



KUHN RANCH

Water Conservation Area Management Plan

Water Conservation Area Summary

WCA Acres: 6,186.8

Number of IRR Water Rights: 26
Historical Use Period: 2008-2017

Number of IRR Wells: 42
Historical Avg. Annual Use: 9,110 AF

Prior Conservation Measures:

Prior Landowner: 2008-2015

- Removed all end guns from pivots

Deseret Trust Company: 2016 – To Date

- Changed all water nozzles to a Komet Twister Nozzle
- Lowered pivot nozzle height to maximize the amount of water that gets to the soil
- Converted alfalfa and corn fields/pivots to less water consumptive crops of triticale, Bermuda grass, and orchard brome. Triticale sits fallow from June to August, during hottest summer months.
- *These changes have led to ~22% average annual conservation of the permitted water use of all irrigation water rights throughout the historical use period.*

WCA Term & Diversion Limits:

- WCA term: 5 years
- Total volume allocation during the WCA: 39,000 AF (~14.5% additional annual conservation)

Corrective Controls

- Continue converting fields/pivots to less water consumptive crops.
- Continue adjusting irrigation systems to deliver water as efficiently as practicable.
- File change applications to combine water permits to cover small groups of pivots to allow for more strategic use of wells.
- Establish minimum annual reduced volumes for 15 wells (See Exhibit E – *this is a minimum 24.4% annual reduction/conservation for these wells*).
- Reduce annual average flow rates for the water rights and wells listed in Exhibit F.

Flexibility Requested

- Authorization to potentially divert more than the currently permitted volume in 11 wells to cover irrigation needs during drought years (See Exhibit E).
- Up to 7,800 AF may be carried over and added to a subsequent WCA period after 2026, if unused during the duration of this WCA period.

Total Water Conserved During WCA Period (based on historical use): 6,550 AF

RECEIVED

NOV 17 2022

Garden City Field Office
Division of Water Resources

MANAGEMENT PLAN

For the Designation of a Water Conservation Area (WCA)
Deseret Ranches Kuhn Ranch; Finney County and Haskell County, KS
January 2022 through December 2026

PREAMBLE: In order to conserve and extend the productive life of the aquifer in our region and increase the value and viability of our water rights and water resources for future generations we, the undersigned water right owner propose the following management plan, pursuant to K.S.A. 82a-745 (WCA Law), to form the basis of a Consent Agreement and Order Designating a Water Conservation area (WCA).

1. Expression of Conservation Goals

The goals of this WCA are to maintain production while enhancing profitability per acre-foot of water pumped, to examine and change current conservation practices as necessary, and to reduce water use over the term of the WCA from long-term averages. We, the water right owner, enrolling in a consent agreement under the terms and conditions of this WCA management plan will work towards these goals by exercising more flexible and efficient use of the water resources.

The current total appropriations authorized for all irrigation water rights included in this WCA are 11,673 acre-feet (AF) per year, with an historical average annual use during the period 2008-2017 of 9,110 AF.

We, the water right owner, are consenting to the terms and conditions of this WCA and commit to reducing water use for five (5) years, through an ~14.5% reduction over and above our historical average usage. The total volume of water to be diverted during the term of the WCA shall be limited to 39,000 AF.

2. Water Rights Enrolled and Geographic Boundaries

This WCA shall include the water rights listed in the attached document (Exhibit A). This list includes details of all points of diversion associated with those water rights, as well as legal descriptions of the locations of the points of diversion and identification numbers.

The geographic boundary for this WCA is shown on the attached map and table (Exhibit B) and is defined by legal locations. The table includes total acres irrigated and legal location definitions by section, township, and range within the WCA boundary.

3. Findings Regarding Groundwater Conditions

We understand that the WCA Law requires a finding that one of the following circumstances be present within the geographic boundaries of this WCA; specified in K.S.A. 82a-1036 (a) through (d):

- a. Groundwater levels in the area in question are declining or have declined excessively;
- b. The rate of withdrawal of groundwater in the area equals or exceeds the rate of recharge within such area;
- c. Preventable waste of water is occurring or may occur within the area in question; or
- d. Unreasonable deterioration of the quality of water is occurring or may occur with the area in question

RECEIVED

NOV 17 2022

Garden City Field Office
Division of Water Resources

We have been informed that the following conditions exist:

- a. Groundwater levels in the area in question are declining or have declined excessively;
- b. The rate of withdrawal of groundwater in the area equals or exceeds the rate of recharge within such area;

These conditions suggest the advisability of implementing this WCA.

See attached maps and figures (Exhibit C) supporting these findings and observations.

4. Due Consideration for Past Conservation

We acknowledge that as described in the law, a WCA management plan shall consider water users who have previously implemented reductions in water use resulting from voluntary conservation measures.

Kuhn Ranch has taken the following voluntary conservation measures resulting in reduced groundwater use:

- a. Removed all end guns from pivots
- b. Changed all water nozzles to a Komet Twister Nozzle
- c. Lowered pivot nozzle height to maximize the amount of water that gets to the soil
- d. Converted alfalfa and corn fields/pivots to less water consumptive crops of triticale, Bermuda grass, and orchard brome. Triticale sits fallow from June to August, during hottest summer months.

These changes have led to ~ 22% average annual conservation of the permitted water use of all our irrigation water rights throughout the historical use period.

5. Corrective Control Provisions and Plan for Conservation

We acknowledge that the following corrective controls will be in effect within this WCA during the term of the WCA period listed:

- a. Continue converting fields/pivots to less water consumptive crops.
- b. Continue adjusting irrigation systems to deliver water as efficiently as practicable.
- c. File change applications to combine water permits to cover small groups of pivots to allow for more strategic use of our wells (Exhibit D).
- d. Limit the total volume of water to be diverted during the term of the WCA to 39,000 AF.
- e. All water rights will be held to their annual authorized quantity and annual authorized rate of diversion except for the water rights and wells listed in Exhibit E.
- f. Reduce annual average flow rates for the water rights and wells listed in Exhibit F.
- g. The corrective control provisions of this WCA cannot conflict with the rules and regulations of the local GMD that result in greater overall conservation of water resources. If a Local Enhanced Management Area (LEMA) plan or an Intensive Groundwater Use Control Area (IGUCA) is formed after the initiation of this WCA, and the WCA is partially or wholly within the LEMA or IGUCA, the corrective control provisions that result in the greater overall conservation of water resources based on inches per acre and not based on percent reduction of average historical use shall prevail. However, any LEMA or IGUCA must consider the conservation achieved by WCA participants pursuant to K.S.A. 82a-745(a)(6). The Chief Engineer is authorized to amend the provision of the WCA to conform to any rules, regulations, or requirements that result in greater conservation of the water resource subject to the foregoing consideration for past and current conservation.

6. Flexibility Requested

We, the water right owner enrolling in this WCA understand we may gain the following additional incentives in consideration for our WCA participation:

- a. Authorization to potentially divert more than the currently permitted volume in 11 wells to cover irrigation needs during drought years (Exhibit E), provided that the total annual amount diverted across the WCA is no more than the maximum authorized aggregate diversion volume.
- b. Up to 7,800 AF, which is the average annual WCA allocation, may be carried over and added to a subsequent WCA period after 2026, if unused during the duration of this WCA period. For the carryover quantity to be included, all owners must enter into an agreement to participate in a subsequent WCA by December 31st of the last year of this WCA.
- c. Authorization for a variance of +3% above the reduced rates listed in Exhibit F during single inspections of wells as flow rates naturally fluctuate. We will maintain the average annual flow rate at or below the proposed reduced rate.

7. Compliance Monitoring and Enforcement

We, the water right owner, understand that the following compliance monitoring and enforcement provisions are proposed. This section also includes any specific provisions regarding measuring or reporting water usage.

We will submit an annual report no later than March 1st and maintain a spreadsheet detailing the following information for each of the water right owner's wells: beginning and ending meter readings, acres irrigated, and the quantity of water remaining for the WCA period listed. These records will be available to KDA-DWR upon request.

We will ensure backup measurements will be supported or an alternate measurement device will be available to be put into service in case the water flowmeter record for any given well is questionable or not dependable.

We acknowledge that water flowmeters with the WCA will be sealed to the measurement chamber by KDA-DWR during the duration of this management plan to ensure an accurate water use record.

We, the water right owner, within this WCA shall be responsible for ensuring the water flowmeters comply with state and local laws. Any water right owner or authorized designee who finds a flowmeter that is inoperable or inaccurate shall within 48 hours contact KDA-DWR concerning the matter. Whenever an inoperable or inaccurate meter is repaired or replaced, the owner or authorized designee shall notify the KDA-DWR within seven (7) days on a form prescribed by the Chief Engineer of the water flowmeter installation and any water flowmeter repair or replacement event.

We acknowledge that failure to abide by the terms of this agreement may result in the termination of the WCA. Failure to abide by the terms, conditions, and limitations of the individual water rights will be subject to the civil penalties outlined in K.A.R. 5-14-10 and K.A.R. 5-14-12.

8. Review of Effectiveness

We acknowledge that a review of this WCA shall be completed prior to November 1st of the final year of the WCA period listed to ensure the above terms remain appropriate and are achieving the stated goals of this WCA. Should the Chief Engineer find that the terms are no longer appropriate or that no progress has been made towards the stated goal, the Chief Engineer may refuse to renew a WCA and may suggest added terms and goals. We understand upon review, and a finding by the Chief Engineer, that the WCA has achieved or made progress towards its goals and that the same terms be included in a subsequent

WCA for another designated period. The terms of the WCA period may be continued as long as this WCA is in good standing with its most recent WCA period and upon formal approval by the Chief Engineer. The Chief Engineer shall issue findings addressing the terms and goals of the existing management plan prior to any renewal of a subsequent WCA.

We acknowledge that unless terminated under the provisions below (e.g., due to the development of a LEMA), the WCA will be in effect for the listed period with an evaluation at the end of every WCA period. We understand that KDA-DWR will conduct this evaluation to ensure compliance and conservation. The evaluation will determine total water use during the WCA period.

We acknowledge that should an order of designation for a LEMA be implemented prior to the end of this WCA period, an evaluation of this WCA will be conducted the year prior to the start of a LEMA. This evaluation may be used to determine an additional allocation amount of water to be carried over into a LEMA, should this be the case.

9. Member Addition, Withdrawal, and Removal

KDA-DWR acknowledges that the water right owner and their associated water rights and geographic boundaries may be added to the WCA upon written notification to the Chief Engineer by the owner of the enrolling water right with legal description of the areas to be added. If additional members are added, a member may withdraw from the WCA through written notification to the Chief Engineer signed by the owner of the participating water right or rights to be withdrawn from the WCA.

If the addition or withdrawal of water rights requires modification to the water allocation quantities, geographic boundaries, places of use, terms, or conditions of the original WCA, the management plan shall be revised to incorporate such changes and the associated consent agreement shall be reaffirmed by all parties, after opportunity for comment on the proposed revisions by the applicable GMD.

10. Termination

We acknowledge the members may terminate this WCA agreement at any time by written notification, signed by the members of the WCA, to the Chief Engineer of the intent to terminate.

We also acknowledge that the Chief Engineer may terminate this WCA upon finding that it is not being upheld to its terms. Such termination shall give notice and require a full evaluation of the WCA, and water rights associated to ensure follow-up actions.

11. State Law

We acknowledge that this WCA is subject to compliance with all other applicable state laws.

12. Notification to Nearby Owners

We acknowledge that, by statute, the Chief Engineer is required to provide written notification to all water right owners with a point of diversion within ½ of a mile, or farther, if necessary, by a rule and regulation of the Chief Engineer, of the geographic boundaries of this WCA.

13. Assurances

We acknowledge this WCA will not alter the terms, conditions, and limitations of the base water rights.

14. Review of Other Applicable Requirements

We acknowledge that upon review, this WCA management plan was found to affect equal or greater overall conservation than applicable GMD regulations, LEMA, and IGUCA requirements.

15. Participant's Agreement

By signing below, we, the water right owner, agree that this management plan is fair and equitable. This management plan, provided to the Chief Engineer and water right owners, is the expressed written intent of the parties and the whole agreement between the parties. We, the water right owner agree to be bound by all the terms contained in this management plan and understand that the provisions of this agreement shall be construed to give effect to the provisions listed. We, the water right owner also agree that this management plan is the basis for a consent agreement among the Chief Engineer and the undersigned water right owner, and, therefore, any order and consent agreement issued by the Chief Engineer, designating this WCA, shall be binding upon all parties as the necessary formal implementation of this management plan.

FOR THE PARTICIPANT: The water right owner signing below, affirms their approval of this WCA management plan and if approved by the Chief Engineer allows consent to the Chief Engineer to formally approve the designation of this WCA, described herein, by means of a Consent Agreement and Order.

M. Wesley Mashburn Date: 12/13/22

DESERET TRUST COMPANY,
a Utah nonprofit corporation, not individually,
but in its capacity as Trustee of Trust Number 02-50899
under Agreement dated February 29, 1980

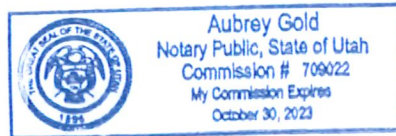
Address:

Attn: Vice President of Land
79 South Main Street, Suite 1000,
Salt Lake City, Utah 84111
Tel: 801-715-9195
Email: land@farmlandreserve.org

ACKNOWLEDGMENT OF NOTARY

State of Utah)
) SS
County of Salt Lake)

Acknowledged before me on 12/13/2022
By: M. Wesley Mashburn
Signature: Aubrey Gold
Notary Public



My Commission Expires: 10/30/2023

CERTIFICATE OF SERVICE

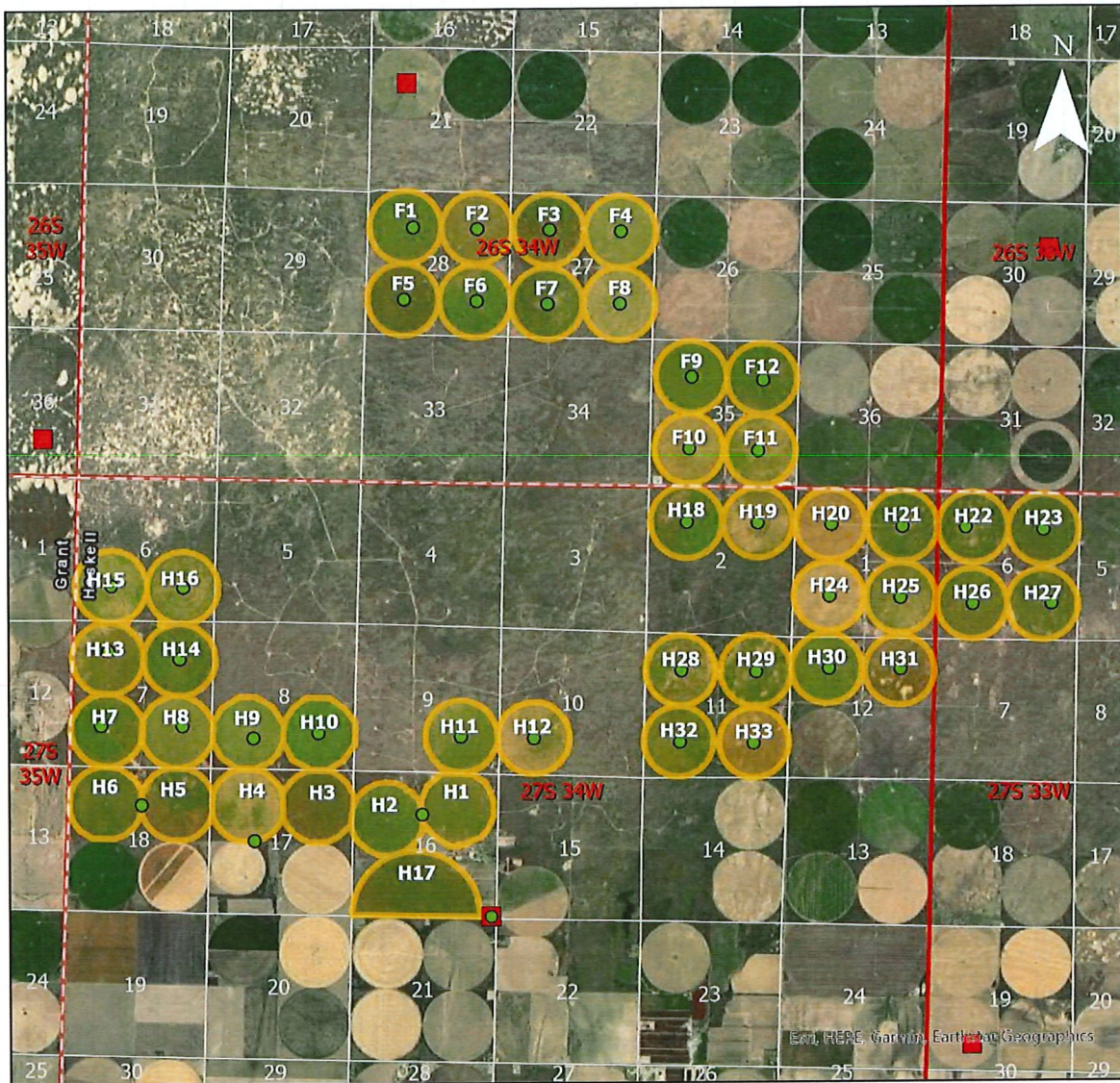
I hereby certify that on this 13 day of December, 2022 copies of the foregoing were sent via email to the following:

Attn: Vice President of Land
79 South Main Street, Suite 1000,
Salt Lake City, Utah 84111
Tel: 801-715-9195
Email: land@farmlandreserve.org

Exhibit A – Water Rights & Points of Diversion List

Water Asset #	Diversion Volume	Well Alias	Point of Diversion Loc & ID#	Point of Diversion #	Permitted Volume	Volume Units	Use
6911	675	H17	16-27S-34W 1	12582	675	ac-ft	Irrigation
11552	1064	H1/H2	16-27S-34W 2	51069	320	ac-ft	Irrigation
11552		H3/H4	17-27S-34W 1	37798	384	ac-ft	Irrigation
11552		H5/H6	18-27S-34W 1	115	360	ac-ft	Irrigation
22578 D1	1088	F12	35-26S-34W 1 35-26S-34W 8	86155	272	ac-ft	Irrigation
22578 D1		F9	35-26S-34W 2	2913	272	ac-ft	Irrigation
22578 D1		F11	35-26S-34W 3 35-26S-34W 7	85154	272	ac-ft	Irrigation
22578 D1		F10	35-26S-34W 5	67182	272	ac-ft	Irrigation
27106	260	H18	2-27S-34W 1	36498	260	ac-ft	Irrigation
30817	1040	H29	11-27S-34W 1	36905	260	ac-ft	Irrigation
30817		H28	11-27S-34W 2	40326	260	ac-ft	Irrigation
30817		H33	11-27S-34W 3	35739	260	ac-ft	Irrigation
30817		H32	11-27S-34W 4	19218	260	ac-ft	Irrigation
30818	1040	H23	6-27S-33W 1	45175	260	ac-ft	Irrigation
30818		H22	6-27S-33W 2	13042	260	ac-ft	Irrigation
30818		H27	6-27S-33W 3	23956	260	ac-ft	Irrigation
30818		H26	6-27S-33W 4	30692	260	ac-ft	Irrigation
30819	1573	H21	1-27S-34W 1	42320	266	ac-ft	Irrigation
30819		H20	1-27S-34W 2	26416	266	ac-ft	Irrigation
30819		H25	1-27S-34W 3	6403	266	ac-ft	Irrigation
30819		H24	1-27S-34W 4	33263	247	ac-ft	Irrigation
30819		H31	12-27S-34W 3	38087	266	ac-ft	Irrigation
30819		H30	12-27S-34W 4	21514	262	ac-ft	Irrigation
30820	266	H19	2-27S-34W 2	16552	266	ac-ft	Irrigation
34110	260	H10	8-27S-34W 1	1664	260	ac-ft	Irrigation
34111	260	H9	8-27S-34W 2	16503	260	ac-ft	Irrigation
34112	260	H8	7-27S-34W 1	749	260	ac-ft	Irrigation
34113	260	H7	7-27S-34W 2	15599	260	ac-ft	Irrigation
36324	260	F8	27-26S-34W 1	36021	260	ac-ft	Irrigation
36327	252	H14	7-27S-34W 3	26494	252	ac-ft	Irrigation
36330	260	F4	27-26S-34W 2	26871	260	ac-ft	Irrigation
36331	260	H13	7-27S-34W 4	29329	260	ac-ft	Irrigation
36333	260	F3	27-26S-34W 3	13587	260	ac-ft	Irrigation
36350	256	H12	10-27S-34W 3	21364	256	ac-ft	Irrigation
36352	260	F2	28-26S-34W 1	14511	260	ac-ft	Irrigation
36356	260	H11	9-27S-34W 2	5406	260	ac-ft	Irrigation
36369	260	F1	28-26S-34W-2	5328	260	ac-ft	Irrigation
36370	260	F7	27-26S-34W 4	47446	260	ac-ft	Irrigation
36372	260	H15	6-27S-34W 1	42751	260	ac-ft	Irrigation
36388	259	H16	6-27S-34W 2	10638	259	ac-ft	Irrigation
36390	260	F6	28-26S-34W 3	38984	260	ac-ft	Irrigation
36412	260	F5	28-26S-34W 4	13680	260	ac-ft	Irrigation

Exhibit B – WCA Geographic Boundary & Legal Description



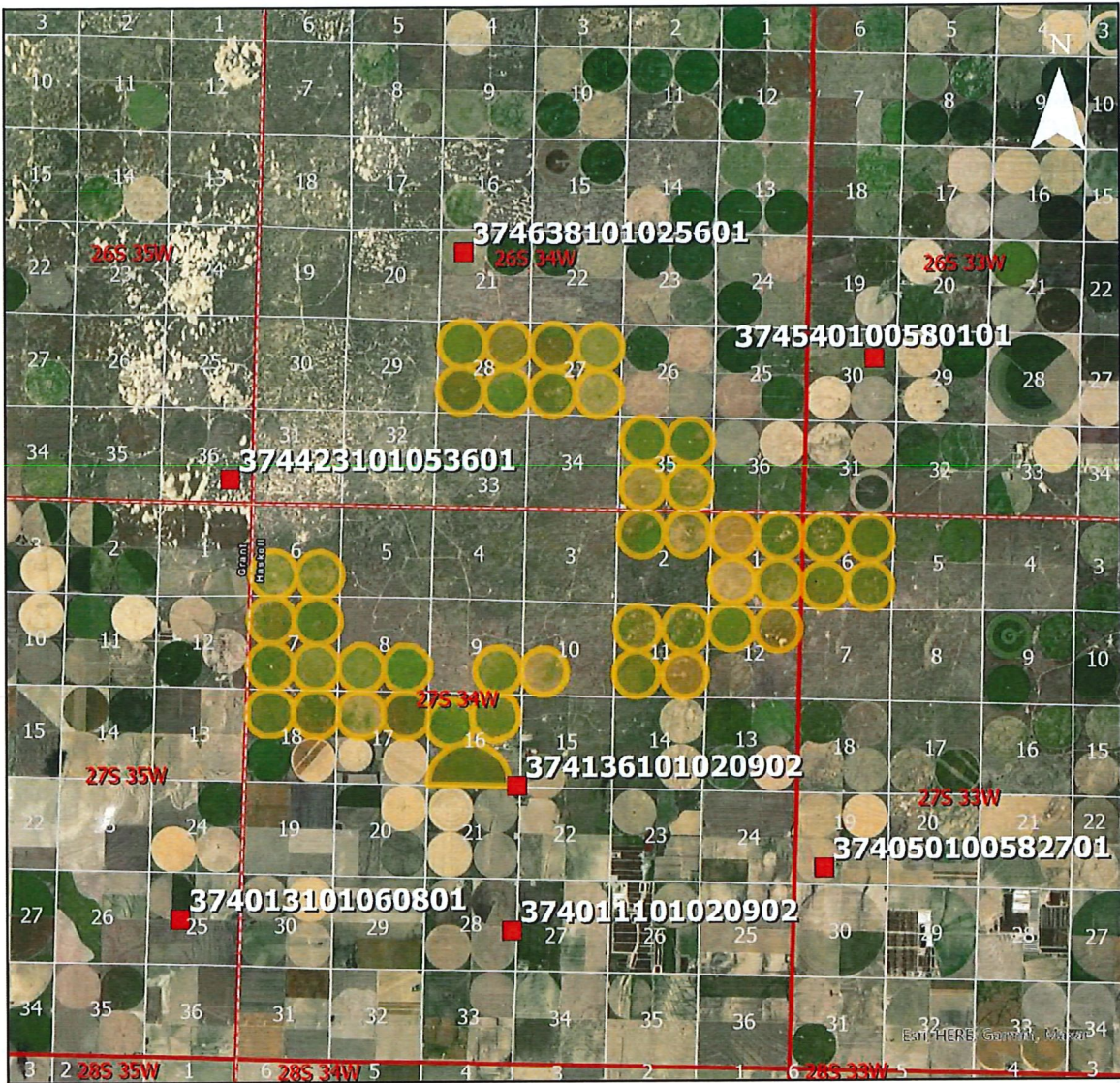
Legend

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> WCA Boundary WCA Points of Diversion | <ul style="list-style-type: none"> KGS Observation Wells | <ul style="list-style-type: none"> Township/Range Section |
|--|---|---|

WCA Authorized Place of Use

WR#	Overlap WR's	Pivot #	Sec	T (S)	R (W)	NE (1/4)						NW (1/4)						SW (1/4)				SE (1/4)				Total Acres	Notes		
						NE (1/4)		SW (1/4)		SE (1/4)		NE (1/4)		NW (1/4)		SW (1/4)		SE (1/4)		NE (1/4)		NW (1/4)		SW (1/4)				SE (1/4)	
						NE (1/4)	NW (1/4)	SW (1/4)	SE (1/4)	NE (1/4)	NW (1/4)	SW (1/4)	SE (1/4)	NE (1/4)	NW (1/4)	SW (1/4)	SE (1/4)	NE (1/4)	NW (1/4)	SW (1/4)	SE (1/4)	NE (1/4)	NW (1/4)	SW (1/4)	SE (1/4)			NE (1/4)	NW (1/4)
6911	11552	H1,2,17	16	27	34	25	25	30	31.5	30	30	31.5	30	30											343.5	Overlapped			
		H3,4	17	27	34	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5											252	Acres Not			
		H5,6	18	27	34	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5											252	Counted in			
11552	6911	H1,2,17	16	27	34	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	40	40	40	40	40	40	40	40	40		554	Total Acres			
		H3,4	17	27	34	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5											252				
		H5,6	18	27	37	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5											252				
22578-D1		F9,10,11,12	35	26	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	544				
27106		H18	2	27	34						39.9	39.9	40	40											159.8				
30817		H28,29,32,33	11	27	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	544					
30818		H22,23,26,27	6	27	33	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	544					
30819		H20,21,24,25	1	27	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	544					
		H30,31	12	27	34	34	34	34	34	34	34	34	34	34											272				
30820		H19	2	27	34	33.25	33.25	33.25	33.25																133				
34110		H10	8	27	34																			130					
34111		H9	8	27	34										32.5	32.5	32.5	32.5						130					
34112		H8	7	27	34																			130					
34113		H7	7	27	34										32.5	32.5	32.5	32.5						130					
36324		F8	27	26	34																			136					
36327		H14	7	27	34	32.5	32.5	32.5	32.5															130					
36330		F4	27	26	34	34	34	34	34															136					
36331		H13	7	27	34										32.5	32.5	32.5	32.5						130					
36333		F3	27	26	34										34	34	34	34						136					
36350		H12	10	27	34																			130					
36352		F2	28	26	34	34	34	34	34						32.5	32.5	32.5	32.5						136					
36356		H11	9	27	34																			130					
36369		F1	28	26	34										34	34	34	34						136					
36370		F7	27	26	34																			136					
36372		H15	6	27	34																			130					
36388		H16	6	27	34																			130					
36390		F6	28	26	34																			136					
36412		F5	28	26	34										34	34	34	34						136					
Grand Total Acres:																								6186.8					

Exhibit C – Kansas Geological Survey Observation Wells & Graphs



Legend

 WCA Boundary

 KGS
Observation
Wells

 Township/
Range
 Section

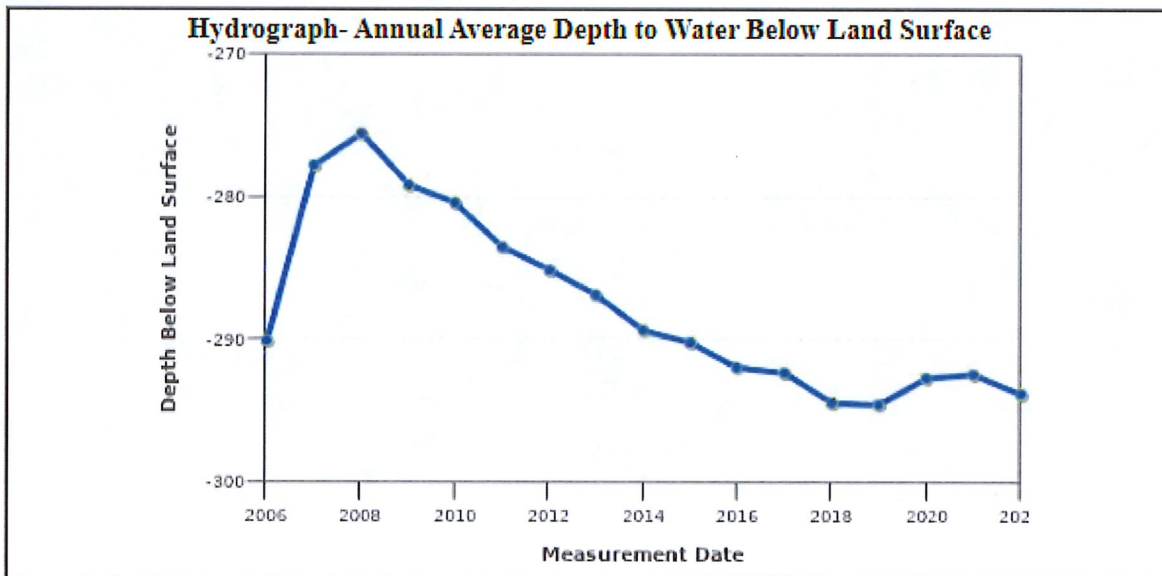
General Well Site Information ?

USGS ID:	374423101053601	KGS Local Well ID:	26S 35W 36DDB 01
County:	Kearny	PLSS Description:	26S 35W 36 SE
HUC 8 Code:	11030003	GMD:	Southwest Kansas GMD #3
Longitude:	-101.094233	Lat/Long Source:	GPS (within 50 feet)
Latitude:	37.7402	Lat/Long Accuracy:	5 seconds
Surface Elevation (ft):	3012.33	Depth of Well (ft):	440
Geological Unit Codes:	TO KJ	USGS Map Name:	HICKOK NE
Use of Site:	Withdrawal of Water	Use of Water:	Irrigation
WWC5 Links:	31881	WIMAS Link:	54672

Water Level Measurements ?

374423101053601

Note that depth to water is feet below land surface and all measurements for the well are included.



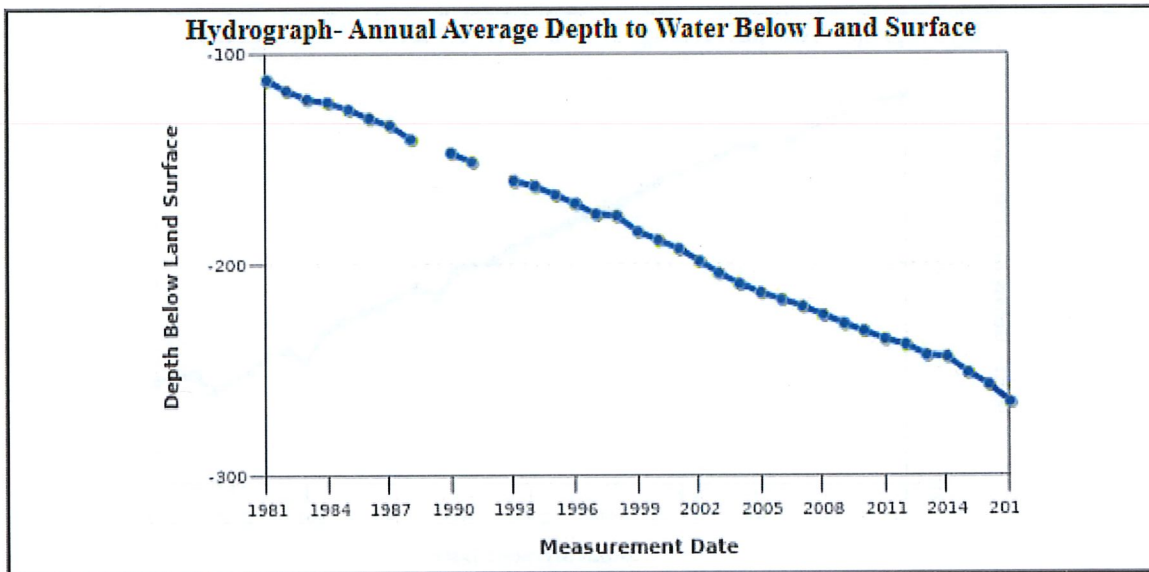
General Well Site Information ?

USGS ID:	374638101025601	KGS Local Well ID:	26S 34W 21BBD 01
County:	Finney	PLSS Description:	26S 34W 21 SENWNW
HUC 8 Code:	11030003	GMD:	Southwest Kansas GMD #3
Longitude:	-101.048847	Lat/Long Source:	GPS (within 50 feet)
Latitude:	37.776743	Lat/Long Accuracy:	5 seconds
Surface Elevation (ft):	2955	Depth of Well (ft):	275
Geological Unit Codes:	QU TO	USGS Map Name:	DEERFIELD SE
Use of Site:	Withdrawal of Water	Use of Water:	Irrigation
WWC5 Links:	None	WIMAS Link:	43596

Water Level Measurements ?

374638101025601

Note that depth to water is feet below land surface and all measurements for the well are included.



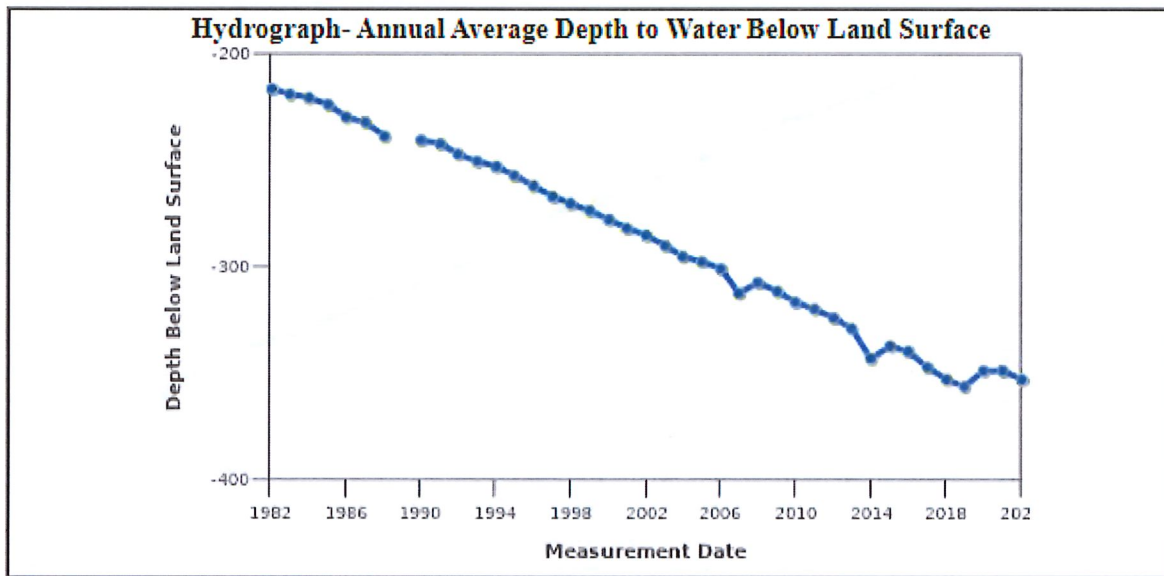
General Well Site Information [?](#)

USGS ID:	374013101060801	KGS Local Well ID:	27S 35W 25BDC 01
County:	Grant	PLSS Description:	27S 35W 25 SWSENW
HUC 8 Code:	11030003	GMD:	Southwest Kansas GMD #3
Longitude:	-101.102048	Lat/Long Source:	GPS (within 50 feet)
Latitude:	37.670772	Lat/Long Accuracy:	5 seconds
Surface Elevation (ft):	3046	Depth of Well (ft):	410
Geological Unit Codes:	TO	USGS Map Name:	HICKOK NE
Use of Site:	Withdrawal of Water	Use of Water:	Irrigation
WWC5 Links:	None	WIMAS Link:	1107

Water Level Measurements [?](#)

374013101060801

Note that depth to water is feet below land surface and all measurements for the well are included.



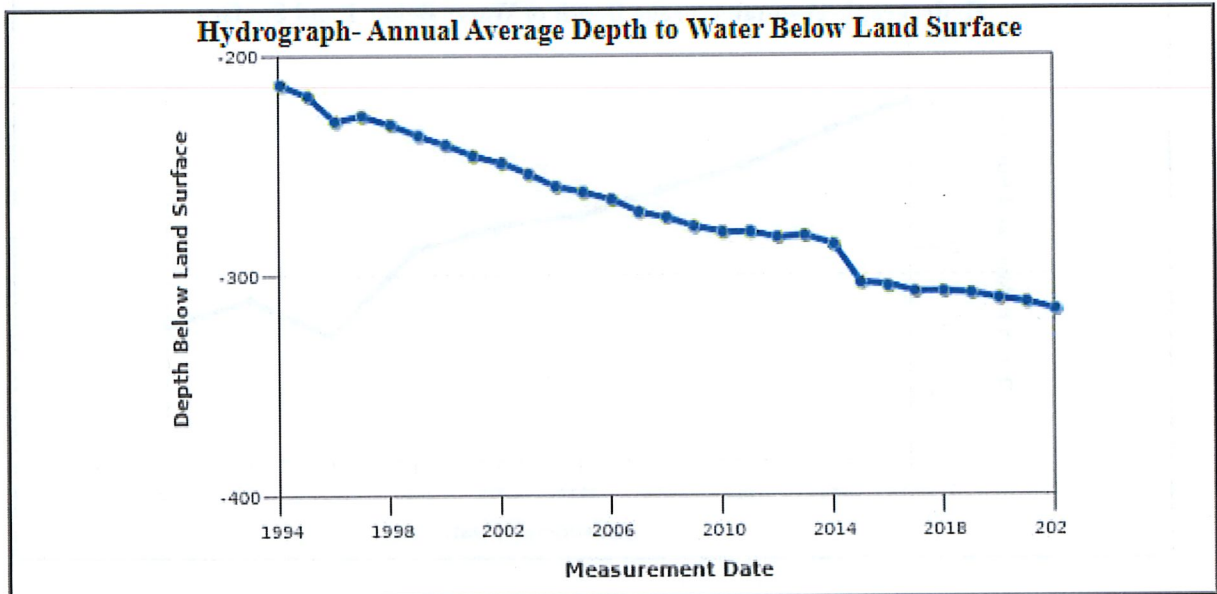
General Well Site Information ?

USGS ID:	374136101020902	KGS Local Well ID:	27S 34W 16DDD 02
County:	Haskell	PLSS Description:	27S 34W 16 SESESE
HUC 8 Code:	11030003	GMD:	Southwest Kansas GMD #3
Longitude:	-101.036047	Lat/Long Source:	GPS (within 50 feet)
Latitude:	37.693003	Lat/Long Accuracy:	5 seconds
Surface Elevation (ft):	2995	Depth of Well (ft):	400
Geological Unit Codes:	TO	USGS Map Name:	HICKOK NE
Use of Site:	Withdrawal of Water	Use of Water:	Irrigation
WWC5 Links:	28378	WIMAS Link:	12582

Water Level Measurements ?

374136101020902

Note that depth to water is feet below land surface and all measurements for the well are included.



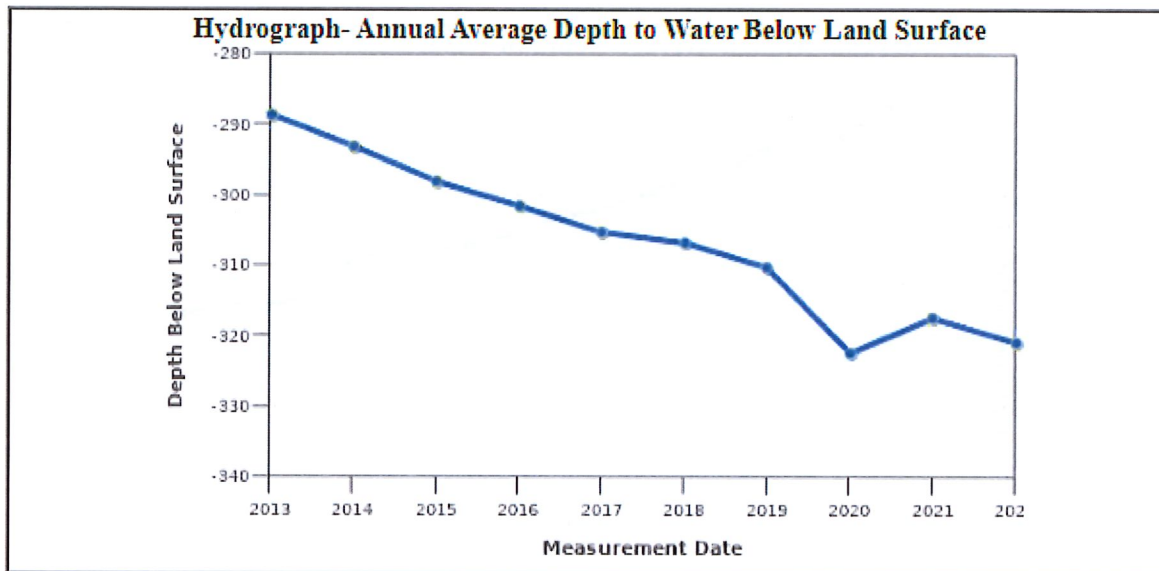
General Well Site Information ?

USGS ID:	374540100580101	KGS Local Well ID:	26S 33W 30ADC 01
County:	Finney	PLSS Description:	26S 33W 30 NCN2S2NE
HUC 8 Code:	11030003	GMD:	Southwest Kansas GMD #3
Longitude:	-100.966772	Lat/Long Source:	GPS (within 50 feet)
Latitude:	37.761496	Lat/Long Accuracy:	5 seconds
Surface Elevation (ft):	2955	Depth of Well (ft):	525
Geological Unit Codes:	TO	USGS Map Name:	Garden City SW
Use of Site:	Withdrawal of Water	Use of Water:	Irrigation
WWC5 Links:	454466	WIMAS Link:	80028

Water Level Measurements ?

374540100580101

Note that depth to water is feet below land surface and all measurements for the well are included.



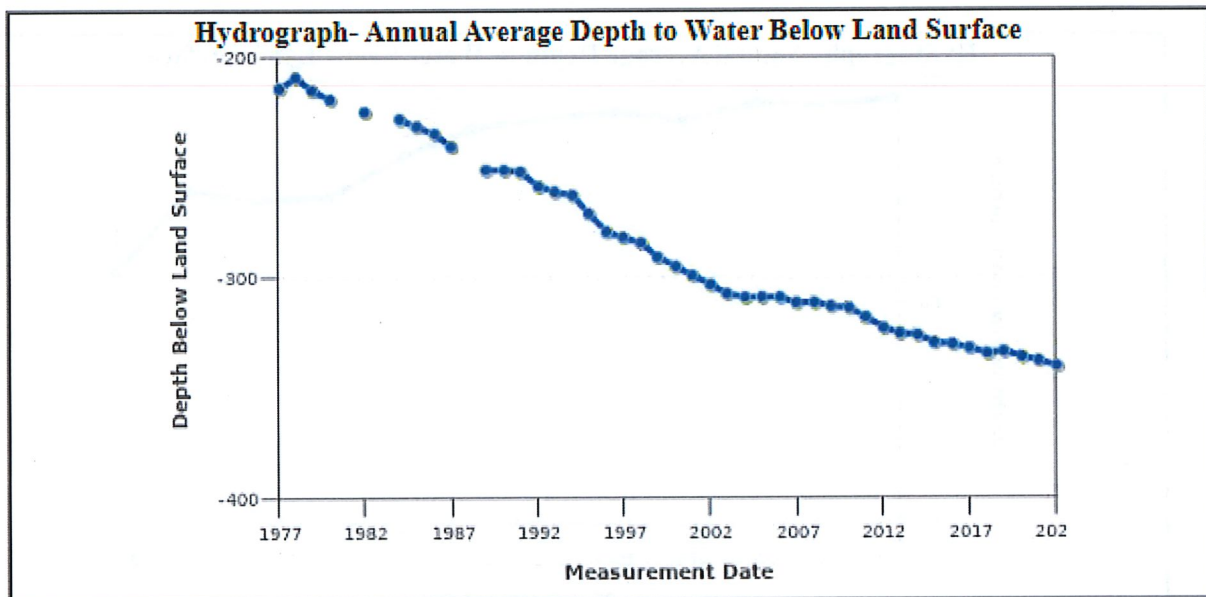
General Well Site Information [?](#)

USGS ID:	374011101020902	KGS Local Well ID:	27S 34W 28DAA 02
County:	Haskell	PLSS Description:	27S 34W 28 NENESE
HUC 8 Code:	11030003	GMD:	Southwest Kansas GMD #3
Longitude:	-101.035547	Lat/Long Source:	GPS (within 50 feet)
Latitude:	37.670153	Lat/Long Accuracy:	5 seconds
Surface Elevation (ft):	3042	Depth of Well (ft):	410
Geological Unit Codes:	TO	USGS Map Name:	HICKOK NE
Use of Site:	Withdrawal of Water	Use of Water:	Irrigation
WWC5 Links:	None	WIMAS Link:	None

Water Level Measurements [?](#)

374011101020902

Note that depth to water is feet below land surface and all measurements for the well are included.



General Well Site Information [?](#)

USGS ID:	374050100582701	KGS Local Well ID:	27S 33W 19CDB 01
County:	Haskell	PLSS Description:	27S 33W 19 NWSESW
HUC 8 Code:	11030003	GMD:	Southwest Kansas GMD #3
Longitude:	-100.974105	Lat/Long Source:	GPS (within 50 feet)
Latitude:	37.680433	Lat/Long Accuracy:	5 seconds
Surface Elevation (ft):	3007	Depth of Well (ft):	577
Geological Unit Codes:	TO	USGS Map Name:	GARDEN CITY 3 NW
Use of Site:	Withdrawal of Water	Use of Water:	Irrigation
WWC5 Links:	111006	WIMAS Link:	60185

Water Level Measurements [?](#)

374050100582701

Note that depth to water is feet below land surface and all measurements for the well are included.

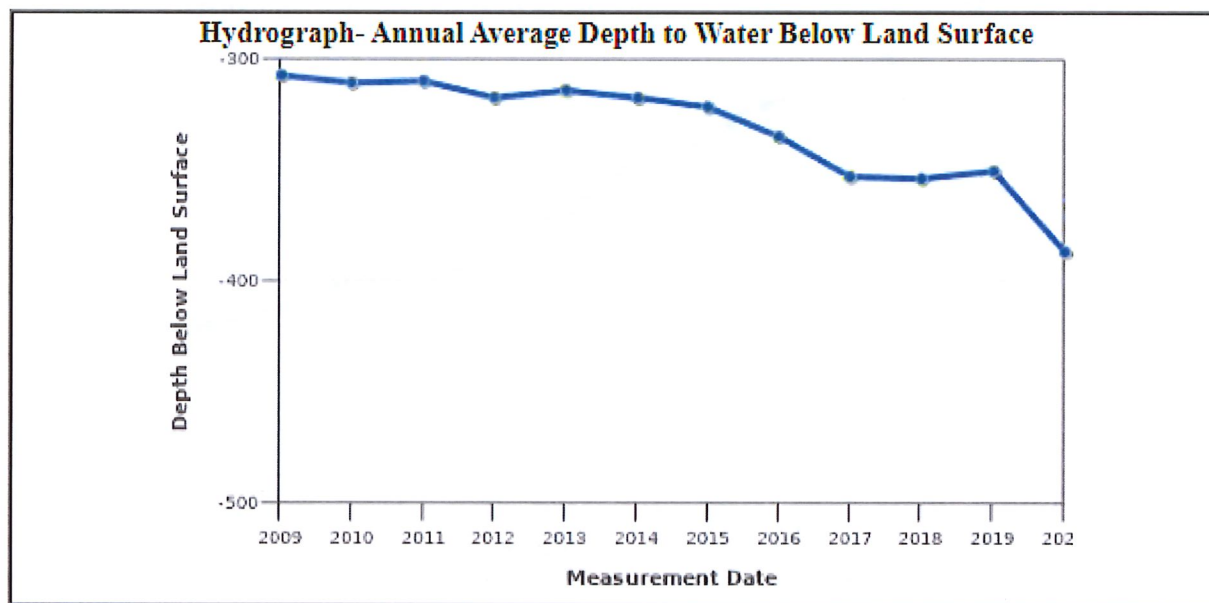


Exhibit D – Potential Pivot/Water Permit Cluster Groups



Exhibit E – Proposed Temporary Changes in Water Diversion Volumes (AF)

Flexible Additional Volumes <i>(potential needs for a more severe drought year)</i>					Minimum Annual Reduced Volumes <i>(actual reduced volumes will most likely be more than this)</i>				
Pivot/ Well	Permit #	Permitted Volume	Change	Expected Use	Pivot/ Well	Permit #	Permitted Volume	Change	Expected Use
F7	36370	260	10	270	F1	36369	260	-50	210
F11	22578 D1	272	20	292	F3	36333	260	-50	210
F12	22578 D1	272	50	322	F8	36324	260	-50	210
H1/H2	11552	320	10	330	F9	22578 D1	272	-100	172
H9	34111	260	15	275	F10	22578 D1	272	-50	222
H16	36388	259	15	274	H7	34113	260	-20	240
H20	30819	266	20	286	H8	34112	260	-20	240
H24	30819	247	10	257	H17	6911	675	-100	575
H25	30819	266	20	286	H19	30820	266	-100	166
H26	30818	260	50	310	H21	30819	266	-100	166
H32	30817	260	25	285	H22	30818	260	-100	160
Totals:		2942	245	3187	H23	30818	260	-25	235
					H27	30818	260	-100	160
					H28	30817	260	-100	160
					H31	30819	266	-100	166
					Totals:		4357	-1065	3292

Exhibit F – Proposed Temporary Changes in Water Diversion Rate (GPM)

Pivot/ Well	Water Asset #	Point of Diversion Loc & ID#	Point of Diversion #	Authorized Rate (gpm)	FRI's Recent Recorded Rate (gpm)	KDA-DWR Proposed Reduced Rate (gpm)
H17	6911	16-27S-34W 1	12582	1450	550	525
H1/H2	11552	16-27S-34W 2	51069	695	650	621
H28	30817	11-27S-34W 2	40326	750	200	191
H32	30817	11-27S-34W 4	19218	4000	600	573
H23	30818	6-27S-33W 1	45175	770	400	382
H22	30818	6-27S-33W 2	13042	900	200	191
H27	30818	6-27S-33W 3	23956	870	275	262
H26	30818	6-27S-33W 4	30692	775	600	573
H21	30819	1-27S-34W 1	42320	815	200	191
H20	30819	1-27S-34W 2	26416	795	600	573
H25	30819	1-27S-34W 3	6403	760	525	501
H24	30819	1-27S-34W 4	33263	625	500	477
H31	30819	12-27S-34W 3	38087	820	175	167
H19	30820	2-27S-34W 2	16552	1000	300	286
H9	34111	8-27S-34W 2	16503	695	650	621
H8	34112	7-27S-34W 1	749	760	525	501
H7	34113	7-27S-34W 2	15599	800	400	382
F8	36324	27-26S-34W 1	36021	805	350	334
F3	36333	27-26S-34W 3	13587	855	350	334
F1	36369	28-26S-34W-2	5328	920	450	430
F7	36370	27-26S-34W 4	47446	925	550	525
H16	36388	6-27S-34W 2	10638	740	600	573
F12	22578 D1	35-26S-34W 1 35-26S-34W 8	86155	1000	700	669
F9	22578 D1	35-26S-34W 2	2913	1000	175	167
F11	22578 D1	35-26S-34W 3 35-26S-34W 7	85154	1000	650	621
F10	22578 D1	35-26S-34W 5	67182	1000	375	358
			Totals:	25,525	11,550	11,028

S. Thurlow
1/23/2023

Theis analysis of Deseret WCA

A 50-year Theis analysis was used to evaluate the potential increase in dynamic drawdown as a result of the proposed WCA. The WCA proposes increases (green) and decreases (red) in Authorized Quantities with a limit of 39,000 AF for a 5 year period to the following 26 wells (Figure 1) authorized by File Nos.: 36369, 36333, 36324, 22578-D1 ID2, 22578-D1 ID7, 34113, 34112, 6911, 30820, 30819 ID1, 30818 ID3, 30818 ID1, 30818 ID2, 30817 ID2, 30819 ID3 (PDIV 38087), 36370, 22578-D1 ID5, 22578-D1 ID8, 11552, 34111, 36388, 30819 ID3 (PDIV 6403), 30819 ID4, 30819 ID2, 30818 ID4, and 30817 ID4

The GMD No. 3 groundwater model was used for a projected future (2068) saturated thickness (100.4 ft). The average of model cells located within Township 26 South, Range 33 West, Section 33; Township 26 South, Range 34 West, Sections 22, 25-29, 31-36; Township 27 South, Range 33 West, Sections 6, 7, 18; and Township 27 South, Range 34 West, Sections 1-18, 20-24, 27 was used.

The transmissivity was estimated based on lithological logs from the Kansas Geological Survey's Water Well Completion Records Database (WWC5). WWC5 records within 3.5 miles of the center of the WCA were used. Records that were within that area, but did not include lithological data, were not drilled to bed rock, or had poor lithological descriptions were excluded. Hydraulic conductivity assumptions were based on the calibrated values used for the GMD No. 3 groundwater model (Figures 2 and 3). In all, 20 lithological logs were evaluated (Figure 4-6, Tables 1-20), with an average transmissivity of 5,344 square feet per day. An assumed specific storage (1×10^{-5} for the Ogallala Aquifer and 1×10^{-6} for the Dakota Aquifer) and the projected saturated thickness was used to determine the assumed storativity of 0.00093.

Drawdown was evaluated at 2 nearby existing wells authorized by File Nos. 25460 ID5 and 25460 ID6 (Tables 22-23). The total drawdown at each nearby well was calculated by summing the drawdown of each individual pumping well listed above by using the pumping scenario provided by the WCA plan. This scenario consists of 210 AF, 210 AF, 210 AF, 172 AF, 222 AF, 240 AF, 240 AF, 575 AF, 166 AF, 166 AF, 160 AF, 235 AF, 160 AF, 160 AF, 166 AF, 270 AF, 292 AF, 322 AF, 330 AF, 275 AF, 274 AF, 286 AF, 257 AF, 286 AF, 310 AF, and 285 AF for the pumping wells, respectively (Table 21). The authorized rates used for those respective pumping wells are 920 GPM, 855 GPM, 805 GPM, 1000 GPM, 1000 GPM, 800 GPM, 760 GPM, 1450 GPM, 1000 GPM, 815 GPM, 870 GPM, 770 GPM, 900 GPM, 750 GPM, 820 GPM, 925 GPM, 1000 GPM, 1000 GPM, 695 GPM, 695 GPM, 740 GPM, 760 GPM, 625 GPM, 795 GPM, 775 GPM, and 4000 GPM (Table 21). This was compared to the average historic use for the wells (160.4 AF, 137.3 AF, 174.048 AF, 77.375 AF, 200.833 AF, 149.8 AF, 184.3 AF, 291.3 AF, 177.5 AF, 130.8 AF, 133.7 AF, 180.1 AF, 158.6 AF, 114.5 AF, 122.9 AF, 202.6 AF, 167.875 AF, 193.6 AF, 232.3 AF, 215.9 AF, 138.467 AF, 206.1 AF, 210.9 AF, 215.4 AF, 194.9 AF, and 246.1 AF, respectively from 2012-2021) at their recent pumping rates submitted by the owner (450 GPM, 350 GPM, 350 GPM, 175 GPM, 650 GPM, 400 GPM, 525 GPM, 550 GPM, 300 GPM, 200 GPM, 275 GPM, 400 GPM, 200 GPM, 200 GPM, 175 GPM, 550 GPM, 375 GPM, 700 GPM, 650 GPM, 650 GPM, 600 GPM, 525 GPM, 500 GPM, 600 GPM, 600 GPM, 600 GPM). The maximum net drawdown occurred at the well authorized by File No. 25460 ID6. The net drawdown at that distance was 85.4 feet, or 85.0% of the projected future saturated thickness (Table 22). If the proposed rates of all the respective pumping wells are limited to the rates of 430 GPM, 334 GPM, 334 GPM, 167 GPM, 621 GPM, 382 GPM, 501 GPM, 525 GPM, 286 GPM, 191 GPM, 262 GPM, 382 GPM, 191 GPM, 191 GPM, 167 GPM, 525 GPM, 358 GPM, 669 GPM, 621 GPM, 621 GPM, 573 GPM, 501 GPM, 477 GPM, 573 GPM, 573 GPM, and 573 GPM (Table 21), the maximum net drawdown will occur at the well authorized by File No. 25460 ID5. The net drawdown at that distance would then be limited to 20.1 ft, or 20.0% of the projected saturated thickness (Table 23).

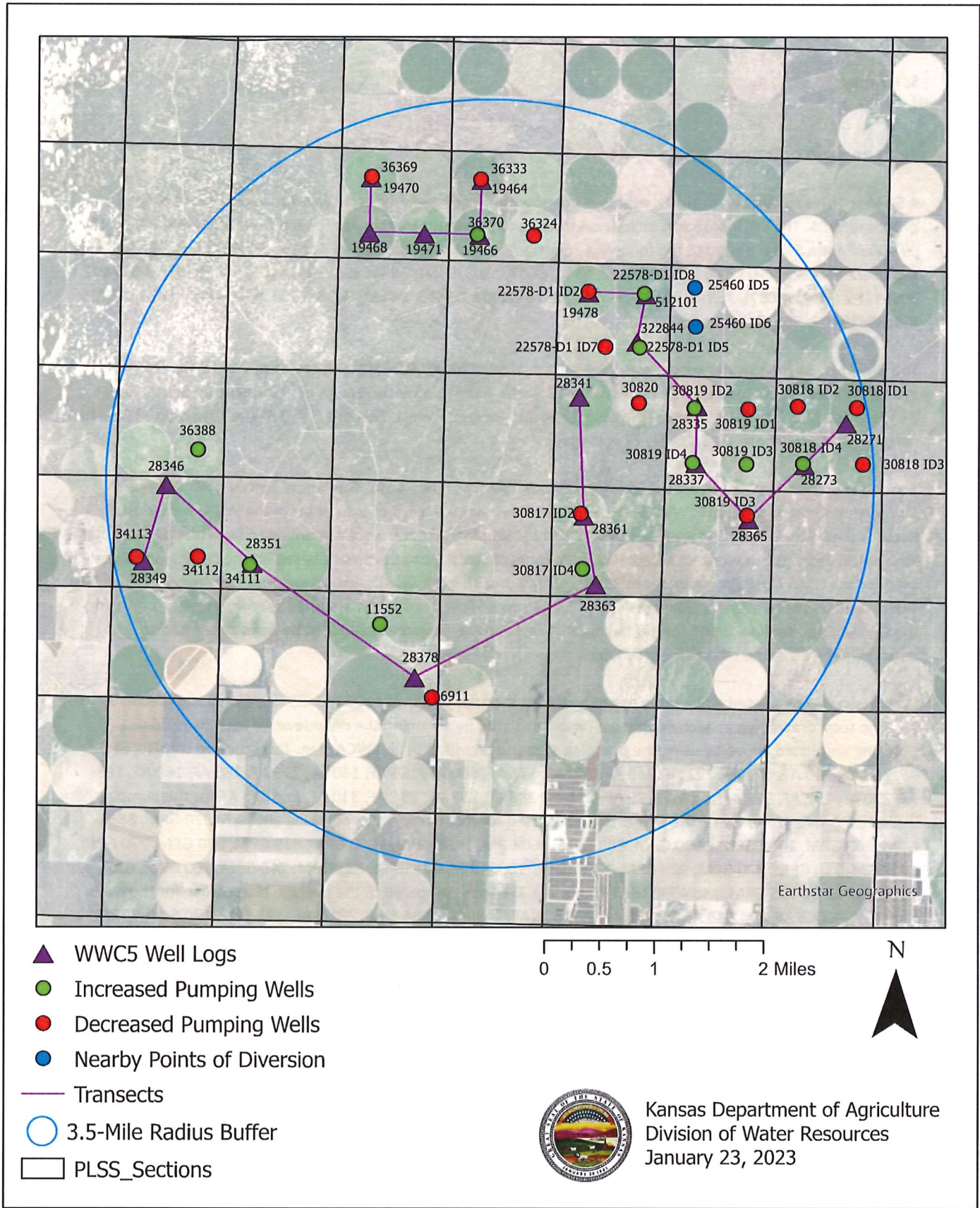


Figure 1: Location of current and proposed point of diversion, surrounding points of diversion, and WWC5 records

Table 1. PST+ synonymy codes and lithology descriptions.

Synonymy	Lithology	Synonymy	Lithology	Synonymy	Lithology
sh	Shale	sc	Sandy Clay or Silty Sand	fsnd	Fine Sand
c	Clay	fds	Fine Sandy Silt	fmgnd	Fine to Medium Sand
coal	Coal	fmds	Fine to Medium Sandy Silt	fmsnd	Fine to Medium Sand
br	Bedrock	fcrsds	Fine to Coarse Sandy Silt	snd	Sand
rb	Red Bed	ds	Sandy Silt	fcrrsnd	Fine to Coarse Sand
r	Rock	mds	Medium Sandy Silt	msnd	Medium Sand
sst	Siltstone	gc	Gravelly Clay	mcrsrd	Medium to Coarse Sand
ca	Limestone/caliche	mcrsds	Medium to Coarse Sandy Silt	cg	Clayey Gravel
o	Overburden	crsds	Coarse Sandy Silt	crsrd	Coarse Sand
ts	Topsoil	cesd-cg	Cemented Sand and/or Gravel	sg	Silty Gravel
fs	Fine Silt	fss	Fine Silty Sand	fsdg	Fine Sand and Gravel
fsc	Fine Sandy Clay	fmss	Fine to Medium Silty Sand	fmsdg	Fine to Medium Sand and Gravel
fmrc	Fine to Medium Sandy Clay	ss	Silty Sand	msdg	Medium Sand and Gravel
m	Marl or Ochre	mss	Medium Silty Sand	sdg	Sand and Gravel
msc	Medium Sandy Clay	fcrrss	Fine to Coarse Silty Sand	fcrrsdg	Fine to Coarse Sand and Gravel
s	Silt	mcrsrd	Medium to Coarse Silty Sand	mcrsrdg	Medium to Coarse Sand and Gravel
crsrd	Coarse Sandy Clay	crsrd	Coarse Silty Sand	crsrdg	Coarse Sand and Gravel
fcrrrd	Fine to Coarse Sandy Clay	u	Unknown (most likely unintelligible)	fg	Fine Gravel
mcrsrd	Medium to Coarse Sandy Clay			fmg	Fine to Medium Gravel
				fcrrg	Fine to Coarse Gravel
				fcrrsg	Fine to Coarse Gravel
				g	Gravel
				mg	Medium Gravel
				mcrsg	Medium to Coarse Gravel
				crsg	Coarse Gravel

Figure 2: Synonymy codes and lithology descriptions. Source: KGS OFR 2010-18

Table 6. The calibrated values for PST+ synonymy lithologies.

Synonymy	K	Sy	Synonymy	K (ft/d)	Sy	Synonymy	K (ft/d)	Sy
sh	0.00004	0.05	sc	4.4	0.08	fsnd	15	0.24
c	0.00004	0.05	fds	4.4	0.08	fmgnd	15	0.24
coal	0.00004	0.05	fmds	4.4	0.08	fmsnd	15	0.24
br	0.00004	0.05	fcrsds	4.4	0.08	snd	63	0.24
rb	0.00004	0.05	ds	4.4	0.08	fcrrsrd	63	0.24
r	0.00004	0.05	mds	4.4	0.08	msrd	63	0.24
sst	0.00004	0.05	gc	4.4	0.08	mcrsrd	63	0.24
ca	0.0001	0.08	mcrsds	4.4	0.08	cg	63	0.24
o	0.0001	0.08	crsds	4.4	0.08	crsrd	63	0.29
ts	0.0001	0.08	cesd-cg	14.5	0.16	sg	63	0.29
fs	0.0001	0.08	fss	14.5	0.16	fsdg	299	0.29
fsc	0.0001	0.08	fmss	14.5	0.16	fmsdg	299	0.29
fmrc	0.0001	0.08	ss	14.5	0.16	msdg	299	0.29
m	0.0001	0.08	mss	14.5	0.16	sdg	299	0.29
msc	0.0001	0.08	fcrrss	14.5	0.16	fcrrsdg	299	0.29
s	0.0001	0.08	mcrsrd	14.5	0.16	mcrsrdg	299	0.29
crsrd	0.0001	0.08	crsrd	14.5	0.16	crsrdg	299	0.29
fcrrrd	0.0001	0.08	u	14.5	0.16	fg	299	0.29
mcrsrd	0.0001	0.08				fmg	299	0.29
						fcrrg	299	0.29
						fcrrsg	299	0.29
						g	299	0.29
						mg	299	0.29
						mcrsg	299	0.29
						crsg	299	0.29

Figure 3: Calibrated hydraulic conductivity values. Source: KGS OFR 2010-18

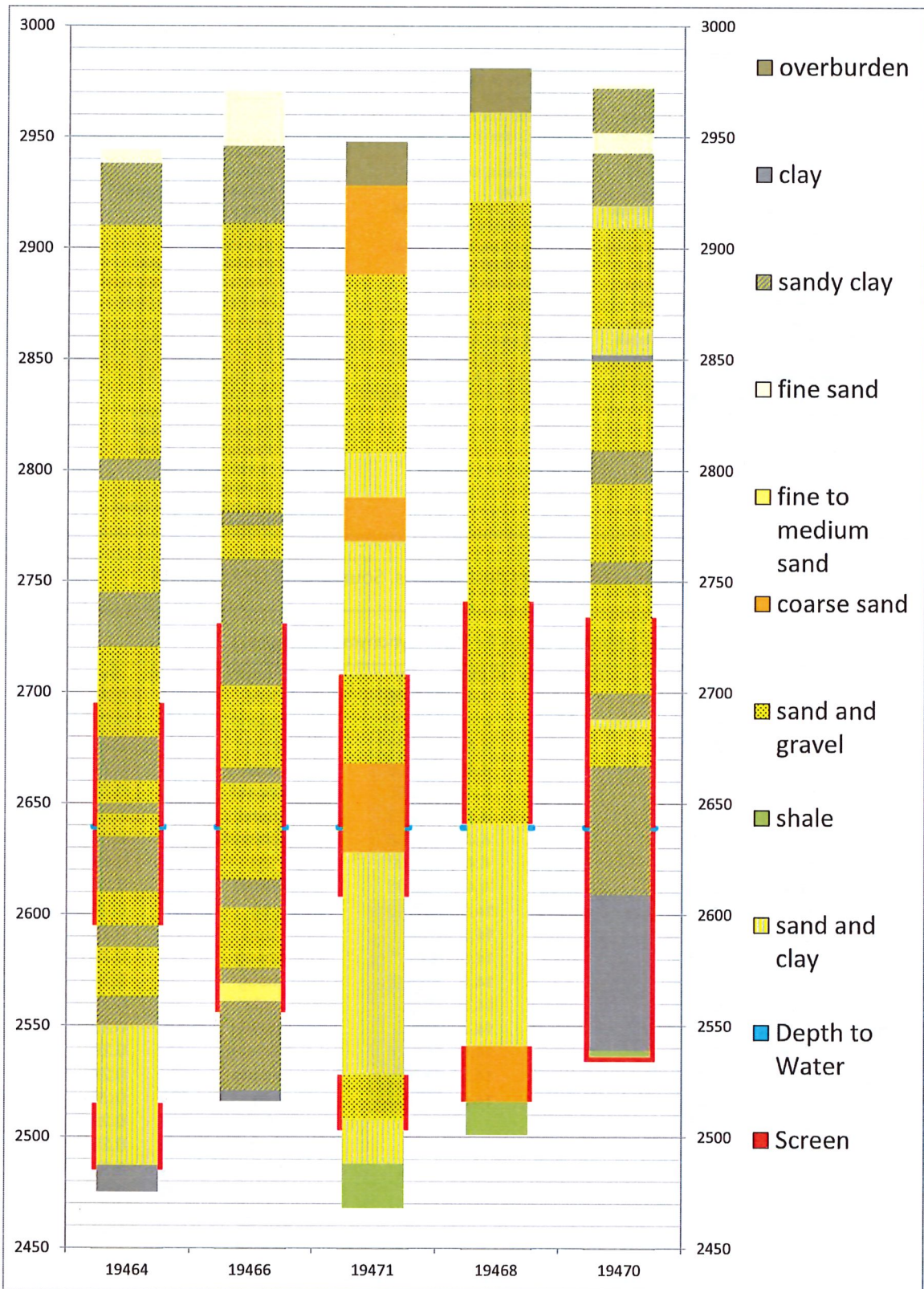


Figure 4: lithology log of KGS Wells on North transect line

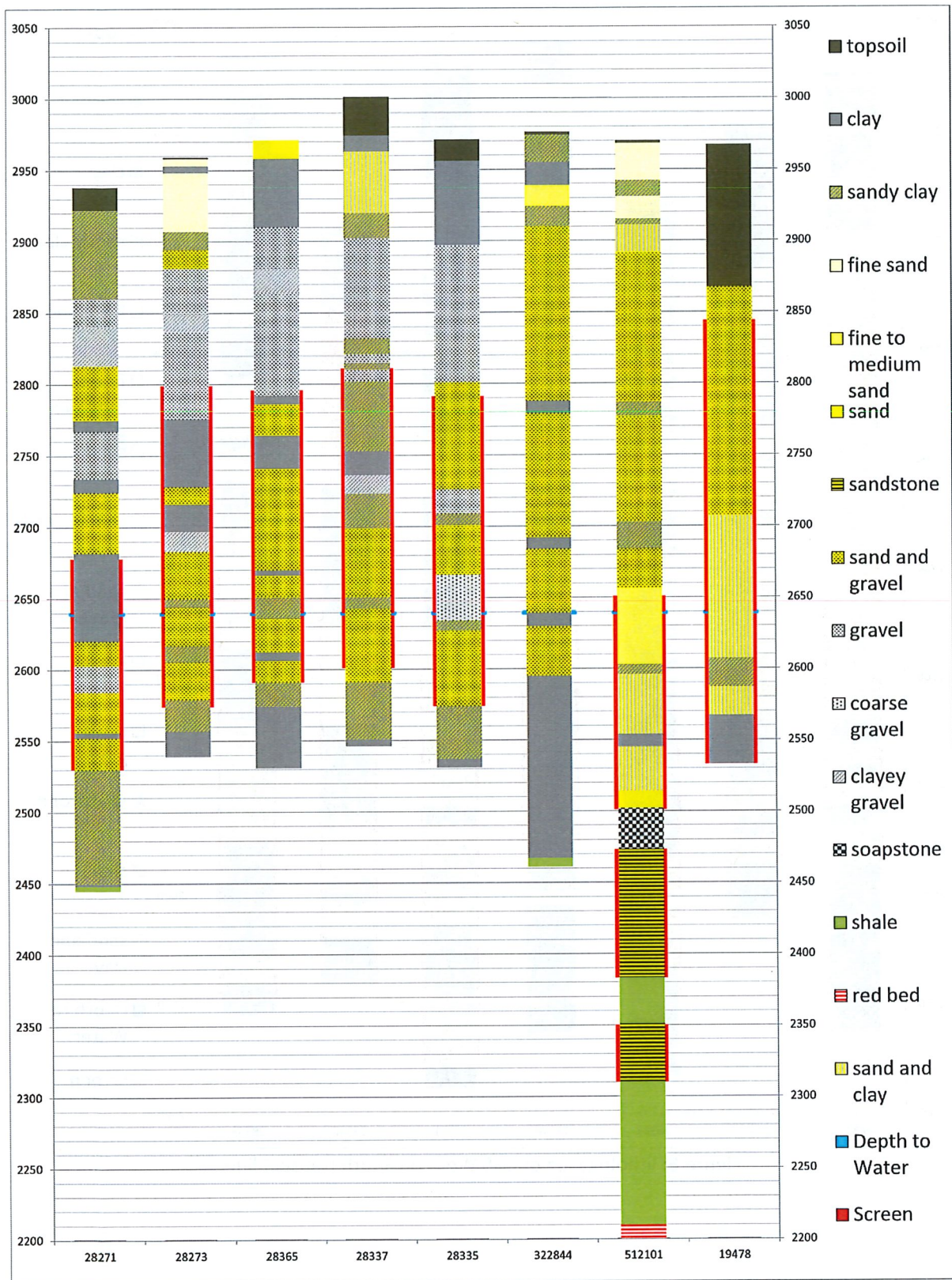


Figure 5: lithology log of KGS Wells on East transect line

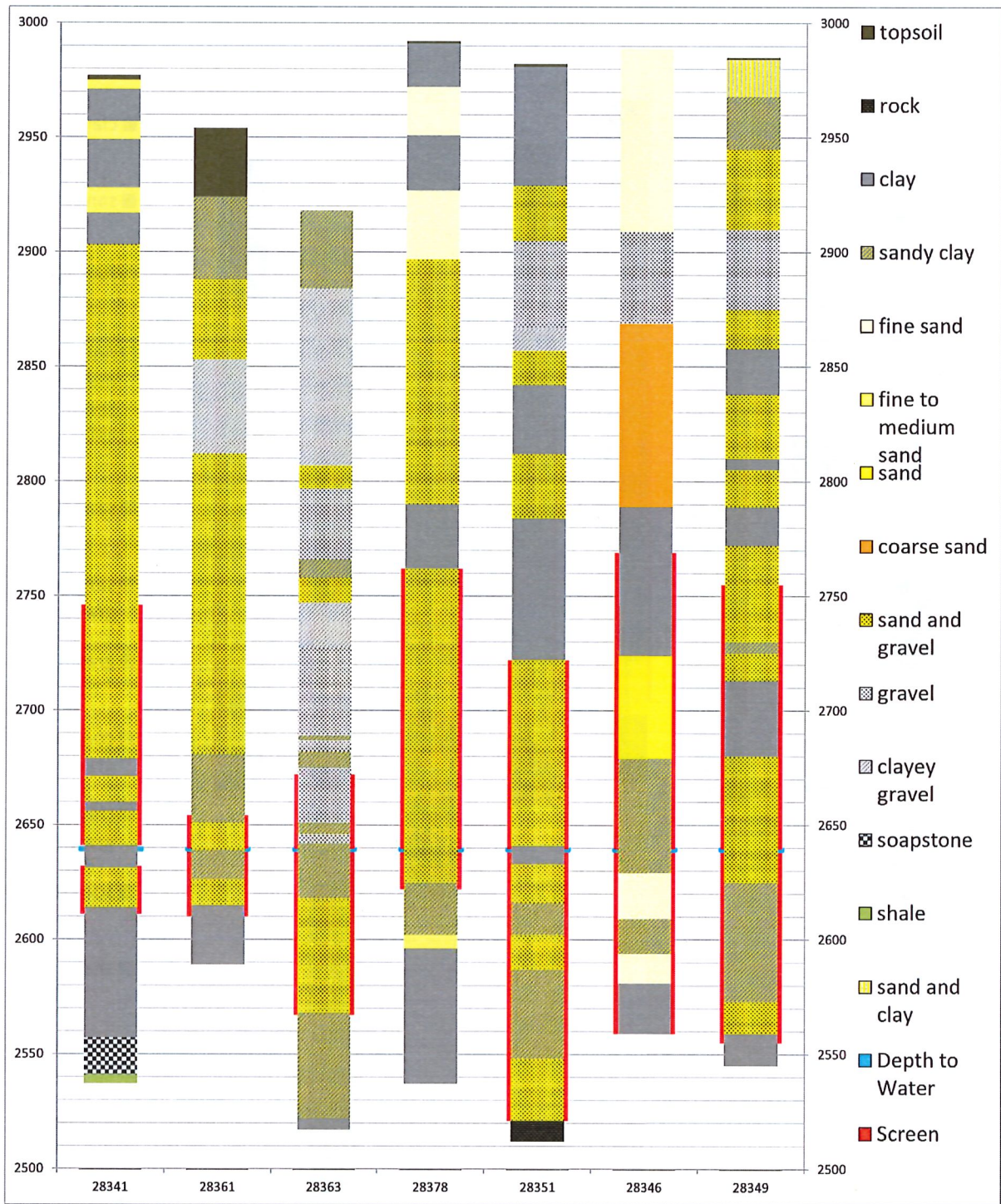


Figure 6: lithology log of KGS Wells on South transect line

Table 1: Lithology, KGS Well ID 19470

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
fine sand				
sandy clay				
fine sand				
sandy clay				
fine to medium sand – clay streak				
fine to medium sand – gravel – loose				
fine to medium sand and gravel – clay streak				
fine medium clay, sand and gravel				
clay				
fine medium coarse sand and gravel				
fine medium coarse sand and gravel – small clay streaks				
sandy clay – gravel streak				
fine medium sand and gravel – loose – 5% clay				
sandy clay				
fine medium coarse sand and gravel – brown rock				
fine medium coarse sand and gravel – loose 5% clay				
brown sandy clay				
fine medium clay sand – loose				
fine medium sand and gravel – 10% clay loose				
brown sandy clay – small gray streak	sc	100	15	66
brown sandy clay – gravel streak	sc, g	80, 20	15	949.8
white gray and blue clay – tight	c	100	70	0.0
yellow gray shale	sh	100	3	0.0
Total Transmissivity:				1015.8

Table 2: Lithology, KGS Well ID 19468

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
overburden and sand and clay				
medium sand and clay loose				
medium sand and clay loose				
coarse sand and gravel loose				
coarse sand and gravel loose				
coarse sand and gravel loose				
coarse sand, gravel and clay streaks. Loose				
coarse sand and gravel loose				
coarse sand and gravel and clay streaks. Loose				
coarse sand, gravel and clay streaks. Loose				
coarse sand, gravel and clay streaks. Loose				
coarse sand and gravel loose				
coarse sand, gravel, clay and rock stks. Loose				
coarse sand, gravel and rock stks. Loose				
coarse sand, gravel and clay streaks. Loose				
coarse sand and gravel loose				
coarse sand, gravel and clay streaks. Loose				
medium sand and clay tight stks.	msnd, c	80, 20	18	907.2
medium sand and clay loose	msnd, c	60, 40	20	756.0
medium sand and clay tight stks.	msnd, c	80, 20	20	1008.0
medium sand and clay loose	msnd, c	60, 40	20	756.0
medium sand and clay loose	msnd, c	60, 40	20	756.0
coarse sand loose	crssnd	100	20	1260.0
coarse sand	crssnd	100	5	315.0
blue shale @ 465	sh	100	15	0.0
Total Transmissivity:				5758.2

Table 3: Lithology, KGS Well ID 19471

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
overburden and sand				
coarse sand loose				
coarse sand loose				
coarse sand and gravel loose				
coarse sand and gravel loose				
coarse sand and gravel loose				
coarse sand, gravel and clay streaks. Loose				
coarse sand and clay streaks. Loose				
coarse sand				
coarse sand and clay loose				
medium sand and clay tight				
coarse sand and clay streaks. Loose				
medium sand, gravel and rock stks. Loose				
coarse sand and gravel loose				
coarse sand loose				
coarse sand loose	crssnd	100	11	693.0
coarse sand and clay streaks. Loose	crssnd, c	80, 20	20	1008.0
medium sand and clay loose	msnd, c	60, 40	20	756.0
medium sand and clay tight	msnd, c	60, 40	20	756.0
medium sand and clay loose	msnd, c	60, 40	20	756.0
medium sand and clay loose	msnd, c	60, 40	20	756.0
coarse sand, gravel and clay tight	crssnd, g, c	50, 30, 20	20	2424.0
fine sand and red and blue clay tight	fsnd, c	60, 40	20	180.0
blue shale	sh	100	20	0.0
Total Transmissivity:				7329.0

Table 4: Lithology, KGS Well ID 19464

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
fine sand				
brown sandy clay				
fine medium sand and gravel - clay streaks				
fine medium coarse sand and gravel and brown rock				
brown sandy clay				
fine medium coarse sand and gravel - small clay streak				
fine medium coarse sand and gravel - 10% clay - loose				
brown sandy clay - gravel streaks				
fine medium coarse sand and gravel - loose				
brown sandy clay and hard streak				
fine medium coarse sand and gravel - loose				
sandy clay - gravel streak				
fine medium coarse sand and gravel - loose				
sandy clay	sc	100	25	110.0
fine medium coarse sand and gravel - loose	snd, g	60, 40	10	1574.0
fine medium coarse sand and gravel - 20% clay - loose	snd, g, c	50, 30, 20	5	606.0
sandy clay - 50% sand and gravel streak	sc, snd, g	50, 25, 25	10	927.0
fine medium coarse sand and gravel	snd, g	60, 40	5	787.0
fine medium coarse sand and gravel - 5% clay - loose	snd, g, c	55, 40, 5	17	2622.3
sandy clay	sc	100	13	57.2
fine medium sand and clay	fmsnd, c	60, 40	45	405.0
fine medium sand - clay streak 20%	fmsnd, c	80, 20	18	216.0
red, white clay - tight	c	100	7	0.0
red and yellow clay	c	100	5	0.0
Total Transmissivity:				7934.1

Table 5: Lithology, KGS Well ID 19466

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
fine sand				
brown sandy clay				
fine medium sand and gravel - clay streak				
fine medium sand and gravel - loose				
sandy clay				
fine medium coarse sand and gravel - loose				
brown sandy clay - gravel streak				
sandy clay with gravel streak and white rock				
fine medium coarse sand and gravel - loose				
fine medium sand and gravel - hard streak at 297-299				
tight sandy clay				
fine medium coarse sand and gravel - loose sand hard streak				
fine medium coarse sand and gravel - loose 10% clay	snd, g, c	50, 40, 10	23	3475.3
sandy clay and gravel streak	sc, g	80, 20	13	823.2
fine medium coarse sand and gravel - loose 10% clay	snd, g, c	50, 40, 10	27	4079.7
sandy clay - sand and gravel streak	cs, snd, g	80, 10, 10	7	278.0
fine medium sand - loose	fmsnd	100	8	120.0
sandy clay - hard sand streak	sc, snd	80, 20	40	644.8
red clay - yellow clay - hard and tight	c	100	5	0.0
Total Transmissivity:				9421.0

Table 6: Lithology, KGS Well ID 19478

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
surface, clay, sand and gravel	Above water surface			
coarse sand and gravel (productive sand)				
medium to coarse sand and gravel with clay streak				
coarse sand and gravel (productive sand)				
coarse sand with light colored clay				
medium sand / sandy clay with fine sand	msnd, sc, fsnd	50, 30, 20	12	429.8
medium to coarse sand with clay streaks	mcrssnd, c	70, 30	20	882.0
sandy clay with fine sand streaks	sc, fsnd	80, 20	20	130.4
fine sand with brown clay	fsnd, c	70, 30	20	210.0
white and brown sticky clay	c	100	20	0.0
brown sticky clay	c	100	14	0.0
Total Transmissivity:				1652.2

Table 7: Lithology, KGS Well ID 512101

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil				
fine sand				
brown sandy clay with few fine sand strips				
fine sand				
brown sandy clay				
fine sand with many clay ledges				
fine to medium coarse sand; small, medium, large gravel				
brown sandy clay with few sand strips				
fine to medium coarse sand and small gravel				
brown sandy clay				
sand, fine to medium coarse, small gravel, with few clay ledges				
sand, fine to medium	fmsnd	100	36	540.0
brown sandy clay	sc	100	7	30.8
fine sand with few clay ledges	fsnd, c	90, 10	22	297.0
fine sand with lime rock and clay ledges	fsnd, ca, c	60, 20, 20	20	180.0
brown clay	c	100	9	0.0
fine sand with few clay stringers	fsnd, c	90, 10	31	418.5
sand, fine to medium coarse	snd	100	12	756.0
yellow and gray soapstone	ca	100	29	0.0
sandstone with few brown rock	ds, r	90, 10	38	150.5
sandstone with few soapstone strips	ds, ca	90, 10	24	95.0
sandstone with couple shale ledges	ds, sh	90, 10	28	110.9
shale	sh	100	32	0.0
sandstone with few shale strips	ds, sh	90, 10	21	83.2
sandstone	ds	100	20	88.0
shale	sh	100	100	0.0
red bred	rb	100	10	0.0
Total Transmissivity:				2749.9

Table 8: Lithology, KGS Well ID 322844

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil				
brown sandy clay				
brown clay				
fine to medium sand				
brown sandy clay				
fine to medium sand and gravel - some coarse				
fine to medium sand and gravel - 10% clay				
brown clay				
fine to medium sand and gravel				
fine to medium sand and gravel - 10% clay				
fine to medium sand and gravel with clay streaks				
brown clay				
fine to medium sand and gravel				
brown clay	c	100	9	0.0
fine to medium sand and gravel - 10% clay	fmsnd, g, c	50, 40, 10	21	2669.1
fine to medium sand and gravel with clay streaks	fmsnd, g, c	50, 40, 10	14	1779.4
brown clay	c	100	95	0.0
brown clay with brown rock streaks 40%	c, r	100	16	0.0
brown and yellow clay - tight	c	100	8	0.0
yellow clay	c	100	9	0.0
shale	sh	100	6	0.0
Total Transmissivity:				4448.5

Table 9: Lithology, KGS Well ID 28341

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil				
sand fine to med				
brown clay				
sand fine to med				
brown clay				
sand fine to med				
brown clay				
sand fine to med coarse, small to large gravel. Drilled rough. Very few clay sts with a few cobblestones. Used water				
sand fine to med coarse, small to med with a few large gravel. Very few clay sts. Loose - used water				
sand fine to med coarse, small a few med size gravel. Loose - used water				
sand fine to med coarse, small to med with a few large gravel. Very few clay sts. Loose - used water				
brown clay and limerock ledges				
sand fine to med coarse, small to very few med size gravel. Loose - used water				
brown clay				
sand fine to med coarse and a few small gravel. Loose - used water				
brown clay	c	100	8	0.0
sand fine to med coarse, a few small gravel. Loose used water	snd, g	80, 20	17	1873.4
brown clay	c	100	7	0.0
brown clay with a few limerock sts	c, ca	90, 10	50	0.0
yellow clay and soapstone	c, ca	60, 40	16	0.0
weather shale - hard	sh	100	4	0.0
Total Transmissivity:				1873.4

Table 10: Lithology, KGS Well ID 28335

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil fine sand			Above water surface	
brown clay				
med. coarse gravel (loose)				
med. coarse gravel (loose)				
med. coarse gravel (loose)				
fine to medium sand and gravel streak of med. coarse gravel (loose)				
med. coarse gravel (loose)				
brown sandy clay 15% med. coarse gravel (loose)				
fine to medium sand and gravel 15% clay				
fine to medium sand and gravel streak of med. coarse gravel (loose)				
med. coarse gravel (loose)				
brown sandy clay	sc	100	7	30.8
fine to medium sand and gravel	fmsnd, g	60, 40	21	2700.6
fine to medium sand and gravel (loose)	fmsnd, g	60, 40	17	2186.2
fine to medium sand and gravel streak of med. coarse gravel (loose)	fmsnd, g	50, 50	15	2355
brown sandy clay white rock mixed	sc, r	60, 40	28	73.9
brown sandy clay brown rock	sc, r	60, 40	9	23.8
yellow clay brown rock hard	c	100	6	0.0
Total Transmissivity:				8865.3

Table 11: Lithology, KGS Well ID 28337

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil fine sand				
brown clay				
fine sand clay mixed				
brown sandy clay				
med. coarse gravel (loose)				
med. coarse gravel hard streak				
med. coarse gravel				
brown sandy clay				
med. coarse gravel				
brown sandy clay				
med. coarse gravel				
brown sandy clay small coarse gravel streak				
brown sandy clay				
blue clay				
blue clay small gravel streak				
brown sandy clay				
fine to medium sand and gravel streak of med. coarse gravel (tight)				
fine to medium sand and gravel streak of med. coarse gravel (loose)				
brown sandy clay				
			Above water surface	
fine to medium sand and gravel	fmsnd, g	60, 40	3	385.8
fine to medium sand and gravel (loose)	fmsnd, g	60, 40	21	2700.6
fine to medium sand and gravel 10% clay	fmsnd, g, c	50, 40, 10	24	3050.4
brown sandy clay	sc	100	40	176.0
brown yellow clay hard	c	100	5	0.0
Total Transmissivity:				6312.8

Table 12: Lithology, KGS Well ID 28271

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil fine sand				
brown sandy clay				
med. coarse gravel (loose)				
med. coarse gravel 10% clay				
fine to medium sand and gravel streak of med. coarse gravel (loose)				
brown clay				
med. coarse gravel				
brown clay sticky				
fine to medium sand and gravel (loose)				
fine to medium sand and gravel clay streak hard				
blue clay hard streak	c	100	19	0.0
fine to medium sand and gravel small hard streak	fmsnd, g	60, 40	17	2186.2
med. coarse gravel small hard streak	mcrsg	100	19	5681.0
fine to medium sand and gravel hard loose streak	fmsnd, g	60, 40	28	3600.8
brown and white clay hard	c	100	4	0.0
fine to medium sand and gravel	fmsnd, g	60, 40	22	2829.2
brown sandy clay	sc	100	80	352.0
yellow clay hard	c	100	2	0.0
shale	sh	100	3	0.0
			Above water surface	
Total Transmissivity:				14659.2

Table 13: Lithology, KGS Well ID 28273

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil				
fine sand				
brown clay				
fine sand				
brown sandy clay				
fine to medium sand and gravel				
med. coarse gravel				
med. coarse gravel 10% clay				
med. coarse gravel				
gray white clay				
blue clay hard streak				
brown clay				
fine to medium sand and gravel hard streak 15% clay				
brown clay				
gray blue clay small streak of gravel				
fine to medium sand and gravel streak of med. coarse and hard streak				
brown sandy clay hard				
fine to medium sand and gravel (loose)	fmsnd, g	60, 40	22	2829.2
brown sandy clay hard	sc	100	12	52.8
fine to medium sand and gravel	fmsnd, g	60, 40	26	3343.6
brown sandy clay	sc	100	10	44
brown sandy clay white rock mixed	sc, r	70, 30	12	37.0
yellow clay brown rock hard	c	100	18	0.0
Total Transmissivity:				6306.6

Above water surface

Table 14: Lithology, KGS Well ID 28361

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil fine				
fine sand clay mixed				
fine to medium sand and gravel (loose)				
fine to medium sand and gravel 10% clay (loose)				
med. coarse gravel 10% clay hard streak				
fine to medium sand and gravel (loose)				
fine to medium sand and gravel streak of med. coarse gravel (loose)				
fine to medium sand and gravel streak of med. coarse gravel 10% clay				
brown sandy clay				
fine to medium sand and gravel (loose)				
brown sandy clay	sc	100	13	57.2
fine to medium sand and gravel (loose)	fmsnd, g	60, 40	11	1414.6
brown and yellow clay	c	100	26	0.0
Total Transmissivity:				1471.8

Table 15: Lithology, KGS Well ID 28363

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
brown sandy clay				
brown sandy clay 15% gravel				
med. coarse gravel 10% clay (loose)				
fine to medium sand and gravel (loose)				
med. coarse gravel				
brown sandy clay hard				
fine to medium sand and gravel streak of med. coarse gravel (loose)				
med. coarse gravel 10% clay				
med. coarse gravel				
brown sandy clay				
med. coarse gravel (loose)				
brown sandy clay hard				
med. coarse gravel				
brown sandy clay				
med. coarse gravel				
brown sandy clay	sc	100	21	92.4
fine to medium sand and gravel (loose)	fmsnd, g	60, 40	50	6430.0
brown sandy clay	sc	100	46	202.4
brown yellow clay	c	100	5	0.0
Total Transmissivity:				6724.8

Table 16: Lithology, KGS Well ID 28365

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
sand				
brown clay				
med. to coarse gravel (loose)				
med. to coarse gravel 20% clay (loose)				
med. to coarse gravel (loose)				
brown clay				
fine to medium sand and gravel 10% clay (loose)				
brown clay (hard streaks)				
fine to medium sand and gravel streaks of coarse gravel 10% clay (loose)				
brown clay				
fine to medium sand and gravel 10% clay (loose) (small hard streaks)				
brown sandy clay	sc	100	3	13.2
fine to medium sand and gravel 10% clay (loose)	fmsnd, g, c	50, 40, 10	24	3050.4
brown clay	c	100	6	0.0
fine to medium sand and gravel 10% clay (loose)	fmsnd, g, c	50, 40, 10	15	1906.5
brown sandy clay and fine sand (loose)	sc, fsnd	60, 40	17	146.88
brown and gray clay (tight)	c	100	32	0.0
brown gray and yellow clay with brown rock (hard)	c	100	11	0.0
Total Transmissivity:				5117.0

Table 17: Lithology, KGS Well ID 28378

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil				
brown clay				
fine sand				
brown clay				
fine sand				
fine to medium sand and gravel (loose)(some coarse gravel)				
brown clay				
fine to medium sand and gravel (loose)				
fine to medium sand and gravel 35% clay (loose)				
fine to medium sand and gravel 10% clay (loose)	fmsnd, g, c	50, 40, 10	14	1779.4
brown sandy clay	sc	100	23	101.2
fine to medium sand	fmsnd	100	6	90.0
brown clay (tight)	c	100	34	0.0
brown gray and yellow clay with brown rock (hard)	c	100	21	0.0
yellow and gray clay with brown rock and shale (hard)	c	100	4	0.0
Total Transmissivity:				1970.6

Table 18: Lithology, KGS Well ID 28351

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil				
brown clay				
fine to medium sand and gravel (loose)				
med. to coarse gravel (loose)				
brown clay 40% gravel (tight)				
fine to medium sand and gravel 30% clay (loose)				
brown clay				
fine to medium sand and gravel 15% clay (loose)				
fine to medium sand and gravel 10% clay (loose)				
brown clay				
fine to medium sand and gravel 10% clay (loose)				
Above water surface				
brown clay	c	100	16	0.0
fine to medium sand and gravel 10% clay (loose)	fmsnd, g, c	50, 40, 10	17	2160.7
brown sandy clay	sc	100	14	61.6
fine to medium sand and gravel 20% clay (loose)	fmsnd, g, c	50, 30, 20	15	1458.0
brown sandy clay	sc	100	39	171.6
fine to medium sand and gravel (loose)	fmsnd, g	60, 40	27	3472.2
brown rock with gray and yellow clay (hard)	r	100	9	0.0
Total Transmissivity:				7324.1

Table 19: Lithology, KGS Well ID 28346

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
fine sand	Above water surface			
gravel				
large sand				
clay				
medium sand				
sandy clay	sc	100	10	44.0
fine sand	fsnd	100	20	300.0
sandy clay	sc	100	15	66.0
fine sand	fsnd	100	13	195.0
clay	c	100	22	0.0
Total Transmissivity:				605.0

Table 20: Lithology, KGS Well ID 28349

Driller's Description	Synonymy Codes	Percentages	Saturated Thickness (Feet)	Transmissivity (feet ² /day)
top soil				
sand and clay				
brown sandy clay				
fine to medium sand and gravel (loose)				
med. to coarse gravel (loose)				
fine to medium sand and gravel (loose)				
blue clay				
fine to medium sand and gravel 10% clay (loose)				
brown clay				
fine to medium sand and gravel 10% clay (loose)				
blue clay				
fine to medium sand and gravel (loose)				
brown sandy clay 30% gravel (loose)				
fine to medium sand and gravel (loose)				
brown clay				
fine to medium sand and gravel (loose)				
brown sandy clay	fmsnd, g	60, 40	14	1800.4
brown sandy clay	sc	100	30	132.0
brown sandy clay streaks of gravel 35% (loose)	sc, g	65, 35	22	2365.2
fine to medium sand and gravel 10% clay (loose)	fmsnd, g, c	50, 40, 10	14	1799.4
brown gray and yellow clay (hard)	c	100	14	0.0
Total Transmissivity:				6077.0

Table 21: Rates and Quantities of each pumping well

File No.	Point of Diversion	Proposed Quantity (AF)	Average Historic Quantity (AF)	Authorized Rate (GPM)	FRI'S Recent Recorded Rate (GPM)	Proposed Reduced Rate (GPM)
36369	5328	210	160.4	920	450	430
36333	13587	210	137.3	855	350	334
36324	36021	210	174.0	805	350	334
22578-D1 ID2	2913	172	77.4	1000	175	167
22578-D1 ID7	85154	222	200.8	1000	650	621
34113	15599	240	149.8	800	400	382
34112	749	240	184.3	760	525	501
6911	12582	575	291.3	1450	550	525
30820	16552	166	177.5	1000	300	286
30819 ID1	42320	166	130.8	815	200	191
30818 ID3	23956	160	133.7	870	275	262
30818 ID1	45175	235	180.1	770	400	382
30818 ID2	13042	160	158.6	900	200	191
30817 ID2	40326	160	114.5	750	200	191
30819 ID3	38087	166	122.9	820	175	167
36370	47446	270	202.6	925	550	525
22578-D1 ID5	67182	292	167.9	1000	375	358
22578-D1 ID8	86155	322	193.6	1000	700	669
11552	51069	330	232.3	695	650	621
34111	16503	275	215.9	695	650	621
36388	10638	274	138.5	740	600	573
30819 ID3	6403	286	206.1	760	525	501
30819 ID4	33263	257	210.9	625	500	477
30819 ID2	26416	286	215.4	795	600	573
30818 ID4	30692	310	194.9	775	600	573
30817 ID4	19218	285	246.1	4000	600	573

Table 22: Total historic and proposed Theis drawdown on nearby wells from all pumping wells; $T = 5,344 \text{ ft}^2/\text{day}$, $S = 0.0009$; Proposed Pumping Rate

Nearby Well File Nos.	Total Baseline Drawdown (FT)	Total Proposed Drawdown (FT)	Net Drawdown (FT)	Net Drawdown (%ST)
25460 ID5	114.2	192.5	78.3	80.0%
25460 ID6	120.1	205.4	85.4	85.0%

Table 23: Total historic and proposed Theis drawdown on nearby wells from all pumping wells; $T = 5,344 \text{ ft}^2/\text{day}$, $S = 0.0009$; Limited Pumping Rate

Nearby Well File Nos.	Total Baseline Drawdown (FT)	Total Proposed Drawdown (FT)	Net Drawdown (FT)	Net Drawdown (%ST)
36412	114.2	134.3	20.1	20.0%
36390	120.1	140.0	19.9	19.9%