper Shell Creek	1	-1.61	-1.61	0	0	1
Todd Valley	19	-3.32	-3.02	0	0	19
(north of Hwy 92)	7	-4.08	-4.40	0	0	7
(south of Hwy 92)	12	-1.83	-2.21	0	0	12
Uplands	56	-2.74	-3.55	2	1	53
David City	19	-5.92	-5.02	0	0	19
Leshara Uplands	4	-2.72	-2.60	0	0	4
Morse Bluff	3	-2.44	-3.74	0	0	3
Prague	5	-1.72	-3.07	0	0	5
Swedeburg	9	-2.05	-1.97	0	0	9
Weston	7	-1.60	-1.66	1	1	5
Yutan	5	-5.04	-5.04	1	0	4
Yutan South	4	-2.47	-3.01	0	0	4
				4%	9%	87%



McMag²⁰⁰⁰[™] Flow Meter

The Durable and Reliable Mag Meter Designed for
Agriculture and Irrigation



The Best Mag Meter Solution For Irrigation Flow Measurement





Electronic Register with EasyRead Technology

- Rate and total on one screen
- No scrolling
- No water intrusion to damage electronics
- Quick, at-a-glance meter reads
- No external power or cords required



Quick and easy to install in-field, minimizing downtime



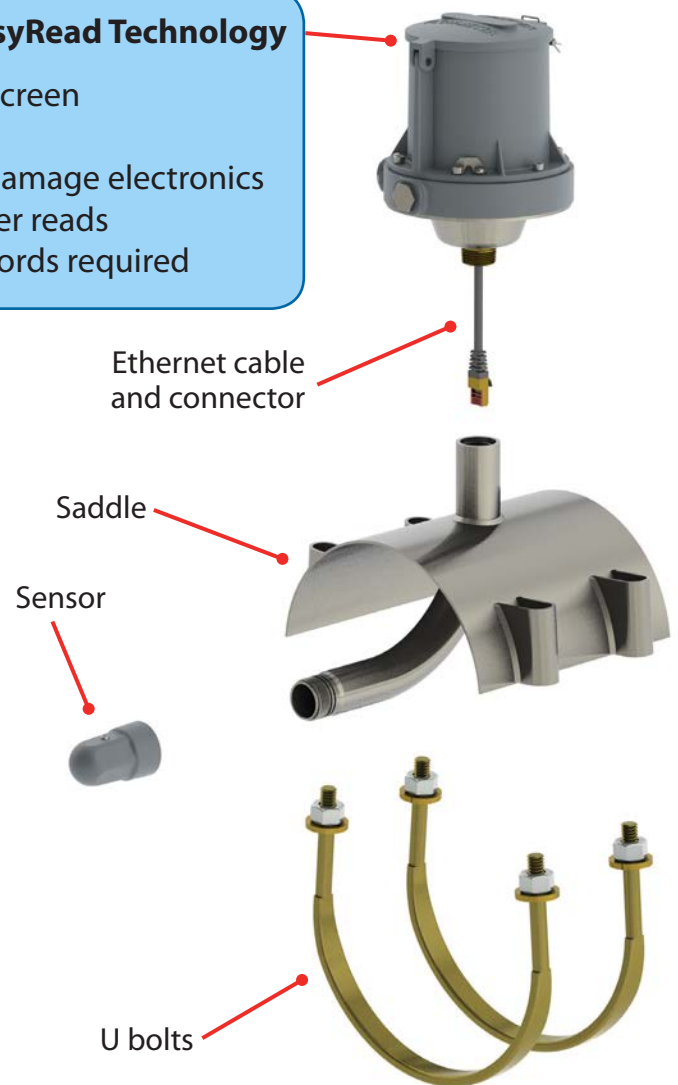
Modular design - each piece can be independently replaced and self-serviced



The McMag2000 has an overall low cost of ownership, offering mag technology at a wallet friendly price and with in-field replacement kits



The saddle-style design and DIY converter programmability allow for portability

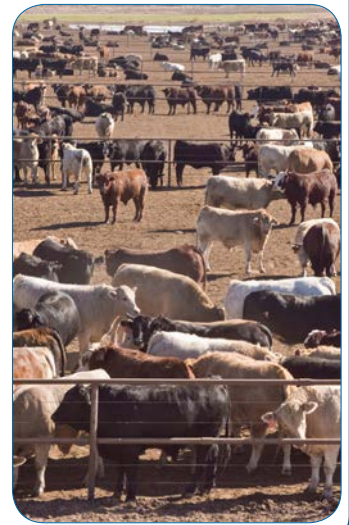


When is the Mc Mag²⁰⁰⁰ the best option for my irrigation application?

The McMag²⁰⁰⁰ provides farmers and irrigators an affordable and easy-to-read Flow meter with minimal maintenance and little to no downtime. As the only flow meter on the market with a price tag comparable to a McPropeller meter, the McMag²⁰⁰⁰ has a low cost of ownership without compromising durability and accuracy. The McMag²⁰⁰⁰ is portable, making it an efficient purchase for users with multiple irrigation lines. This mag's familiar saddle-style form and streamlined functionality allows for simple retrofit from McPropeller. Field serviceability guarantees minimum downtime and maximum control. It's the hassle-free, wallet-friendly, works-when-you-need-it-to, simple to use, mag meter, only from McCrometer.

Typical Applications

- Center Pivot Systems
- Well Monitoring
- Water Distribution
- Chemigation
- Livestock Waste Lagoons
- Surface Water
- Golf Courses and Park Management



Simple and Effective

- Available with all of the features you need, none of the features you don't
- Straightforward, hassle-free installation; just cut the pipe and bolt on
- Easy to read converter that calculates both total and instantaneous flow

Designed for Accuracy, Built to Last

- Innovative patent pending sensor design takes the measurement from the center of your pipe for an ideal flow profile, optimized accuracy and repeatability
- Durable, built with a time-tested rugged design
- Consistent and repeatable measurements due to the simplicity of our proven design
- Versatile, with a wide range of applications

Benefits

- 5-year full warranty
- +/- 2% accuracy
- Easy in-field installation
- Simple retrofit conversion from existing Mc Propeller saddle meters
- Low maintenance
- Low cost of ownership
- Minimal pipeline intrusion

To find out more about our flow measurement products, or for a free flow evaluation, contact your nearest McCrometer representative today or visit our website at www.mccrometer.com. You can reach us directly at 1-800-220-2279.

Specifications

DESIGN & MATERIALS

Line Sizes	4" to 12"
Meter Type	Saddle-style insertion electromagnetic meter
Straight-run Requirements	5D upstream, 2D downstream
Converter	<ul style="list-style-type: none">• Rate and total on one screen• Sealed within a die-cast aluminum case• Includes a domed acrylic lens and a hinged lens cover with locking clasp• Pulse-out available for system integration• IP67 to protect from harsh environments• DC power optional
Retrofit	Available using McPropeller saddle

PERFORMANCE

Accuracy	$\pm 2\%$ accuracy, or $\pm 0.25\%$ of standard full scale flow
Operating Temperature	10°F to 140°F (-12°C to 60°C)
Storage Temperature	-20°F to 149°F (-29°C to 65°C)

Any published technical data and specifications are subject to change without notice.



Committed to Quality Manufacturing in the USA



McCrometer prides itself on the fact that all of its flow meters are designed, manufactured, and tested in the USA. Manufacturing takes place in our headquarters in Hemet, California and we own and operate one of the world's largest volumetric test facilities in Porterville, California. Our manufacturing facilities and quality control systems are the foundation for being a trusted supplier. Our USA based, high quality manufacturing is another reason our customers around the world have confidently chosen McCrometer flow meters for their most challenging flow applications since 1955.



Benefits

The McMag²⁰⁰⁰ provides farmers and irrigators an affordable and easy-to-read mag with minimal maintenance and little to no downtime. As the only mag meter on the market with a price tag comparable to a propeller meter, the McMag²⁰⁰⁰ has a low cost of ownership without compromising durability and accuracy. The McMag²⁰⁰⁰ is portable, making it an efficient purchase for users with multiple irrigation lines. This mag's familiar saddle-style form and streamlined functionality allows for in-field programmability and serviceability, guaranteeing minimal downtime and maximum control. It's the hassle-free, wallet-friendly, works-when-you-need-it-to, simple to use, mag meter, only from McCrometer.

Designed for Accuracy, Built to Last

- Durable, built with a time-tested rugged design
- Consistent and repeatable measurements
- Versatile, with a wide range of applications

Installation

The McMag²⁰⁰⁰ offers hassle-free installation, even in tight spaces. No flanges or costly welding is involved. Users simply cut a 3" diameter hole in the top of their pipe and slide the sensor into the hole, and then cinch the meter onto the pipe using the Factory provided U-straps.

The meter can be mounted in a horizontal or vertical position with a full pipe of water. A minimum of five pipe diameters upstream of a flow disturber and two pipe diameters downstream from the meter are required to ensure optimal accuracy of $\pm 2\%$. When used with a flow straightener, these distances are 1.5 diameters upstream and 1 diameter downstream.

Existing saddle style Mc Propeller meters can be easily and quickly retrofit to the Mc Mag²⁰⁰⁰ in the field.



KEY FEATURES

- $\pm 2\%$ accuracy
- Easy in-field installation
- Low maintenance
- 5-year full warranty
- Low cost of ownership
- "Do-it-yourself" programmability
- Minimal pipeline intrusion

APPLICATIONS

- Center Pivot Systems
- Well Monitoring
- Water Distribution
- Chemigation
- Livestock Waste Lagoons
- Surface Water
- Golf Courses and Park Management

Description

The McMag²⁰⁰⁰™ provides growers and irrigators with a new alternative for flow measurement. With a 5-year meter warranty, a 5-year battery life, and saddle mount design, the McMag²⁰⁰⁰ delivers the dependability and ease-of-installation McCrometer has provided to the agricultural market for over 65 years. The electromagnetic sensor offers accuracy as good as $\pm 2\%$.

The meter is available to fit a common range of agricultural line sizes, from 4" to 12" diameter pipe or tube.

The innovative design of the McMag²⁰⁰⁰ saddle mount meter offers modular design to ensure McMag²⁰⁰⁰ continues to have low cost of ownership, the main components can be easily and affordably updated in field without downtime.

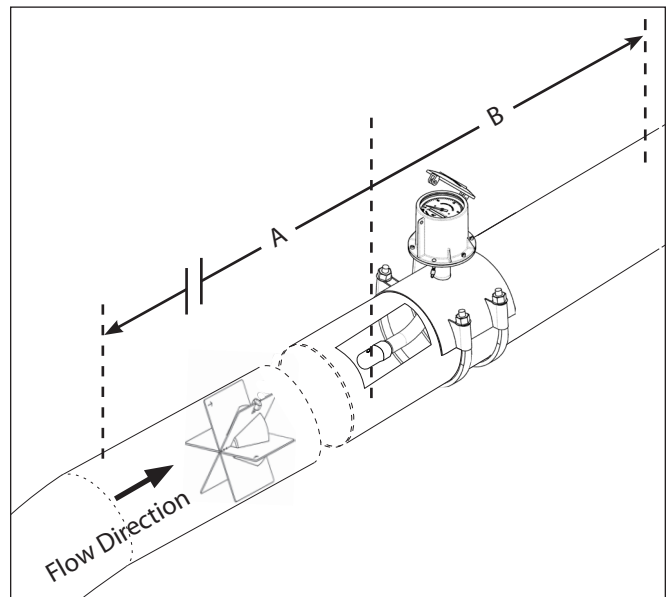
The meter combines a saddle, precision sensor, and a battery powered integrated electronic converter package to provide accurate flow measurement for full-pipe flow monitoring applications.

The integrated electronic converter is secured with tamper resistant screws to protect against unauthorized access. The meter offers flow rate and total water used and a 5-year warranty. The McMag²⁰⁰⁰ features two 3.6V lithium-thionyl chloride (Li-SOCl₂) D size batteries, and a back-up battery pack. The main power batteries are easily replaced in the field. Pulse output is available for remote meter reading or SCADA.

Pipe Run Requirements

Both upstream and downstream distances are measured from the center of the sensor as shown at right. In a typical installation to achieve $\pm 2\%$ accuracy the McMag2000 flow meter should be installed a minimum of five diameters upstream from most flow disturbers and two diameters downstream of the meter, or when used with a flow straightener, 1.5 diameters upstream and 1 diameter downstream.

Configuration	A	B
With or without straightening vanes	5	2
With flow straightener	1.5	1



Part Number Structure

G20	-	-	-	-	-
METER SIZE					
4" Saddle Meter	04				
6" Saddle Meter	06				
8" Saddle Meter	08				
10" Saddle Meter	10				
12" Saddle Meter	12				
MATING PIPE OR TUBE OPTIONS					
Tube Style Saddle (Nominal Inch OD)	T				
Pipe Style Saddle (Nominal Pipe OD)	P				
Non Standard OD Style Saddle (In available Sizes)	S				
No Saddle (Electronics and Sensor Kit, MC Only)	K				
POWER & OUTPUT OPTIONS					
Battery Power / No Outputs (<i>Default</i>)	-				
Battery Power / Pulse Output	1				
DC Power (10-32v) Battery Backup / Pulse Output	2				
Battery Power / Telemetry Ready Pulse Output (7 pin telemetry cable)	3				
Battery Power / ATT Wireless Telemetry System (RTU, Solar Panel, 7 pin cable)	4				
Battery Power / Verizon Wireless Telemetry System (RTU, Solar Panel, 7 pin cable)	5				
CABLE LENGTH OPTIONS					
6 ft Open end two wire cable (*1,2 power options)	1				
25 ft Open end two wire cable (*1,2 power options)	2				
50 ft Open end two wire cable (*1,2 power options)	3				
6 ft 7 Pin Male telemetry Cable (*3,4,5 Output options)	4				
25 ft 7 Pin Male telemetry Cable (*3,4,5 Output options)	5				
50 ft 7 Pin Male telemetry Cable (*3,4,5 Output options)	6				
6 ft 7 Pin Female telemetry Cable (*3,4,5 Output options)	7				
SADDLE OPTIONS					
F Style Saddles for FS Flow Straightener	F				

Flow Meter Specifications

Description and Operating Specifications

	Volumetric flow in filled flow conduits 4" to 12" utilizing saddle installed sensor. Flow indication in English Standard or Metric units.	
Method	Electromagnetic	
Pipe Sizes and Flow Rates	4"	40 - 600 gpm
	6"	90 - 1350 gpm
	8"	150 - 2350 gpm
	10"	240 - 3700 gpm
	12"	350 - 5300 gpm
Body Style	Saddle mount	
Pressure	150 psi (10.3 bar) working pressure	
Accuracy	±2% accuracy, or ±0.25% of standard full scale flow	
Velocity Range	0.5 ft/s to 15 ft/s	
Empty Pipe Detection	Hardware/Software, conductivity-based	
Electrical Connections	Optional shielded cable for 10-35VDC	
	Optional shielded cable for pulse out	
Pipe Run Requirements	With or without vanes:	5D upstream / 2D downstream
	With flow straightener:	1.5D upstream / 1 downstream
Retrofit	Available using McPropeller saddle	

Display and Measurement

Display	<ul style="list-style-type: none"> • Large LCD display (no backlight) • Non-volatile memory • Anti-reverse totalizer (standard) • Total (to 9 digits of precision) • Flow Rate and Velocity (to 5 digits of precision) • Low battery and empty pipe indication • Opening lid activates display 			
	Digits	5 Rate, 9 Total		
	Rate Units	Gallons per minute	Imperial gallons per minute	Cubic feet per minute
		Million gallons per day	Miner's inch (9G)	Barrels per minute (55G)
		Cubic feet per second	Miner's inch (11.22G)	Barrels per hour (55G)
Megaliters per day		Acre-feet per day	Barrels per day (55G)	
Liters per second		Kiloliters per hour	Barrels per minute (42G)	
Cubic meters per hour		Liters per hour	Barrels per hour (42G)	
Liters per minute		Cubic meters per minute	Barrels per day (42G)	
Gallons per hour				
Totalizer Units	Gallons	Barrel (31G)	Miners Inch Minute (11.22G)	
	Cubic Feet	Barrel (42G)	Miners Inch Minute (9G)	
	Acre Feet	Barrel (46G)	Miners Inch Hour (11.22G)	
	Cubic Meters	Barrel (55G)	Miners Inch Day (11.22G)	
	Liters	Imperial Gallon	Miners Inch Hour (9G)	
	Megaliter	Acre Inch	Miners Inch Day (9G)	
	Metric Ton (KL)	Ton (Short)		

Flow Meter Specifications

Power

Battery	Standard: two 3.6V lithium-thionyl chloride (Li-SOCl ₂) D size batteries. Batteries are field replaceable. Unit contains backup battery.
DC Power	Linear power supply 10-35VDC, 2W
Battery Life	Five-year expected battery life, five-year battery warranty. <i>Note: Battery expectancy is with standard configuration</i>

Environmental

Operating Temperature	10° to 140°F (-12° to 60°C) sensor
Storage Temperature	-40° to 149°F (-40° to 65°C)
Operating Pressure	150 PSI
Water Impermeability	IP67

Outputs

Pulse Output	<p>One digital pulse (open collector) output for volumetric</p> <p>With battery power: Minimum allowable is 1 pulse per second, 1 Hz Calculation: Max flow [gpm] / 60 = minimum gallons per pulse</p> <p>With DC power: Minimum allowable is 5 pulses per second, 5 Hz Calculation: Max flow [gpm] / 300 = minimum gallons per pulse</p>
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Options and Accessories

- Epoxy coated carbon steel flanged spool piece
- DC power w/battery backup
- Annual verification / calibration
- Stainless Steel ID tag
- Boot cover

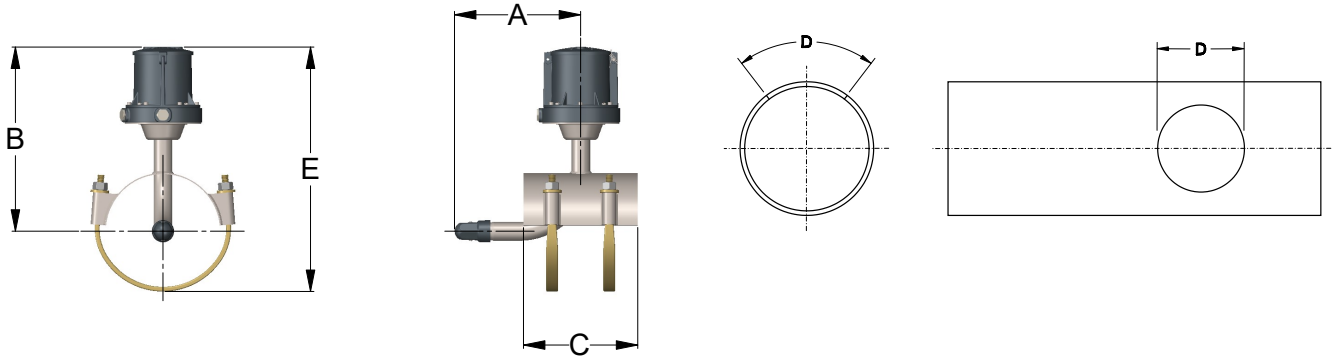
Materials

Sensor Body	HDPE plastic
Electrodes	Stainless steel (316)
Saddle Mount	Stainless steel (304)
U-Bolt/Hardware	Zinc coated steel
Electronic Housing	IP-67 Certified diecast aluminum, powder coated enclosure w/ tamper resistant seal, 6" x 6" x 5" tall
Saddle Gasket	Neoprene
Boot Cover	EPDM rubber optional

Warranty

Meter	5-year standard warranty
Battery	5-year warranty

Dimensions and Weights



DIMENSIONS					
Meter and Nominal Pipe Size	4	6	8	10	12
Minimum Flow U.S. GPM	40	90	150	240	350
Maximum Flow U.S. GPM	600	1350	2350	3700	5300
Approx. Shipping Weight-lbs.	13	15	18	20	24
A (inches)	5 1/2	9	9	9	9
B (inches)	10 3/4	13 1/4	13 1/4	13 1/4	14 1/4
C (inches)	7	8	8	9 1/2	9 1/2
D (inches)	3	3	3	3	3
E (inches)	13 1/4	16 1/2	17 1/2	19 1/2	21 1/2

REQUIRED ORDERING INFORMATION: Pipe O.D. and I.D. are required for all saddle meter orders.

(Draft) RCPP Grant through NRCS

Project and Timelines

Location: Bellwood and Schuyler-Richland Nitrogen Management Areas

Grant Timeline: November 2021 – November 2025

An individual would be hired through the grant from November 2021 – March 2024

Responsibilities of Individual:

- Contact 100% of the producers in these areas.
 - This would be a contract employee.
 - Develop a management strategy to curb nitrate leaching.
 - Utilize Nitrate Assessment Tool for education and BMP locations.
 - Assist producers in nitrogen reports and recommendations.
- Other potential responsibilities
 - Collect water samples and water measurements.
 - Chemigation Inspections
 - Data Entry
- Education by I & E and Water staff
 - Work with FFA and/or Science Groups
 - Present at least 2 times yearly to adult organizations.
 - Present to elementary classes
 - Utilize University of Nebraska Medical Center on Health Risk
 - Develop a program with Med Center on Risks and Awareness
 - Establish a bi-lingual program on water quality.

Best Management Practices for Considerations

- Irrigation Systems and Water Management
 - Start Implementation – Fall/Winter 2022-23
- Nitrogen Management
 - Start Implementation – Crop Year 2022
- Cover Crops
 - Start Implementation – Summer/Fall 2022

**COST REIMBURSABLE STANDARD RESEARCH AGREEMENT
OFFICE OF SPONSORED PROGRAMS
RESEARCH AGREEMENT #139302
LPNNRD Vadose Zone Soil Project**

RESEARCH AGREEMENT (the “Agreement”) between the Board of Regents of the University of Nebraska on behalf of the University of Nebraska-Lincoln, a non-profit, public educational institution of the State of Nebraska, hereinafter referred to as “UNL”, and Lower Platte North NRD, hereinafter referred to as the “Sponsor”. Party shall mean the Sponsor or UNL as the context dictates, and when used in the plural, shall mean the Sponsor and UNL.

WHEREAS, the research program contemplated by this Agreement is of mutual interest and benefit to UNL and to the Sponsor, and will further the instructional and research objectives of UNL in a manner consistent with its status as a non-profit, tax-exempt, educational institution.

NOW, THEREFORE, the Parties hereto agree as follows:

1 RESEARCH

- 1.1 **STATEMENT OF WORK.** UNL agrees to use reasonable efforts to perform the research program as described in Attachment A (the “Research”) which is incorporated and made part of this Agreement.
- 1.2 **PRINCIPAL INVESTIGATOR.** The Research will be supervised by Dr. Daniel Snow the “Principal Investigator”. If, for any reason, Dr. Snow is unable to continue to serve as Principal Investigator and a successor acceptable to both UNL and the Sponsor is not available, this Agreement shall be terminated as provided in Article 3.2.
- 1.3 **EXPENDABLES AND EQUIPMENT.** UNL owns all expendables and equipment purchased or fabricated to perform the Research.

2 FINANCIAL

- 2.1 **DESIGNATION.** For the purposes of this Agreement, “Cost” is defined as all direct and indirect costs incurred by UNL in performing the Research. This Agreement is designated as a Cost Reimbursable Agreement with a Cost of \$2,640.00, in accordance with Attachment B.

Sponsor will pay UNL the Cost as indicated in Article 2.2 below. The parties estimate that the Cost is sufficient to support the Research. UNL may submit to Sponsor a revised budget requesting additional funds if Sponsor requests a change in the Research scope of work. Sponsor will not be liable for any payment in excess of Cost except as per Sponsor’s written agreement. UNL has the authority to re-budget costs at the discretion of the Principal Investigator, as long as the re-budgeting is consistent with the goals of the Research.

2.2 **PAYMENT.** Actual costs will be billed no less often than quarterly and no more often than monthly. Payment(s) shall be made to UNL by the Sponsor in U.S. dollars.

Checks shall be made payable to the University of Nebraska (ID #47-0049123).

Checks shall be mailed to: University of Nebraska-Lincoln
Sponsored Programs
151 Prem S. Paul Research Center
2200 Vine Street
PO Box 830861
Lincoln, NE 68583-0861

For identification purposes, each payment shall include the Research Agreement number, title of the Research Project and the name of the Principal Investigator.

UNL will invoice the Sponsor for costs incurred, and the Sponsor will pay any undisputed invoice within thirty (30) days of receipt of that invoice by the Sponsor. Any amount not received by the due date so noted in the invoice will be subject to interest on the unpaid principal balance at the rate specified in Neb. Rev. Stat. § [45-104](#), as such rate may from time to time be adjusted.

The invoice may be sent to the sponsor by the following method(s):	With copy to (optional):
EMAIL: dandersen@lpnrd.org	EMAIL:

UNL's institutional preference for sending invoices is via electronic mail

2.3 **TAXES.** UNL is a non-profit, public educational institution. Sponsor agrees that if this Agreement is subject to taxation by any governmental authority, Sponsor will pay these taxes in full. UNL will have no liability for payment of these taxes.

3 TERM AND TERMINATION

3.1 PERIOD OF PERFORMANCE. The Research shall be conducted during the period 02/01/2021(the "Effective Date") through 05/31/2021 (the "Completion Date"). The Completion Date may be modified or extended only by mutual written agreement of the Parties.

3.2 TERMINATION. Performance under this Agreement may be terminated by either Party upon ninety (90) days' prior written notice to the other Party. Upon termination by either Party, UNL will be reimbursed as specified in Article 2.2 for all costs and non-cancelable commitments incurred in the performance of the Research up to and including the effective date of termination, such reimbursement not to exceed the total estimated cost specified in Article 2.2. If any UNL student is supported under this Agreement, Sponsor will remain responsible for the full cost of the student support through the academic semester if this Agreement is terminated.

In the event that either Party hereto shall commit any breach of or default in any of the terms or conditions of the Agreement, and also shall fail to remedy such default or breach within thirty (30) days after receipt of written notice thereof from the other party hereto, the party giving notice may, at its option and in addition to any other remedies which it may have at law or in equity, terminate this Agreement by sending notice of termination in writing to the other party to such effect. Such termination shall be effective as of the date of receipt of such notice.

Termination of this Agreement by either party for any reason shall not affect the rights and obligations of the parties accrued prior to the effective date of the termination of this Agreement. No termination of the Agreement, however effectuated, shall release the parties from their rights and obligations under Articles 1.3, 2.1-2.3, 3.2, 4, 5, 6, 7.1-7.2 and 7.6.

4 CONFIDENTIALITY

4.1 CONFIDENTIAL INFORMATION. The University and the Sponsor agree that any "Confidential Information" as defined herein, shall be handled according to the following terms:

"Confidential Information" hereunder shall mean any materials, written information, and data marked "Confidential" by either party or non-written information and data disclosed by either party that is identified at the time of disclosure to the receiving party as confidential and is reduced to writing and transmitted to the receiving party within thirty (30) days of such non-written disclosure. Each party agrees to use the same degree of care it uses to protect its own confidential information and, to the extent permitted by law, to maintain as confidential for a period of three (3) years the Confidential Information. The obligations of confidentiality set forth herein shall not apply to any Information which is:

- A. possessed by the receiving party, other than through prior disclosure by the disclosing party, as evidenced by the receiving party's written records and which was not acquired directly or indirectly from the disclosing party;
- B. in the public knowledge at the time of disclosure;
- C. published or available to the general public after disclosure, otherwise than through a breach of this Agreement;
- D. obtained by the receiving party from a third party with a valid right to disclose such Information, provided that said third party is not under a confidentiality obligation to the disclosing party or any other third party;
- E. independently developed by the receiving party without reference to the disclosing party's Confidential Information as shown by the receiving party's written records; or
- F. required to be disclosed by legal process, or subject to the obligations of the University pursuant to the provisions of the Nebraska Public Records Act, Neb. Rev. Stat. §84-712 et. seq.

4.2 **USE OF NAMES.** Sponsor and its affiliates shall not use the name “University of Nebraska” or any variation, adaptation, or abbreviation thereof, or the name of any of UNL’s trustees, officers, faculty members, students, employees, or agents, or any trademark owned by UNL, in any promotional material or other public announcement or disclosure without the prior written consent of UNL’s Vice Chancellor for Business and Finance, which consent UNL may withhold in its sole discretion.

5 **PUBLICATION**

5.1 **PUBLICATIONS.** UNL will be free to publish the results of the Research in whole or in part, provided that UNL complies with this Article 5. UNL agrees to provide Sponsor with a copy of each manuscript, presentation, poster, and/or any other form of public disclosure intended to be presented visually or audibly or in writing to any third party or organization disclosing the Research (“Manuscript”) at least thirty (30) days prior to its submission, presentation, and/or disclosure to any third party or organization (“Publication”). Within thirty (30) days of receipt of the Manuscript, Sponsor may request delay in Publication for a period not to exceed an additional sixty (60) days (or some longer period of time as agreed to by the Parties) from the date Sponsor gives notice to UNL that patentable subject matter is included in such Manuscript to allow for the filing of appropriate intellectual property protection. If Sponsor notifies UNL of subject matter in any such Manuscript that should be protected, UNL agrees to coordinate with Sponsor the disclosure, drafting and filing such intellectual property protection prior to Publication of the Manuscript as provided in Article 6.3 below within the time period referenced herein. If Sponsor does not make a written request for such delay within thirty (30) days after receipt of a Manuscript, UNL shall be free to publish the Manuscript at any time after the end of the thirty (30) days. UNL agree to remove any Sponsor Confidential Information (as defined in Article 4.1, or in Attachment C, as applicable) that is identified by Sponsor as Confidential Information prior to publication. Pursuant to the policies of UNL and traditional academic practice, the author(s) of such publications shall retain ownership of all copyright interest thereto.

6 **INTELLECTUAL PROPERTY**

6.1 **SPONSOR INTELLECTUAL PROPERTY.** Title to any invention made solely by the Sponsor’s personnel without the use of UNL administered funds or facilities (“Sponsor Invention”) shall remain with the Sponsor. Title to and the right to determine the disposition of any copyrights or copyrightable material first produced or composed in the performance of the Research solely by employees of the Sponsor without the use of UNL administered funds or facilities (“Sponsor Copyright”) shall remain with the Sponsor. Neither Sponsor Inventions nor Sponsor Copyrights shall be subject to the terms and conditions of this Agreement.

6.2 **JOINT INTELLECTUAL PROPERTY.**

6.2.1 **TITLE TO JOINT INVENTIONS.** Inventions made jointly by employees and/or students of UNL and employees of the Sponsor in the performance of the Research or inventions made solely by employees of the Sponsor with use of UNL administered funds or facilities (“Joint Inventions”) shall be jointly owned by both Parties. The Sponsor shall be notified

of any Joint Invention promptly after an invention disclosure is received by UNL. UNL shall have the first right to file a patent application on a Joint Invention in the names of both Parties. All expenses incurred in obtaining and maintaining any patent on such Joint Invention shall be equally shared except that if one Party declines to share in such expenses, the other Party may take over the prosecution and maintenance thereof, at its own expense, provided that title to the patent remains in the names of both Parties. It is agreed that any disputes in inventorship will be determined by a patent attorney mutually agreed upon by Sponsor and UNL.

- 6.2.2 LICENSING OPTIONS. Each Party shall have the independent, unrestricted right to license to third parties any such Joint Invention without accounting to the other Party, except that the Sponsor shall be entitled to elect an exclusive license to UNL's interest in a Joint Invention as provided under Article 6.3.2.2 below.
- 6.2.3 JOINTLY DEVELOPED COPYRIGHTABLE MATERIALS. Copyrightable materials, including computer software (but not including scholarly publications pursuant to Article 5.1) , developed jointly in the performance of the Research by employees and/or students of UNL and employees of the Sponsor, or copyrightable materials, including software, developed solely by employees of the Sponsor with use of UNL administered funds or facilities, shall be jointly owned by both Parties, who shall each have the independent, unrestricted right to dispose of such copyrightable materials as they deem appropriate, without any obligation of accounting to the other Party.

6.3 UNL INTELLECTUAL PROPERTY.

- 6.3.1 TITLE TO INVENTIONS. Title to any invention conceived or first reduced to practice solely by employees and/or students of UNL in the performance of the Research ("UNL Invention") shall remain with UNL. The Sponsor shall be notified of any UNL Invention promptly after a disclosure is received by UNL. UNL (i) may file a patent application at its own discretion or (ii) shall do so at the request of the Sponsor and at the Sponsor's expense.
- 6.3.2 LICENSING OPTIONS. In the event that a patent application on a UNL Invention is filed by UNL, for each UNL Invention, UNL hereby grants the Sponsor a non-exclusive, non-transferable, royalty-free license for internal research purposes. The Sponsor shall further be entitled to elect one of the following license options by notice in writing to UNL within four (4) months after UNL's notification to the Sponsor that a patent application has been filed:
- 6.3.2.1 a non-exclusive, non-transferable, world-wide, royalty-free license without the right to sublicense (in a designated field of use, where appropriate) to the Sponsor to make, have made, use, lease, sell and import products embodying or produced through the use of such invention, provided that the Sponsor agrees to (i) demonstrate reasonable efforts to commercialize the technology in the public interest and (ii) pay all patent prosecution and maintenance costs in all countries,

including the United States, in which the Sponsor is granted a non-exclusive license right under this Article; or

- 6.3.2.2 a royalty-bearing, limited-term, exclusive license (subject to third party rights, if any) to the Sponsor, including the right to sublicense, in the United States and/or any foreign country elected by the Sponsor (subject to Article 6.3.3 below), to make, have made, use, lease, sell and import (in a designated field of use, where appropriate) products embodying or produced through the use of such invention, provided that the Sponsor agrees to reimburse UNL for the costs of patent prosecution and maintenance in the United States and any elected foreign country and further agrees that any products produced pursuant to this license, and that are sold in the United States, shall be substantially manufactured in the United States. This license option is subject to UNL's concurrence and the negotiation of commercially reasonable terms and conditions within three (3) months after selection of this option.
- 6.3.3 FOREIGN FILING ELECTION. If the Sponsor elects a license under Article 6.3.2.1 or Article 6.3.2.2, the Sponsor shall notify UNL of those foreign countries in which it desires a license in sufficient time for UNL to satisfy the patent law requirements of those countries. The Sponsor will reimburse UNL for the out-of-pocket costs, including patent filing, prosecution and maintenance fees, related to those foreign filings.
- 6.3.4 CONFIDENTIALITY OF INVENTION DISCLOSURES. The Sponsor shall retain all invention disclosures submitted to the Sponsor by UNL in confidence and use its best efforts to prevent their disclosure to third parties. The Sponsor shall be relieved of this obligation only when this information becomes publicly available through no fault of the Sponsor.
- 6.3.5 COPYRIGHT OWNERSHIP AND LICENSES. Excluding scholarly publications dealt with pursuant to Article 5.1 above, Title to and the right to determine the disposition of any other copyrights or copyrightable material first produced or composed in the performance of the Research solely by employees and/or students of UNL shall remain with UNL.
- 6.3.6 For any copyrights or copyrightable material other than computer software and its documentation and/or informational databases required to be delivered in accordance with Attachment A, the Sponsor is hereby granted an irrevocable, royalty-free, non-transferable, non-exclusive right and license to use, reproduce, make derivative works, display, distribute and perform all such copyrightable materials for the Sponsor's internal purposes.
- 6.3.7 For a period of four (4) months following UNL's notification or delivery to the Sponsor of computer software and its documentation and/or informational databases required to be delivered to the Sponsor in accordance with Attachment A, the Sponsor shall be entitled to elect a royalty-free, non-transferable, non-exclusive right and license to use, reproduce, make derivative works, display, and distribute to end users, such computer software and its documentation and/or databases for internal and/or commercial purposes. If the use of the software would infringe claims of a patent application filed pursuant to Article 6.3.1 above, then the Sponsor will need to exercise its license rights

in such patent as set forth in Article 6.3.2 above. If such computer software is a derivative of UNL software existing prior to the start of the Research, then such license may not be royalty-free.

6.3.8 RIGHTS IN TRP. In the event that UNL elects to establish property rights other than patents to any tangible research property (TRP), including but not limited to biological materials, developed during the course of the Research, UNL and the Sponsor will determine the disposition of rights to such property by separate agreement. UNL will, at a minimum, reserve the right to use and distribute TRP for non-commercial research purposes.

6.3.9 LICENSE EFFECTIVE DATE. All licenses elected by the Sponsor pursuant to Sections 6.3.2, 6.3.5 and 6.3.8 of this Article 6.3 become effective as of the date the Parties sign a subsequent license agreement.

6.3.10 BACKGROUND INTELLECTUAL PROPERTY.

NOTE: UNL reviews all proposed Research to determine whether there is background intellectual property created by the Principal Investigator that might be relevant to the proposed Research. If such background intellectual property is identified, UNL shall inform the Sponsor prior to the execution of this Agreement, amend this Section 6.3.10 of Article 6.3 and discuss its implications.

6.3.11 NUTECH VENTURES. UNL has entered into an agreement with NUtech Ventures ("NUtech"), a 501(c)(3) supporting organization of UNL, whereby upon assignment from UNL NUtech has the exclusive worldwide rights to market and commercialize any UNL patent rights, copyrights, inventions or discoveries and technology derived therefrom ("UNL IP"). NUtech is also responsible for obtaining patent or copyright protection, or otherwise protecting or disposing of UNL IP as it sees fit. UNL may assign its interest to UNL IP under this Agreement to NUtech without further approval from Sponsor.

7 GENERAL PROVISIONS

7.1 REPRESENTATIONS AND WARRANTIES. UNL MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE RESEARCH OR ANY INTELLECTUAL PROPERTY RIGHTS, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, VALIDITY OF ANY INTELLECTUAL PROPERTY RIGHTS OR CLAIMS, WHETHER ISSUED OR PENDING, AND THE ABSENCE OF LATENT OR OTHER DEFECTS, WHETHER OR NOT DISCOVERABLE. SPECIFICALLY, AND NOT TO LIMIT THE FOREGOING, UNL MAKES NO WARRANTY OR REPRESENTATION (I) REGARDING THE VALIDITY OR SCOPE OF THE RESEARCH OR ANY INTELLECTUAL PROPERTY RIGHTS OPTIONED OR GRANTED HEREUNDER AND (II) THAT THE EXPLOITATION OF THE RESEARCH OR ANY INTELLECTUAL PROPERTY RIGHTS WILL NOT INFRINGE ANY PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF UNL OR OF A THIRD PARTY.

IN NO EVENT SHALL EITHER PARTY, ITS TRUSTEES, DIRECTORS, OFFICERS, EMPLOYEES, STUDENTS AND AFFILIATES, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING ECONOMIC DAMAGES OR INJURY TO PERSONS OR PROPERTY AND LOST

- 7.5 **INDEPENDENT CONTRACTOR.** In the performance of all activities hereunder, (i) UNL shall be deemed to be and shall be an independent contractor, and as such, shall not be entitled to any benefits applicable to employees of the Sponsor, and (ii) neither party is authorized or empowered to act as agent for the other for any purpose and shall not on behalf of the other enter into any contract, warranty, or representation as to any matter. Neither party shall be bound by the acts or conduct of the other.
- 7.6 **GOVERNING LAW.** This Agreement shall be governed by the laws of the State of Nebraska.
- 7.7 **FORCE MAJEURE.** Neither Party shall be responsible to the other for failure to perform any of the obligations imposed by this Agreement, provided such failure shall be occasioned by fire, flood, explosion, lightning, windstorm, earthquake, subsidence of soil, failure or destruction, in whole or in part, of machinery or equipment, or failure of supply of materials, discontinuity in the supply of power, governmental interference, civil commotion, riot, war, strikes, labor disturbance, transportation difficulties, labor shortage or any cause beyond its reasonable control.
- 7.8 **EXPORT CONTROLS.** UNL is subject to United States laws and regulations controlling the export of goods, software and technology including technical data, laboratory prototypes and other commodities. UNL's policy is to comply with all applicable laws and regulations including the Arms Export Control Act, the International Traffic in Arms Regulations ("ITAR"), the Export Administration Regulations ("EAR") and the laws and regulations implemented by the Office of Foreign Assets Control, U.S. Department of the Treasury ("OFAC"). Diversion contrary to U.S. law is prohibited. The transfer of certain technical data, services and commodities may require a license from the cognizant agency of the United States Government and/or written assurances by the Sponsor that the Sponsor will not re-export or retransfer the data or commodities, other than prohibited information, to certain foreign countries without prior approval of the cognizant U.S. government agency. While UNL agrees to cooperate in securing any license which the cognizant agency deems necessary in connection with this Agreement, UNL cannot guarantee that such licenses will be granted. The Sponsor agrees to obtain permission from the U.S. government to re-transfer or re-export for any goods, software and technology that requires such authorization and will not allow any U.S.-origin goods, software or technology to be used for any purposes prohibited by United States law, including, without limitation, support for terrorism or for the development, design, manufacture or production of nuclear, chemical or biological weapons of mass destruction.
- 7.9 **ENTIRE AGREEMENT.** Unless otherwise specified, this Agreement and its Attachments embody the entire understanding between UNL and the Sponsor for the Research, and any prior or contemporaneous representations, either oral or written, are hereby superseded. No amendments or changes to this Agreement, including without limitation; changes in the statement of work, period of performance or total estimated cost, shall be effective unless made in writing and signed by authorized representatives of the Parties. In the event of any inconsistency between the terms of this Agreement and the documents referenced or incorporated into this Agreement, the terms of this Agreement prevail.
- 7.10 **COUNTERPARTS.** This Agreement and any amendment hereto may be executed in counterparts and all such counterparts taken together shall be deemed to constitute one and

the same instrument. If this Agreement is executed in counterparts, no signatory hereto will be bound until all the Parties named below have duly executed a counterpart of this Agreement.

7.11 COMPLIANCE WITH CIVIL RIGHTS LAWS AND EQUAL OPPORTUNITY EMPLOYMENT. Sponsor shall comply with all applicable local, State and Federal statutes and regulations regarding civil rights laws and equal opportunity employment. Neither Sponsor nor any subcontractors shall discriminate against any employee or applicant for employment, to be employed in the performance of this Agreement, with respect to the employee or applicant's hire, tenure, terms, conditions or privileges of employment, because of his or her race, color, religion, sex, disability or national origin.

IN WITNESS WHEREOF, the Sponsor and UNL, intending to be legally bound, have executed this Agreement as of the Effective Date by their respective duly authorized representatives.

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Principal Investigator's Acknowledgement:

I have read this Agreement and agree to perform my obligations as Principal Investigator under this Agreement. I will inform students and other participants performing research services of the terms and conditions of this Agreement.

Signature: _____

Name: _____

Date: _____

ATTACHMENT A

UNL STATEMENT OF WORK

The following information outlined in this Statement of Work consists of confidential, proprietary business information and unpublished research. Unauthorized disclosure is strictly prohibited.

Budget requested will cover cost of nitrate isotope analysis for remaining samples collected and processed for the Lower Platte North NRD Vadose study.

ATTACHMENT B

BUDGET

UNL Basic Request Budget			
	Person Months	Year 1	Total
<i>Senior Personnel</i>	Yr1		
Total Senior Personnel		-	-
<i>Other Personnel</i>	# of Ppl		
Post Docs	0	-	-
Other Professionals	0	-	-
Graduate Students	0.00	-	-
Undergraduate Students	0	-	-
Secretarial	0	-	-
Other	0	-	-
Total Other Personnel		-	-
Fringe Benefits		-	-
Total Salaries and Benefits		-	-
Equipment		-	-
Travel		-	-
Supplies		-	-
Subawards		-	-
Other		2,400	2,400
Total Other Direct Costs		2,400	2,400
Total Direct Costs		2,400	2,400
F&A Base	MTDC	2,400	2,400
F&A	10.0%	240	240
Total Request		2,640	2,640



N Vager Rd

N Vager Rd

Vager Rd

N Lincoln Ave

Victoria Ln

Oxford St

Victoria Ln

Buckingham Rd

E 23rd St

E 23rd Ave C

E 23rd Ave N

Laverna St

Laverna St

Cedar St

E 23rd St

41

N Luther Rd

N Luther Rd

E 23rd St

N Milton Rd

E 23rd St

41

Diers Pkwy

41

E 24th

RESOLUTION NO. 22-2021

A RESOLUTION TO APPROVE THE APPLICATION FOR FINAL SUBDIVISION #SD 123, TO BE KNOWN AS WHISPERING RIDGE ESTATES, LOCATED IN SECTION 6-15-9, (LESHARA TOWNSHIP), ZONING DISTRICT IS RESIDENTIAL ESTATES (RE).

WHEREAS the Saunders County Planning Commission did duly advertise and hold the required public hearing on March 1, 2021. Upon the conclusion of the public hearing, the Planning Commission took action of denying and thereby making recommendation to the Saunders County Board of Supervisors for denial; and

WHEREAS the public hearing was duly advertised March 18, 2021 by the Saunders County Board of Supervisors; and

WHEREAS the public hearing was held April 6, 2021 pursuant to said notice and all statements received at the hearing have been duly considered by the Saunders County Board of Supervisors.

NOW THEREFORE BE IT RESOLVED, to address the health and safety of residents, the following conditions shall be met by the Subdivider:

1. The Subdivider shall install a hydrant with at least 500 gallons per minute of pumping capacity to NRD requirements which shall be available solely for public fire suppression use by the Mead Fire Department along with any mutual aid agencies that may be called to a fire.
2. The Subdivider will be responsible to maintain said high capacity well, hydrant, and heated pump house at its cost so it will operate at said 500 gallons per minute of pumping capacity. Specifications for the well and pump house shall be agreed upon with the Mead Fire Department.
3. The Subdivider shall also submit a grading plan and corresponding drainage plan from a licensed engineer to the County prior to the approval of a Subdivision Agreement and commencement of the project.

BE IT FURTHER RESOLVED, that the Saunders County Board of Supervisors do hereby approve the application for Final Subdivision #SD 123 to be known as Whispering Ridge Estates, upon the aforementioned conditions being met.

Dated this 6th day of April, 2021.

ATTEST:



SAUNDERS COUNTY BOARD OF SUPERVISORS

BY:


Doris M. Karloff, Chairperson

Motion by Sukstorf, seconded by Breunig to open the Public Hearing at 9:06 a.m., for consideration of Application SD#123 by Whispering Ridge Estates for a Final Plat, Sec. 6-15-9 (Leshara Township). Voting yes were Sukstorf, Albrecht, Lutton, Karloff, Breunig, Hrdlicka and Smaus. Voting no were none. Motion carried.


Patti J. Lindgren
Saunders County Clerk

Motion by Lutton, seconded by Smaus to close the Public Hearing at 10:40 a.m. Voting yes were Albrecht, Lutton, Karloff, Breunig, Hrdlicka, Smaus, Sukstorf and Albrecht. Voting no were none. Motion carried.

Motion by Lutton, seconded by Breunig to approve Resolution #22-2021 approving Application SD#123 by Whispering Ridge Estates for a Final Plat, Sec. 6-15-9 (Leshara Township), with the following conditions:

1. The Subdivider shall install a hydrant with at least 500 gallons per minute of pumping capacity to NRD requirements which shall be available solely for public fire suppression use by the Mead Fire Department along with any mutual aid agencies that may be called to a fire.
 2. The Subdivider will be responsible to maintain said high capacity well, hydrant, and heated pump house at its cost so it will operate at said 500 gallons per minute of pumping capacity. Specifications for the well and pump house shall be agreed upon with the Mead Fire Department.
 3. The Subdivider shall also submit a grading plan and corresponding drainage plan from a licensed engineer to the County prior to the approval of a Subdivision Agreement and commencement of the project.
- Voting yes were Lutton, Breunig, Sukstorf and Albrecht. Voting no were Karloff, Hrdlicka and Smaus. Motion carried.

April 13, 2021

Motion by Lutton, seconded by Smaus to ratify the language used in Resolution #22-2021 as to the conditions to be met by the Subdivider of Whispering Ridge Estates.
Voting yes were Karloff, Breunig, Hrdlicka, Smaus, Sukstorf, Albrecht and Lutton. Voting no were none. Motion carried