

June 14, 2017

Ms. Jennifer Sherman  
MidFirst Bank  
101 Cook St  
Denver, Colorado 80206

**Re: Review of the Hunt Estate East Ranch Groundwater Rights**

Dear Ms. Sherman,

As requested, Deere & Ault Consultants, Inc. (“D&A”) reviewed the availability of decreed and undecreed groundwater resources included in the East Ranch portion of the Hunt Estate. We understand that on June 17, 2017, the East Ranch will be auctioned for sale, along with other property owned by the Hunt Estate. The East Ranch consists of six parcels, referred to as Parcels 13 through 18 in the auction property information packets provided for the auction. The East Ranch is located in the East ½ of the East ½ of Section 20, Section 21, Section 22, and the West ½ of Section 27, all in Township 6 South, Range 63 West of the Sixth Principal Meridian in Elbert County, Colorado. **Figures 1 and 2** show the location of the East Ranch Parcels. Parcels 13 through 18 consist of a total of 1,746 acres of land. In addition to the land, the groundwater rights for Parcels 13 through 18 are to be sold at the auction. D&A reviewed available ground water and well data for Parcels 13 through 18 to quantify the potential amount of groundwater available to the property.

**1.0 EXISTING WATER RIGHTS**

Several wells are included with Parcels 13 through 18. The property information packets mention three wells, which reside in Parcels 13, 15, and 18. Review of Colorado Division of Water Resources records, however, shows a total of nine wells. Of the nine wells, six have been constructed and three have been permitted but not yet constructed. All of the wells are small capacity for domestic use, livestock use, or both. From a water rights standpoint, the small capacity domestic and livestock wells do not have any significant value separate from the land and serve mainly as an amenity to the property itself. **Table 1** provides a summary of information on the nine wells, plus a prior well which was replaced. **Figure 2** shows the location of the wells on the East Ranch.

Kiowa Creek runs through Parcels 14, 15, and 16. There are no surface water rights for use on Parcels 13 through 18. Aerial imagery shows small ponds on Parcels 13, 14, and 16, however, there are no storage rights for the small ponds on any of the Parcels.

## **2.0 DESIGNATED BASIN, NON-TRIBUTARY, NOT NON-TRIBUTARY RIGHTS**

All of the East Ranch lies within the boundary of the Kiowa-Bijou Designated Basin and therefore all groundwater beneath the East Ranch is considered Designated Groundwater. Designated Groundwater, which includes both the alluvial aquifer and any underlying bedrock aquifers, is under the jurisdiction of the Colorado Ground Water Commission. The East Ranch is located within the Denver Basin, which includes portions of the Lower Dawson, Denver, Upper Arapahoe, and Laramie Fox-Hills bedrock aquifers. Subject to some restrictions, landowners may appropriate groundwater out of the underlying bedrock aquifers in the Denver Basin by applying for a large capacity well permit through the Colorado Groundwater Commission.

Designated Groundwater within the Denver Basin is treated similarly to Denver Basin groundwater that is outside of any Designated Basin. Groundwater in the Denver Basin is either considered “nontributary” or “not nontributary.” Colorado Revised Statutes (“C.R.S.”) 37-90-103(10.5) defines nontributary as groundwater that “the withdrawal of which will not, within one hundred years of continuous withdrawal, deplete the flow of a natural stream... at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal.” According to C.R.S. 37-90-103(10.7), not nontributary water will deplete the flow of the natural stream “at an annual rate of greater than one-tenth of one percent of the annual rate of withdrawal” over the course of 100 years of continual withdrawal. Another key distinction is that 98 percent of the rate of withdrawal of nontributary water may be consumed, while not nontributary water requires replacement of 4 percent of the rate of withdrawal (Rules and Regulations for the Management and Control of Designated Groundwater, 2 CCR 410-1).

Although Parcels 13 through 18 are within the Kiowa-Bijou Designated Basin, they are not included within the boundaries of the North Kiowa Bijou Management District. Groundwater management districts such as the North Kiowa Bijou Management District often exist in Designated Basins and are responsible for all matters relating to wells, except for well permitting, which is under the purview of the State Ground Water Commission. Groundwater management districts typically impose additional restrictions on well users within the district. Since Parcels 13 through 18 are outside the North Kiowa Bijou Management District, they are not subject to any additional restrictions which groundwater management districts typically require.

## **3.0 ALLUVIAL AQUIFER**

The Kiowa Creek alluvium, which is tributary to the South Platte River, underlies portions of the East Ranch. Normally, in a Designated Basin the landowner could get a permit to pump alluvial groundwater. For the East Ranch, however, there are severe legal and physical limitations which make appropriation of alluvial groundwater infeasible. According to Rule 5.2.4.2 of the Rules and Regulations for the Management and Control of Designated Groundwater by the State of Colorado Ground Water Commission, “the Alluvial Aquifer within the Kiowa-Bijou Designated Ground Water Basin is determined to be overappropriated and, therefore, no new large capacity

well permits shall be granted in the Alluvial Aquifer unless a replacement plan is approved by the Commission.”

If a replacement plan were obtained, the physical availability of water is limited in the sand and gravel alluvium of Kiowa Creek in the vicinity of Parcels 13 through 18. Geologic logs from permits for various wells drilled on the East Ranch show shale confining layers starting at depths of 19 to 80 feet below the surface, which suggests a shallow alluvial aquifer. In addition, permitting documents for the livestock well with Permit No. 185212 show a driller noting there was no water in the alluvium while drilling to the underlying Denver formation. If the Colorado Ground Water Commission were to grant permission to pump water out of the alluvium, it is likely that very little water would be available.

#### **4.0 BEDROCK AQUIFERS**

Nontributary and not nontributary groundwater in the bedrock aquifers of the Denver Basin is portioned based on land ownership. According to Rule 5.3.2.3, of the Rules and Regulations for the Management and Control of Designated Groundwater by the State of Colorado Ground Water Commission, the average annual withdrawal for Denver Basin Bedrock Aquifers is given by the formula:

$$Q = \frac{AbS_y}{100}$$

where

- $Q$  = average annual withdrawal [acre-feet]
- $A$  = land ownership [acres]
- $b$  = aquifer thickness [feet]
- $S_y$  = specific yield [-]
- 100 = number of years water can be withdrawn from aquifer.

The Colorado Division of Water Resources website provides an Aquifer Determination Tool for Denver Basin Aquifers. D&A used the tool to estimate the average annual withdrawal allowance for Parcels 13 through 18, per Rule 5.3.2.3.

**Table 2** summarizes the average annual withdrawal estimates for each Parcel. In total, we estimate the average annual quantity of available groundwater underlying Parcels 13 through 18 to be 1,087 acre-feet for nontributary groundwater from the Lower Dawson, Upper Arapahoe, and Laramie-Fox Hills bedrock aquifers and 800 acre-feet per year of not nontributary water from the Denver bedrock aquifer. We therefore estimate the total annual availability of nontributary and not nontributary groundwater to be 1,887 acre-feet per year. The nontributary and not nontributary groundwater water underlying Parcels 13 through 18 has not yet been decreed. Appropriation of the ground water rights would require approval by the Colorado Groundwater Commission.

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Since the existing wells drilled into the Denver bedrock aquifer are for small capacity wells, and no well installation reports are available for the remaining bedrock aquifers, we do not have good information on potential well yields that could be obtained. Pump tests for the small capacity wells in the Denver bedrock aquifer showed pumping rates between 6 and 15 gallons per minute, which would be inadequate to pump the Denver aquifer water underlying the subject parcels on the East Ranch. The availability of groundwater from the Lower Dawson aquifer is only 0.3 acre-feet per year and drilling a well to access such a small amount would not be feasible.

## **5.0 CONCLUSIONS**

We estimate approximately 1,087 acre-feet per year of nontributary groundwater and 800 acre-feet per year of not nontributary groundwater could be available for extraction from the East Ranch Parcels 13 through 18. The total quantity of nontributary and not nontributary groundwater would be approximately 1,887 acre-feet per year. The remaining ground water rights for existing wells on the East Ranch likely have no value separate from the land.

If you have any questions regarding this report, please do not hesitate to call.

Sincerely,

DEERE & AULT CONSULTANTS, INC.



Eric T. Peterson  
Water Resources Engineer



Daniel V. Ault, P.E.  
President

cc: O.J. Pratt

**Table 1. Information from Existing Well Permits on Hunt East Ranch**

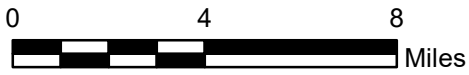
Parcel	Owner	Permit No	Aquifer	Use	Surface Water Level (ft)	Well Depth (ft)	Flow Rate (gpm)	Notes
15	Hunt Rick	86793	Alluvium	Stock	37	75	16	Exempt well.
	Hunt Rick	94543	Unnamed	Stock				Permitted but not constructed.
	Hunt Rick	94544	Denver	Stock				Permitted but not constructed.
18	Hunt Rick	167324	Denver	Domestic	85	155, 140	11, 15	Originally Permit No. 92328, multiple pump tests on original well, which was abandoned in 1992. Re-permitted in 1995, but unknown if constructed.
13	Hunt Rick	170843	Denver	Stock, Exempt	95	200	7	
14	Hunt Rick	170844	Denver	Stock	110	200	7	Originally Permit No. 94539
16	Hunt Rick	185212	Denver	Stock, Exempt	222	540	6, 7	Two pump tests. Replacement for Permit No. 170844.
14	Hunt Rick	192607	Denver	Domestic, Stock	100	560	10	
14	Hunt Family LLC	224676	Laramie-Fox Hills	Domestic, Stock				Converted oil and gas well. No construction report available.
15	Anderson Harry G	264685	Alluvium	Stock	40	75	8	Originally Permit No. 11

**Table 2. Average Annual Groundwater Availability for Bedrock Aquifers on Hunt East Ranch**

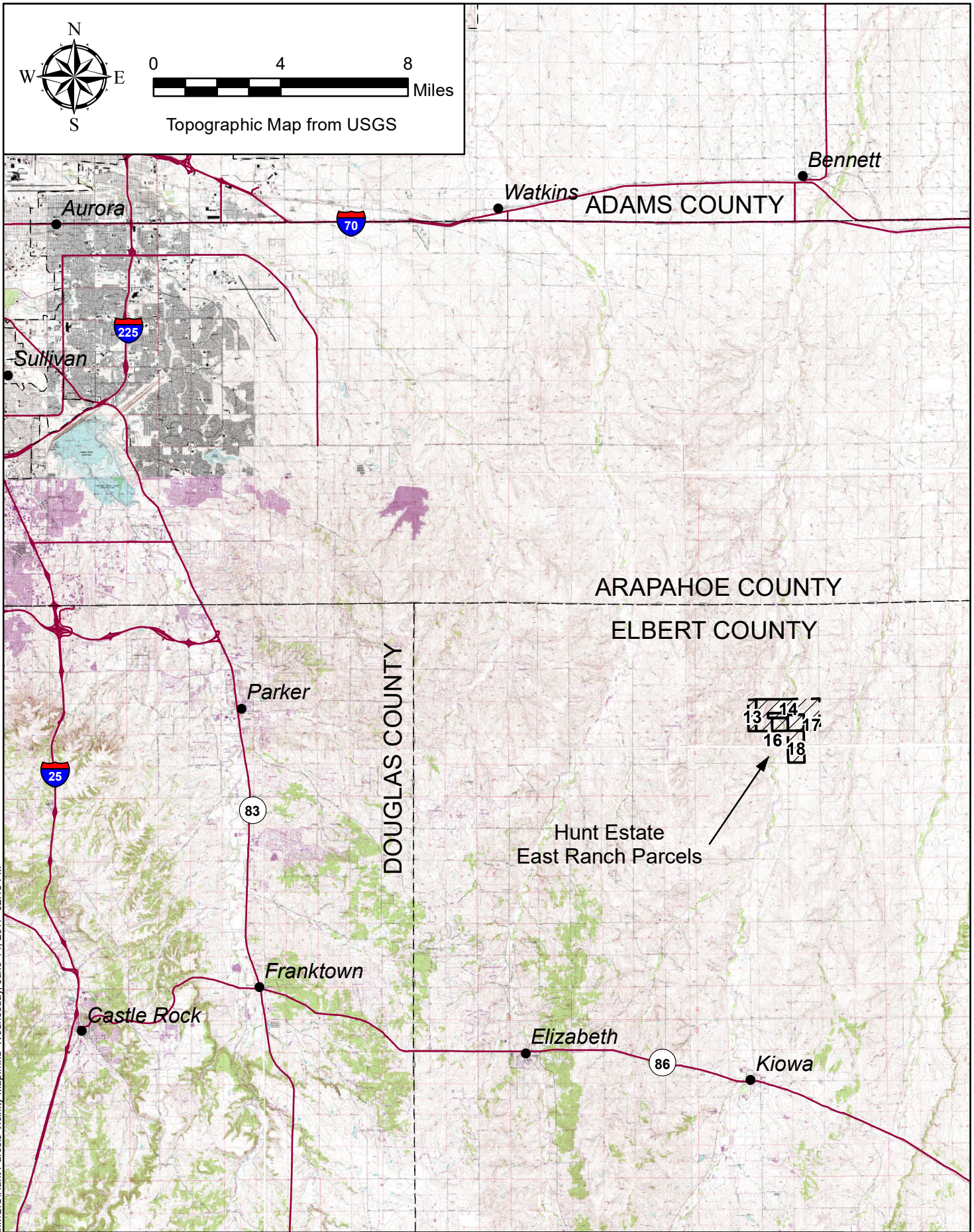
(acre-feet)

Aquifer		Parcel 13	Parcel 14	Parcel 15	Parcel 16	Parcel 17	Parcel 18	Total
Lower Dawson	Nontributary	0.9						0.9
Denver	Not Nontributary	75.8	415.9	27.9	66.0	73.0	141.7	800.3
Upper Arapahoe	Nontributary	68.8	380.9	25.0	57.7	64.5	114.5	711.4
Laramie-Fox Hills	Nontributary	34.2	194.5	12.7	30.6	34.0	69.0	375.0
Total		179.7	991.3	65.6	154.3	171.5	325.2	1,887.6

Notes: •CDSS Aquifer Determination Tool was used.



Topographic Map from USGS



U:\0705 Mid First Bank\GIS\Hunt Parcels Vicinity Map.mxd Wednesday, June 14, 2017 02:15 PM

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**HUNT ESTATE EAST RANCH PARCELS**  
Map of the Vicinity of the East Ranch

FIGURE NO.

**1**

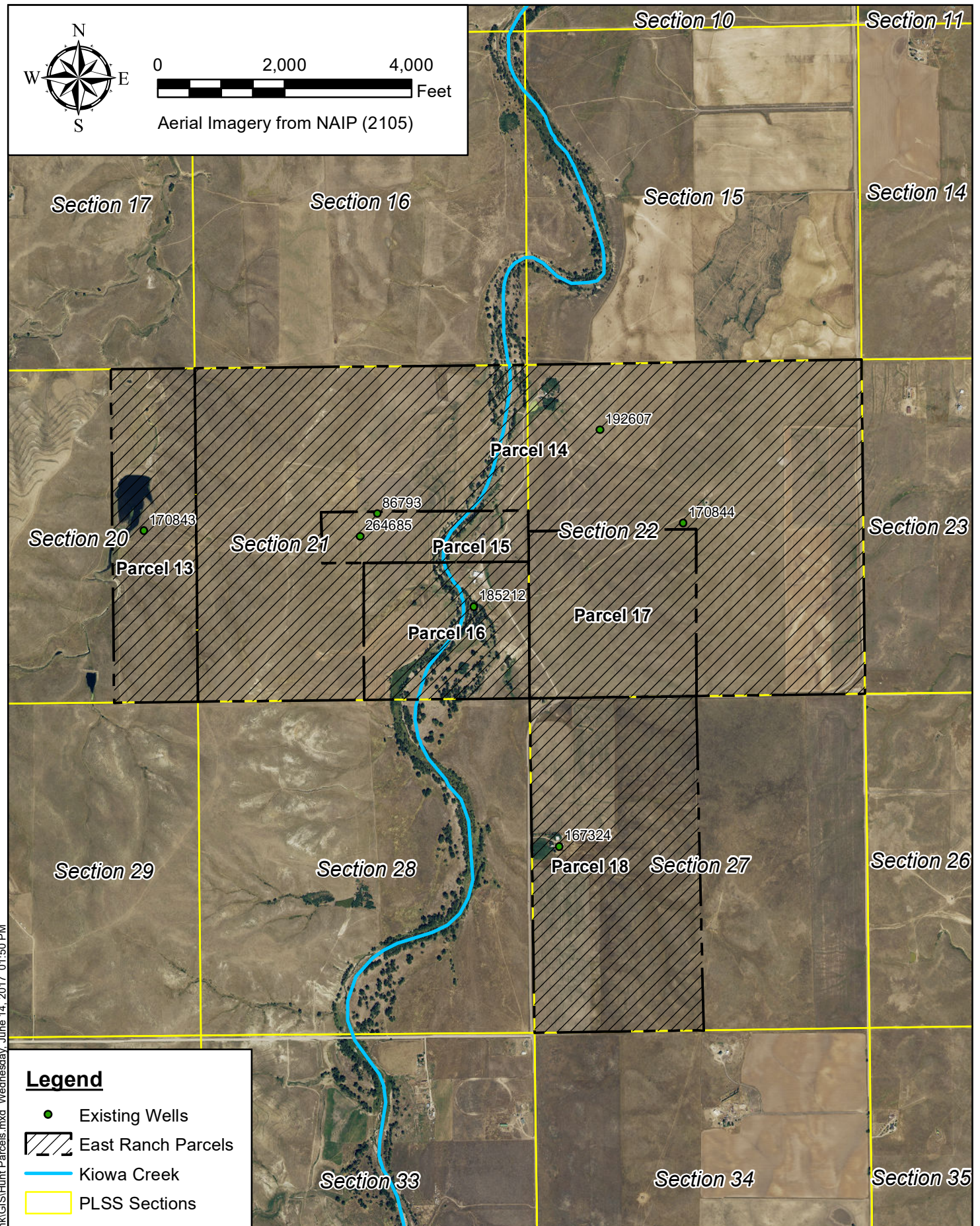
JOB NO: 0705.001.00

SCALE: 1 inch = 4 miles



0 2,000 4,000 Feet

Aerial Imagery from NAIP (2105)



**Legend**

- Existing Wells
- East Ranch Parcels
- Kiowa Creek
- PLSS Sections

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**HUNT ESTATE EAST RANCH PARCELS**  
Well Locations on the East Ranch

FIGURE NO.

**2**

JOB NO: 0705.001.00

SCALE: 1 inch=2,000 feet