

# AGENDA

## RILEY COUNTY PLANNING BOARD/ BOARD OF ZONING APPEALS

Monday, December 14, 2015  
7:30 p.m.

Commission Meeting Room  
Courthouse Plaza East

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*(Procedure: Open joint meeting of the Riley County Planning Board/Board of Zoning Appeals.)*

### **I. OPEN PUBLIC COMMENTS**

### **II. CONSENT AGENDA**

1. Consider the minutes of the November 9, 2015 meeting.
2. Consider the Report of Fees for the month of November 2015.
3. Board of County Commissioners of Riley County, Kansas will present Certificate of Appreciation to Julie Henton – Monday, December 21, 2015 @ 9:30 a.m.
4. Incoming board member – John Osarczuk

*(Procedure: Adjourn the joint meeting of the Riley County Planning Board/Board of Zoning Appeals and due to no agenda items for the Board of Zoning Appeals, convene as the Riley County Planning Board.)*

### **III. GENERAL AGENDA - RILEY COUNTY BOARD OF ZONING APPEALS**

1. No agenda items.

### **IV. GENERAL AGENDA - RILEY COUNTY PLANNING BOARD**

1. A public hearing at the request of D&T Investments, LLC - Tom Abbott Member, and petitioner, and D&T Investments, LLC, owner, to **rezone** a tract of land from "AG" (Agricultural District) & "SF-4" (Single Family Residential) to "R-PUD" (Residential Planned Unit Development) **and plat** the aforementioned tract of land into three (3) lots, all in Wildcat Township, Section 36, Township 9 South, Range 6 East, in Riley County, Kansas. **ACTION NEEDED: Take item from the Table and conduct a public hearing to recommend approval/denial of the rezonings to the Board of County Commissioners and approve/deny the Concurrent Plat of Perry Addition.**
2. A public hearing at the request of Russell M. Simons, petitioner, and Russell M. & Karla Simons, owners, to **vacate** and **rezone** a portion of Lot 1, Simons Subdivision, from "SF-5" (Single Family Residential) to "AG" (Agricultural District) **and replat** the remainder of Lot 1 into two (2) lots all in **MADISON TOWNSHIP**, Section 35, Township 8 South, Range 5 East, in Riley County, Kansas. **ACTION NEEDED: Recommend approval/denial of the rezoning to the Board of County Commissioners and approve/deny the Concurrent Plat of Simons Subdivision, Unit Two.**

*(Procedure: Adjourn the Riley County Planning Board meeting.)*

## MINUTES

### RILEY COUNTY PLANNING BOARD/ BOARD OF ZONING APPEALS

Monday, November 9, 2015  
7:30 pm

Courthouse Plaza East  
Commission Meeting Room  
115 North 4<sup>th</sup> Street

Members Present: Lorn Clement, Chairman  
Dr. Tom Taul, Vice-Chair  
Diane Hoobler  
Julie Henton  
John Wienck

Members Absent: None

Staff Present: Bob Isaac – Planner and Lisa Daily - Administrative Assistant

Others Present: Kitty Pursley, Bob Pursley, Kent Manuel and Robert Boyd.

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#### **OPEN PUBLIC COMMENTS**

None.

#### **CONSENT AGENDA**

The minutes of the October 12, 2015 meeting were presented and approved. The Report of Fees for the month of October (\$2,508.00) were presented and approved.

Diane Hoobler moved to adjourn the joint meeting of the Riley County Planning Board/Board of Zoning Appeals and, due to the lack of agenda items for the Board of Zoning Appeals, moved to reconvene as the Riley County Planning Board. Julie Henton seconded. Carried 5-0.

#### **RILEY COUNTY PLANNING BOARD**

##### **D&T Investments, LLC – Plat & Rezone**

Request by D&T Investments, LLC - Tom Abbott Member, and petitioner, and D&T Investments, LLC, owner, to “table” a public hearing to rezone a tract of land from "AG" (Agricultural District) & “SF-4” (Single Family Residential) to “R-PUD” (Residential Planned Unit Development) and plat the aforementioned tract of land into three (3) lots, to the December 14, 2015, Riley County Planning Board meeting.

John Wienck made a motion to table the item to the December 14, 2015, Riley County Planning Board meeting. Diane Hoobler seconded. Carried 5-0.

##### **Pursley – Residential Use Designator – Extraneous Farmstead & Plat**

Lorn Clement opened the public hearing at the request of Katharyn L. Pursley (Deep Creek Connection), petitioner, and Deep Creek Connection LLC – Katharyn L. Pursley, Member owner, to receive a Residential Use Designator - Extraneous Farmstead and plat a tract of land

into one (1) lot in Zeandale Township, Section 14, Township 11 South, Range 8 East, in Riley County, Kansas.

Bob Isaac presented the request. Mr. Isaac described the background, location and physical characteristics of the proposed tract.

Staff recommended approval of the request to receive a Residential Use Designator – Extraneous Farmstead as it was determined the request meets the minimum requirements of the Riley County Zoning Regulations. Staff also recommended that the Board approve the concurrent plat of DCC Addition, as it was determined to meet all requirements of the Riley County Subdivision Regulations, Zoning Regulations and the Sanitary Code.

Chairman Clement asked if the Applicant wanted to speak. The Applicant had no comment.

Chairman Clement asked if there were any proponents or opponents. There were none.

John Wienck moved to close the public hearing. Diane Hoobler seconded. Carried 5-0.

Tom Taul moved to approve the Residential Use Designator – Extraneous Farmstead and the concurrent plat of DCC Addition for reasons listed in the staff report. John Wienck seconded. Carried 5-0.

Mr. Isaac announced that the Board of County Commissioners would hear the request to plat the property on November 23, 2015, at 9:00 am, in the County Commission Chambers.

### **Big Blue Floodplain Management Plan**

Bob Isaac stated there were no updates.

### **Board Member Update**

Bob Isaac announced that Board Member, Julie Henton's last meeting will be December 14, 2015 as her term expires December 31, 2015. He said Monty Wedel will be presenting Board Member, Tom Taul's reappointment and the applications to replace Julie Henton to the Board of County Commissioners on December 3, 2015.

John Wienck moved to adjourn. Tom Taul seconded. Carried 5-0.

The meeting was adjourned at 7:46 P.M.



**RILEY COUNTY  
PLANNING & DEVELOPMENT**

**REPORT OF FEES**

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**November 2015**

<u>DATE</u>	<u>NAME</u>	<u>AMOUNT</u>
11-02-2015	Schwab, Building Permit #15-0076	\$ 150.00
11-05-2015	Hetzler, Water Screening Report	14.00
11-09-2015	Nichols, Environmental Site Evaluation	100.00
11-10-2015	Hamilton, Building Permit #15-0078 & 15-0079	200.00
11-12-2015	Hoffman, Building Permit #15-0081	150.00
11-16-2015	Kloppenber, Building Permit #15-0082	150.00
11-17-2015	Hougland, Water Screening Report	10.00
11-18-2015	Gilbert, Water Screening Report	12.00
11-18-2015	L&L Trenching, Repair Permit	75.00
11-19-2015	Thurlow, Building Permit #15-0083	150.00
11-19-2015	Loecker, Copy fee	.50
11-20-2015	Zoeller, Sign Permit #15-0011 & 15-0012	100.00
11-23-2015	Monaghan, Environmental Site Evaluation	100.00
11-23-2015	Prairiewood Retreat, Sign Permit #15-0013	50.00
11-23-2015	Slocum (Kennedy), Building Permit #15-0084	150.00
11-24-2015	L&L Trenching, Repair Permit	75.00
11-25-2015	Thomas, Water Screening Report	10.00
11-30-2015	Whearty, Water Screening Report	20.00

**TOTAL**

**\$1,516.50**

**DEPOSITS MADE:**

11-13-2015	\$ 614.00
11-20-2015	497.50
11-30-2015	405.00

**TOTAL \$1,516.50**



# PLANNING & DEVELOPMENT

## STAFF REPORT

### Platting and Rezoning

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**PETITION:** (#15-19) Rezone from “AG” (Agricultural District) to “R-PUD” (Residential Planned Unit Development)  
(#15-20) Rezone from “SF-4” (Single Family Residential) to “R-PUD” (Residential Planned Unit Development)  
(#15-21) Plat

**APPLICANT:** D&T Investments, LLC - Tom Abbott Member  
486 McCall Rd  
Manhattan, KS 66502

**PROPERTY OWNER:** D&T Investments, LLC  
486 McCall Rd  
Manhattan, KS 66502

**REPRESENTATIVE:** Alfred Benesch & Company  
3226 Kimball Ave  
Manhattan, KS 66503

**TYPE OF REQUEST:** Rezone a tract of land from "AG" (Agricultural District) and "SF-4" (Single Family Residential) to "R-PUD" (Residential Planned Unit Development) and plat said tract into three (3) lots.

**SIZE OF TRACT:** The subject site is approximately 9.679 acres.

**LOCATION:** Generally located approximately 1000 feet north of Anderson Avenue, on the east side of Kitten Creek Road; Section 39, Township 9 South, Range 6 East; Wildcat Township.

**JURISDICTION:** This application is subject to the requirements of the Riley County Subdivision Regulations.

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**BACKGROUND:** The subject property is an unplatted tract of land that is currently developed with a single family home built in 1963. A portion of the property was rezoned from “G-1” (General Agricultural) to “A-4” (Single Family Residential) in 1976 (Pet. #76-25) for the placement of a mobile home on a permanent foundation. Although a building permit was issued in September 1976 for the structure, there is no evidence that a mobile home occupied the tract. The applicant wishes to subdivide the tract into three (3) lots, establishing the developed portion of the tract as its own lot, while creating two additional residential lots with the remaining tract. The applicant also wishes to rezone the property from “AG” (Agricultural District) & “SF-4” (Single Family Residential) to “R-PUD” (Residential Planned Unit Development).

**DESCRIPTION:**

Physical site characteristics: As previously mentioned, the northwest portion of the tract is developed with a single family residence, with various sheds and accessory structures. Kitten Creek, a 3<sup>rd</sup> order stream, transects the eastern portion of the tract from north to south, and lies within an A Zone – 1% annual chance flood hazard area. The majority of the subject site is heavily wooded various trees and ground cover.

General character of the area: The area is mix of suburban residential development extending north of Keats (urban density residential development) along Kitten Creek Road, surrounded by agricultural/pasture and open space.

Riparian Buffer: As per Section 21C – Development Standards of the Riley County Zoning Regulations, all new development shall be required to provide a riparian buffer along any perennial, intermittent or ephemeral stream. The third order stream that runs through the property will require a 50-foot buffer Zone 1 and a 50-foot buffer Zone II; a distance total of 100 feet measured horizontally and perpendicularly from each bank of the stream.

Agricultural Buffer: As per Section 21C – Development Standards of the Riley County Zoning Regulations, a minimum setback for a residence or a structure for animal habitation shall be 200 feet from all property lines adjoining an existing agricultural use. However, the regulation also provides for the use of an “adequate existing buffer”, (i.e. topography, water bodies, roadways, trees, etc.) that acts as a physical separation to reduce conflict between non-farm and agricultural uses. With the proposed riparian buffer and existing vegetation, it is the opinion of staff that an Agricultural Buffer is not necessary.

**SUITABILITY OF ZONING:**

Zoning History: The applicant wishes to rezone the property from “AG” (Agricultural District) & “SF-4” (Single Family Residential) to “R-PUD” (Residential Planned Unit Development). There are no conditional uses, special uses or variances associated with the site.

Proposed zoning: Although the development exceeds the recommended density of 1 DU/10 acres as recommended in the 2005 Flint Hills Joint Land Use Study, the applicant will be required to file a Fort Riley, Kansas Area of Military Impact Real Estate Disclosure Form with the Register of Deeds, as a condition of the proposed Final Development Plan. This disclosure form also includes recommendations regarding noise attenuating construction methods and materials.

SURROUNDING ZONING/LAND USE		
	ADJACENT ZONING	LAND USE
<b>NORTH</b>	“AG” (Agricultural District)	residential
<b>SOUTH</b>	“AG” (Agricultural District) “SF-1” (Single Family Residential)	residential
<b>EAST</b>	“AG” (Agricultural District)	agricultural
<b>WEST</b>	“SF-4” (Single Family Residential)	residential

**POTENTIAL IMPACT:**

**Public facilities and services:**

Streets and bridges: Currently, proposed Lot 1 is served by Kitten Creek Road. Proposed Lots 2 and 3 will be served by a new street/cul-de-sac treatment called Angelia’s Way, which will connect to Kitten Creek Road and extend east 416 total feet (including cul-de-sac right-of-way) from the center line of Kitten Creek Road. County Engineer Leon Hobson reviewed the request and allowed the reduction of the right-of-way minimum width requirement for a local road from 80-ft. to 60-ft. The naming of the proposed street is consistent with the requirements of Resolution No. 061101-31.

Water and sewer: Proposed Lot 1 shall be served by an on-site individual septic system and lateral field, while proposed Lots 2 and 3 shall be served by on-site wastewater lagoons. All three lots shall be served by Rural Water District No. 1.

Fire: Riley County Fire District #1 will serve the site. The nearest County fire station is the Keats Fire Station, located at 3141 W. 69<sup>th</sup> Avenue.

Effect on public facilities and services: It is not anticipated that the replatting of the subject site will have a detrimental impact on public facilities or services.

Stormwater Drainage: Although the total area proposed density of the subject property is relatively low as compared to the size of the site, the subject property drains easterly into a Wildcat Creek tributary. After reviewing the proposed development plan, the Riley County Conservation District had concerns of how post-development stormwater would be managed. Thus, staff recommended that a stormwater drainage study be completed.

A stormwater drainage study was completed and submitted by Alfred Benesch & Company (see attached). The analysis of drainage impacts considered the existing and post-development drainage impacts as a result of the proposed plat and makes recommendations for mitigation.

The study provided a comparison of the calculated runoff between the existing and proposed conditions. The net increase in storm water runoff for a 100-year storm from existing conditions to proposed conditions is 0.43 cfs. The study concluded that in order to alleviate the 0.43 cfs increase from the 100-year rainfall event, detention is needed. In order to provide the least impact to the proposed lots it is determined that the best location for the pond is directly south of the proposed cul-de-sac. The future driveway for proposed Lot 2 will provide a berm that is utilized as a detention pond outlet structure. The detention pond will provide a maximum storage of 9,000 cubic feet. During a 100-year rain event the pond will only utilize 2,900 cubic

feet, therefore providing capacity for several feet of freeboard and provide additional relief to the watershed system than what exists today. For more details regarding the recommended design, capacity and location of the system, please refer to the attached Stormwater Drainage Report.

Due to the site having a moderate slopes and being near the 1% annual chance floodplain, erosion control methods were recommended, as shown on the site layout plan. Silt fence ditch checks are recommended along the proposed Angela's Way and placement of silt fence is recommended along the east side of the grading limits to prevent any sediment from entering the floodplain.

This study was submitted to the County Engineer and the Riley County Conservation District for review, both of which have found the study and the recommendations to be acceptable.

### **CONFORMANCE TO THE LAND USE PLAN:**

#### **Goals, Objectives and Policies**

Goal for residential:

*To allow for the development of a diversity of housing types, sizes and price levels to meet the changing needs of all county residents.*

Objective R4: Allow for adequate amounts of single family housing in suitable locations throughout the county.

Policies:

R4.2 Roads serving residential developments should safely accommodate anticipated traffic.

#### **Future Land Use Map**

According to the Future Land Use Map North (Figure 11.2) found in the Plan, the subject property is located outside of a designated growth area.

#### **The Land Evaluation/Site Assessment (LESA) Score**

A LESA was generated for this request. According to the final score of the LESA analysis, the subject property achieved 4052 points (Moderate for Development). No bonus points were factored into the analysis.

#### **Hardship on the landowner**

The Applicant stated that a financial hardship would be incurred if the request is denied due to the investments put into the purchase of the property, while the relative gain to the health safety and welfare of the public would not be detrimentally affected with the project moving forward.

Staff analysis: Due to the character of the existing development and the criteria set forth in the proposed zoning of the subject property, it is not anticipated that the request will cause conflicts; thus, the request is consistent with the Plan.

### **COMMENTS AND CONCERNS:**

ENVIRONMENTAL HEALTH: Environmental Health staff has reviewed this plat and found it is in compliance with the Riley County Sanitary Code.

RILEY COUNTY CONSERVATION DISTRICT: The Riley County Conservation District staff reviewed the request (see attached) and had major concerns about development occurring so near

to a Wildcat Creek tributary without any measures proposed to control post-development stormwater run-off. In order to address these concerns, a Stormwater Drainage Study was completed and submitted to the Conservation District and County Engineer for their review. After finding the study acceptable, the recommendations of the study were incorporated into the Preliminary Development Plan.

COUNTY ENGINEER: The County Engineer reviewed the request and reported waiving the 80-ft. right-of-way requirement to 60-ft. and also waived the minimum depth of ditches due to length of road and drainage area.

WILDCAT TOWNSHIP TRUSTEE: The Wildcat Township Trustee reviewed the request and reported that Wildcat Township has no objections. He reported that the road (Kitten Creek Rd.) serving the property is adequate to handle additional traffic.

FORT RILEY: The Directorate of Public Works for the Environmental Division reviewed the request. He expressed concern that the subject site is located within or very near to Noise Zone II, which is considered incompatible with residential uses, churches, schools, places of assembly and medical facilities.

LAW ENFORCEMENT CENTER: The Assistant Director of the Law Enforcement Center has reviewed the request and had no objections.

EMERGENCY MANAGEMENT: The Riley County Emergency Management Director reviewed the request and he stated that his concern was building multiple houses where there is not adequate fire flow. He stated that the nearest municipal water is over one mile away and the nearest fire hydrant is about five miles away. He said he thinks this should be included in the findings on the plat.

**STAFF RECOMMENDATIONS:**

Staff recommends that the Planning Board forward a recommendation of approval to the Board of County Commissioners of the request to rezone the subject property from “AG” (Agricultural District) and “SF-4” (Single Family Residential) to “R-PUD” (Residential Planned Unit Development) for the following reasons:

- The proposed development is generally in conformance with Vision 2025: A Comprehensive Plan for Riley County, Kansas.
- Measures have been incorporated into the R-PUD Final Development Plan which will require the filing of a Fort Riley, Kansas Area of Military Impact Real Estate Disclosure Form along with the Final Plat, as per the recommendations of the Flint Hills Joint Land Use Study. As opposed to the current residential zoning of the subject property, future development and subsequent ownership of the additional lots will be accompanied with full disclosure of the potential impacts of neighboring Fort Riley.
- The riparian area along Kitten Creek that transects the property will be subject to the requirements of Section 21C – Development Standards.

Staff also recommends that the Board approve the Final Plat of Perry Addition, as it has been determined to meet the minimum requirements of the Riley County Subdivision and Zoning Regulations and Sanitary Code.

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**POSSIBLE MOTION(S)**

**ACTION NEEDED FOR REZONING:**

- A. Move to approve the request to rezone the subject property from “AG” (Agricultural District) & “SF-4” (Single Family Residential) to “R-PUD” (Residential Planned Unit Development) for the following reasons:
- The rezoning is compatible with the character of the neighborhood.
  - The rezoning is compatible with the zoning and uses of properties nearby.
  - The subject property is not suitable for the uses allowed by the current zoning.
  - Removal of the current restrictions by rezoning will not detrimentally affect nearby property.
  - The subject property has remained vacant as zoned for a substantial time period.
  - The gain to the public health, safety and welfare by denying rezoning is not as great as the hardship imposed upon the individual landowner.
  - The rezoning is consistent with the recommendations of permanent or professional staff.
  - The rezoning conforms to the adopted comprehensive plan.
  - The rezoning will not detrimentally affect the conservation of the natural resources of the County.
  - The rezoning will result in the efficient expenditure of public funds.
  - The rezoning will promote the health, safety, convenience, prosperity and general welfare of the inhabitants of the County.

**Or**

- B. Move to deny the request to rezone the subject property for the following reasons:
- The rezoning is incompatible with the character of the neighborhood.
  - The rezoning is incompatible with the zoning and uses of properties nearby.
  - The subject property is not suitable for the uses allowed by the proposed zoning.
  - Removal of the current restrictions by rezoning will detrimentally affect nearby property.
  - The subject property is developed or utilized as zoned for a substantial time period.
  - The gain to the public health, safety and welfare by denying rezoning is greater than the hardship imposed upon the individual landowner.
  - The rezoning is inconsistent with the recommendations of permanent or professional staff.
  - The rezoning does not conform to the adopted comprehensive plan.
  - The rezoning may detrimentally affect the conservation of the natural resources of the County.
  - The rezoning will result in the inefficient expenditure of public funds.
  - The rezoning will diminish the health, safety, convenience, prosperity and general welfare of the inhabitants of the County.

**ACTION NEEDED FOR PLAT:**

- A. Motion to approve the request to plat the subject property into three (3) lots, as it has been determined that it meets the requirements of the Riley County Subdivision Regulations.

**Or**

B. Motion to deny the request to plat the subject property into three (3) lots, as it has been determined that it does not meet the requirements of the Riley County Subdivision Regulations.

**ATTACHMENTS:**

- Vicinity/site map
- Surrounding zoning map
- Topeka Shiner Habitat map
- Soils map
- Fire Stations map
- Fort Riley Noise map
- LESA analysis
- Stormwater Drainage Report
- Conservation District's comments
- Preliminary Plat/Preliminary Development Plan
- Final Plat

Prepared by: Bob Isaac, Planner  
December 7, 2015



## VICINITY AND SITE

**D and T Investments - Tom Abbott  
Member**

**Rezone AG to R-PUD #15-19**

**Rezone SF-1 to R\_PUD #15-20**

**Plat #15-21 Perry Addition**

**36-9-6**

### Legend

-  1000' Buffer
-  Site





# SURROUNDING ZONING

**D and T Investments - Tom Abbott  
Member**

**Rezone AG to R-PUD #15-19**

**Rezone SF-1 to R\_PUD #15-20**

**Plat #15-21 Perry Addition**

## Legend 36-9-6

-  1000' Buffer
-  Site

- |  |   |
|--|---|
|  SF-1 Single Family   |  AG Agricultural   |
|  SF-2 Single Family   |  N-1 Noise Hazard  |
|  SF-3 Single Family   |  PUD Planned Unit Dev  |
|  SF-4 Single Family   |  U University  |
|  SF-5 Single Family   |  City Boundaries   |
|  B-1 Two Family       |  Fort Riley  |
|  B-2 Multiple Family  |   |
|  B-3 Mobile Home Park |   |
|  C-1 Neighborhood Bus |   |
|  C-2 Shopping Dist    |  Special Zoning:<br>Conditional Use<br>Designator Lot<br>Special Use<br>Variance |
|  C-3 General Business |   |
|  C-4 Highway Business |   |
|  D-1 Industrial Park  |   |
|  D-2 Light Industrial |   |
|  D-3 Heavy Industrial |   |
|  D-4 Business Park    |   |





# FLOODPLAIN

## TOPEKA SHINER HABITAT

D and T Investments - Tom Abbott  
Member

Rezone AG to R-PUD #15-19

Rezone SF-1 to R\_PUD #15-20

Plat #15-21 Perry Addition

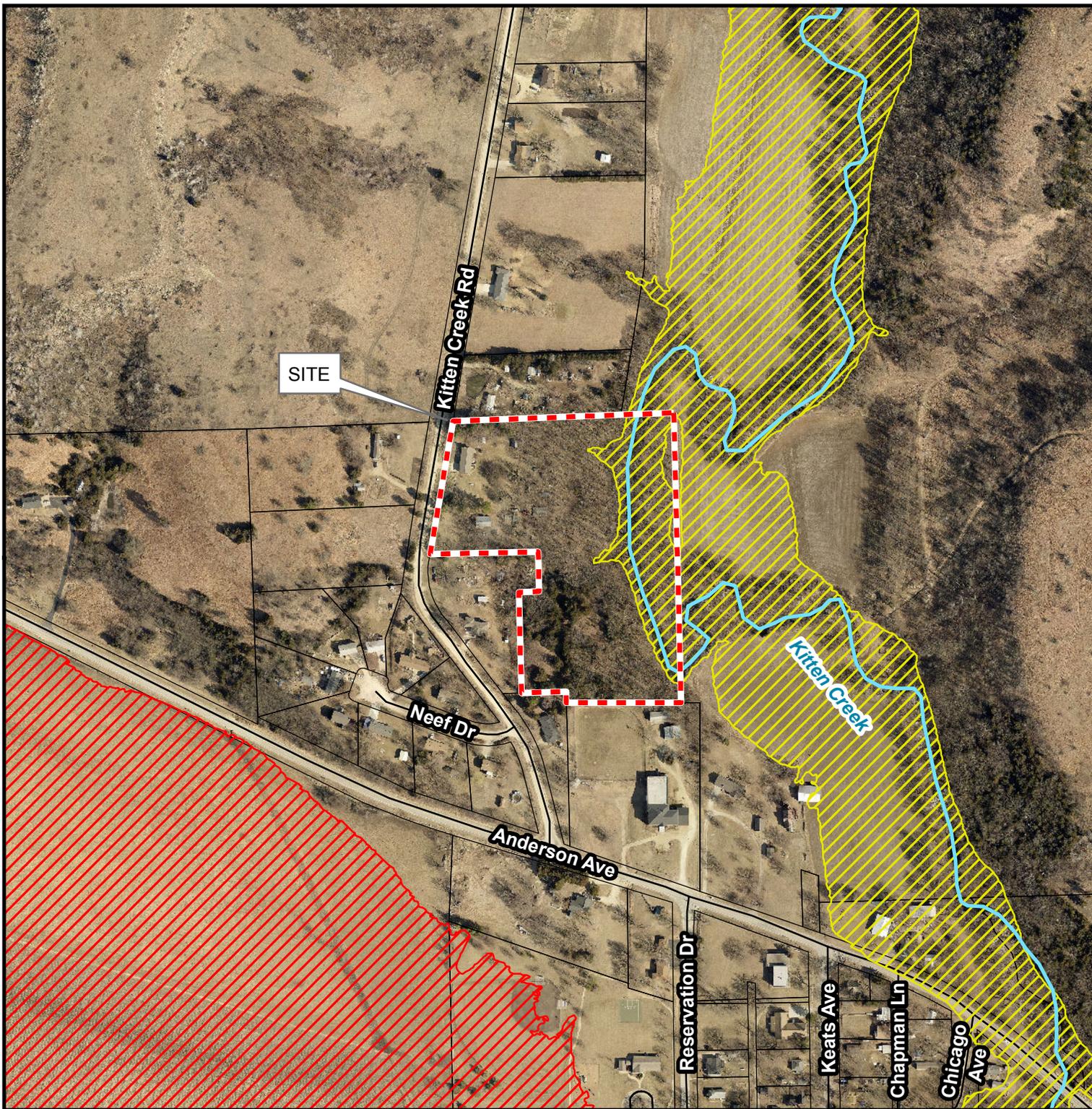
36-9-6

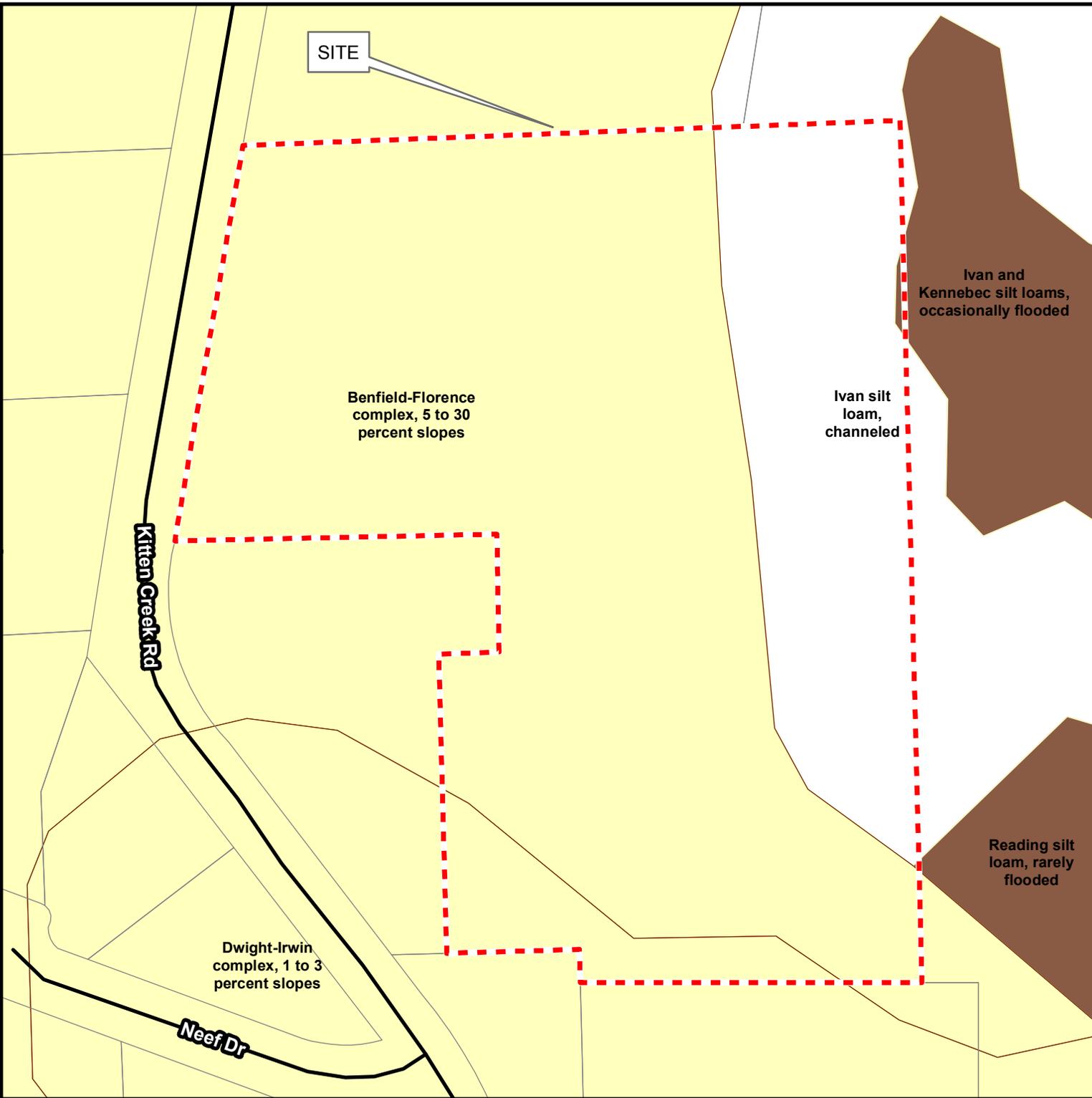
### Legend

 Topeka Shiner Habitat

### Floodplain

-  1% Annual Chance Flood (Unnumbered)
-  1% Annual Chance Flood (Numbered)
-  Floodway
-  1% Annual Chance Flood (1'-3' Depth)
-  .2% Annual Chance Flood





## SOILS

D and T Investments - Tom Abbott  
Member

Rezone AG to R-PUD #15-19

Rezone SF-1 to R\_PUD #15-20

Plat #15-21 Perry Addition

36-9-6

## SOIL TYPES

-  Prime Soils (NRCS)
-  Statewide Importance (NRCS)
-  Other Soils



## FIRE STATIONS

D and T Investments - Tom Abbott  
Member

Rezone AG to R-PUD #15-19

Rezone SF-1 to R\_PUD #15-20

Plat #15-21 Perry Addition

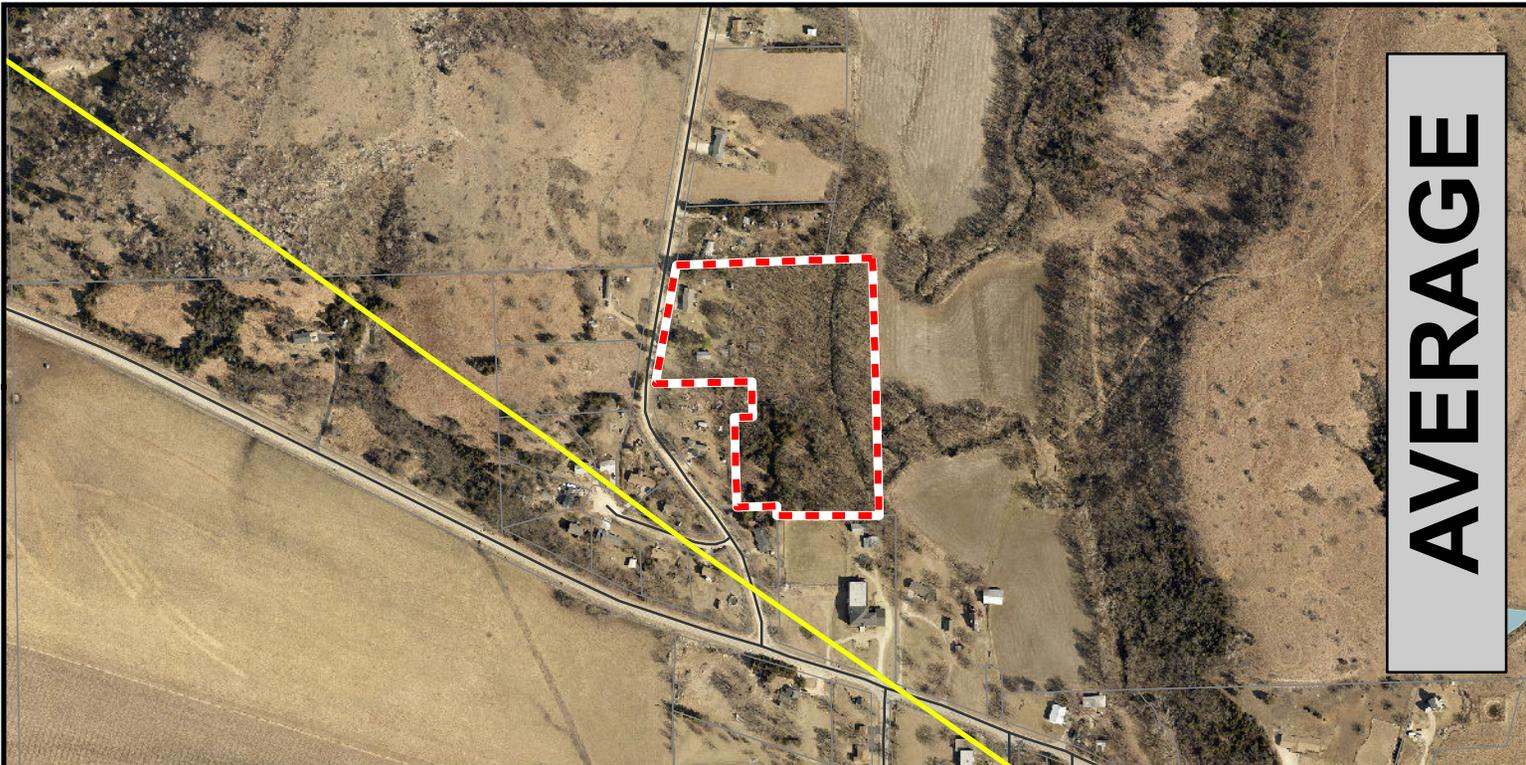
36-9-6

 Fire Station

 Within 5 Miles  
of a Fire Station

 Not within 5 Miles  
of a Fire Station





**AVERAGE**



**FORT RILEY  
NOISE CONTOURS  
AVERAGE AND PEAK**

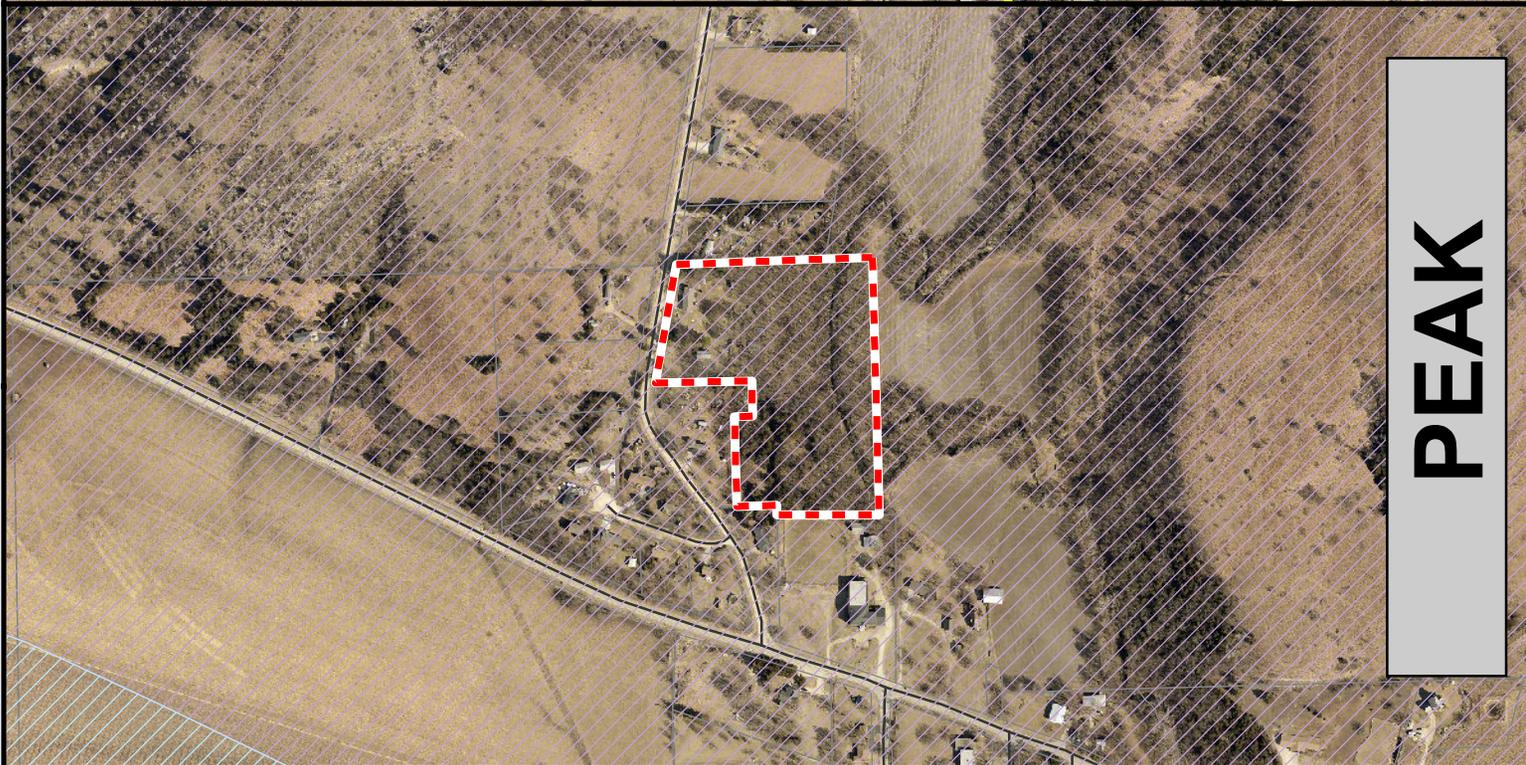
D and T Investments - Tom Abbott  
Member

Rezone AG to R-PUD #15-19

Rezone SF-1 to R\_PUD #15-20

Plat #15-21 Perry Addition

36-9-6



**PEAK**

**Legend**

**Average Noise Levels**

-  CDNL 57 (LUPZ)
-  CDNL 62 (ZONE II)
-  CDNL 70 (ZONE III)

**Peak Noise Levels  
Large Caliber**

-  Large Caliber 115
-  Large Caliber 130

## FACTOR 1

### CHARACTER OF THE NEIGHBORHOOD (Surrounding Area within 1/4 Mile)

#### Agricultural Character Test

	Points	Score
• Percent of Cropland/Grassland		
<input type="checkbox"/> More than 95%	0	
<input type="checkbox"/> 80% to 95%	80	
<input checked="" type="checkbox"/> 60% to 79.99%	165	165
<input type="checkbox"/> Less than 60%	250	
	TOTAL	165
• Overall Housing Density		
<input type="checkbox"/> Greater than 160 acres/residence	0	
<input type="checkbox"/> 80 to 160 acres/residence	65	
<input type="checkbox"/> 40 to 79.99 acres/residence	130	
<input type="checkbox"/> 20 to 39.99 acres/residence	195	
<input checked="" type="checkbox"/> Less than 20 acres/residence	250	250
	TOTAL	250
• Number of Non-Farm Residences		
<input type="checkbox"/> 0	0	
<input type="checkbox"/> 1	50	
<input type="checkbox"/> 2	100	
<input type="checkbox"/> 3	150	
<input type="checkbox"/> 4	200	
<input checked="" type="checkbox"/> 5 or more	250	250
	TOTAL	250
• Number of Tracts Less Than 20 acres		
<input type="checkbox"/> 0	0	
<input type="checkbox"/> 1	50	
<input type="checkbox"/> 2	100	
<input type="checkbox"/> 3	150	
<input type="checkbox"/> 4	200	
<input checked="" type="checkbox"/> 5 or more	250	250
	TOTAL	250
GRAND TOTAL		915

<u>SCALE</u>	Points
Strongly Agricultural	0
Moderately-Strong Agricultural	50
Moderately Agricultural	100
Moderately-Mild Agricultural	150
Mildly Agricultural	200
Mildly Non-Agricultural	250
Mildly Non-Ag Residential	300
Moderately-Mild Non-Ag Res.	350
Moderately Non-Ag Res.	400
Moderately-Strong Non-Ag Res.	450
Strongly Non-Ag Residential	500
	550
	600
	650
	700
	750
	800
	850
	900
	950
	1000

#### Rural Character Test

• Development conforms to rural character guidelines		
	Bonus	
	Points	Score
<input checked="" type="checkbox"/> Conforms to guidelines	500	500
<input type="checkbox"/> Does not conform to guidelines	0	
	TOTAL	500

**TOTAL POINTS AVAILABLE:**  
(Not Including Bonus Points)

**1000 Points**

## FACTOR 2

### THE ZONING AND USES OF NEARBY PROPERTY (Surrounding Area within 1 Mile)

#### Compatible Zoning Test

##### Perimeter Component

- Percent of Perimeter Adjacent to Similar Zoning

	Points	Score
<input type="checkbox"/> No Adjacency	0	
<input type="checkbox"/> 1% - 9.99%	50	
<input checked="" type="checkbox"/> 10% - 24.99%	100	100
<input type="checkbox"/> 25% - 50%	200	
<input type="checkbox"/> Over 50%	250	
	TOTAL	<b>100</b>

##### Proximity Component

- Number of Acres of Similar Zoning Within Certain Distances

Acres	Points	Within 1000'	Between 1000' and ½ mile	Between ½ mile and 1 mile	
0	0				
.1-2	10				
2.1-5	20				
5.1-10	30				
10.1-15	40	40			
Over 15	50		50	50	
Weighting		2.5	1.5	1	
SUBTOTAL		100	75	50	
		TOTAL			<b>225</b>

#### Compatible Land Use Test

##### Perimeter Component

- Percent of Perimeter Adjacent to Similar Land Use

	Points	Score
<input type="checkbox"/> No Adjacency	0	
<input type="checkbox"/> 1% - 9.99%	50	
<input type="checkbox"/> 10% - 24.99%	100	
<input checked="" type="checkbox"/> 25% - 50%	200	200
<input type="checkbox"/> Over 50%	250	
	TOTAL	<b>200</b>

##### Proximity Component

- Number of Acres of Similar Land Use Within Certain Distances

Acres	Points	Within 1000'	Between 1000' and ½ mile	Between ½ mile and 1 mile	
0	0				
.1-2	10				
2.1-5	20				
5.1-10	30				
10.1-15	40	40			
Over 15	50		50	50	
Weighting		2.5	1.5	1	
SUBTOTAL		100	75	50	
		TOTAL			<b>225</b>

**TOTAL POINTS AVAILABLE:**

**1000 Points**

**FACTOR 3**

**THE SUITABILITY OF THE PROPERTY FOR THE USES ALLOWED  
UNDER THE CURRENT ZONING**

**Crop Capability Test**

LAND CAPABILITY CLASS	RELATIVE VALUE (RV)	NUMBER OF ACRES IN SITE	PRODUCT OF RV & NO. OF ACRES
1	0	0.013499	0
2	25	0	0
3	50	0	0
4	75	0.512165	38.412375
5	150	2.132602	319.8903
6	225	6.565786	1477.30185
7	300	0	0
8	375	0	0
TOTALS		9.224052	1835.604525

Product of RV & Acres / Number of Acres in Site = Average Site Value

Average Site Value 199

**Rangeland Productivity Test**

TOTAL DRY WEIGHT PRODUCTION - NORMAL YEAR (lbs)	RELATIVE VALUE (RV)	NUMBER OF ACRES IN SITE	PRODUCT OF RV & NO. OF ACRES
8500+	0	0	0
7500-8499	50	2.146051	107.30255
6500-7499	100	0	0
5500-6499	150	0	0
4500-5499	225	6.565786	1477.30185
3500-4499	300	0	0
2500-3499	375	0.512165	192.061875
TOTALS		9.224002	1776.666275

Product of RV & Acres / Number of Acres in Site = Average Site Value

Average Site Value 193

**Site Suitability Test**

- Attributes Reducing Agricultural Site Suitability

Size of site (in acres)

- 0-3
- 3.1-5
- 5.1-10
- Over 10

Points	Score
125	
90	
45	45
0	
<b>TOTAL</b>	<b>45</b>

Isolation of site from other agricultural land

(Site must be < than 10 acres; isolation may be created by ownership or physical features, e.g. riparian areas, roads, topography, etc.)

- Isolated
- Not Isolated

Points	Score
125	125
0	
<b>TOTAL</b>	<b>125</b>

**TOTAL POINTS AVAILABLE:**

**1000 Points**

## FACTOR 4

### Agricultural Conflict Test

● Proximity of Residence to Confined Animal Feeding Operation (CAFO)

	Points	Score
<input type="checkbox"/> More than 1 mile from CAFO	250	
<input checked="" type="checkbox"/> Between 1 mile and 1/4 mile	0	0
<input type="checkbox"/> Within 1/4 mile	-250	
<b>TOTAL</b>		<b>0</b>

● Proximity of Site to Other Agricultural Activities

DISTANCE	POINTS	Permanently Preserved Land	Cropping Operation	Grassland Tract (>20 acres, no home)
Over 1000'	125	125		
500 - 1000'	100			
250 - 499'	75			
50 - 249'	50			50
Less than 50'	0		0	
<b>SUBTOTALS</b>		<b>125</b>	<b>0</b>	<b>50</b>
				<b>TOTAL</b>
				<b>175</b>

DISTANCE	POINTS	Livestock Enclosure (No
Over 2000'	125	125
1000 - 2000'	100	
500 - 999'	75	
100 - 499'	50	
Less than 100'	0	
<b>TOTAL</b>		<b>125</b>

### Non-Agricultural Conflict Test

● Proximity of Site to Fort Riley Noise Zones

	Points	Score
<input type="checkbox"/> Outside of Noise Zone II and LUPZ	250	
<input checked="" type="checkbox"/> Within LUPZ	125	125
<input type="checkbox"/> Within Noise Zone II	0	
<b>TOTAL</b>		<b>125</b>

### ADDITIONAL POSITIVE/NEGATIVE POINTS FOR MITIGATIVE/DETRIMENTAL IMPACTS

● Effect of Rezoning on Valuation of Adjoining Property\*

	Points	Score
<input type="checkbox"/> Evidence that rezoning will increase value of adjoining property	250	
<input type="checkbox"/> Evidence that rezoning will not devalue adjoining property	125	
<input checked="" type="checkbox"/> No evidence that rezoning will/will not devalue adjoining property	0	0
<input type="checkbox"/> Evidence that rezoning will devalue adjoining property	-250	
<b>TOTAL</b>		<b>0</b>

\* Evidence must be from a professional source

**TOTAL POINTS AVAILABLE:** **1000 Points**

**FACTOR 5**

**Public Health Test**

• Availability of and Connection to Public Sanitary Sewer System

	Points	Score
<input type="checkbox"/> Available at site	200	
<input type="checkbox"/> Within 400'	175	
<input type="checkbox"/> 400' - .24 mile	150	
<input type="checkbox"/> .25 - .49 mile	100	
<input type="checkbox"/> .5 miles - .99 mile	50	
<input checked="" type="checkbox"/> More than 1 mile	0	0
<b>TOTAL</b>		<b>0</b>

• Availability of and Connection to Public Water Systems

	Points	Score
<input checked="" type="checkbox"/> Available at site	200	200
<input type="checkbox"/> Within 400'	175	
<input type="checkbox"/> 400' - .24 mile	150	
<input type="checkbox"/> .25 - .49 mile	100	
<input type="checkbox"/> .5 miles - .99 mile	50	
<input type="checkbox"/> More than 1 mile	0	
<b>TOTAL</b>		<b>200</b>

**BONUS POINTS**

	Points	Score
• Development will result in the creation/extension of new/additional public sewer system	500	<b>0</b>
• Development will result in the creation/extension of new/additional public water system	150	<b>150</b>

**Public Safety Test**

• Public Protection Classification (Fire Insurance Rating)

	Points	Score
<input type="checkbox"/> Within ISO Class 7	200	
<input checked="" type="checkbox"/> Within ISO Class 9	100	100
<input type="checkbox"/> Within ISO Class 10	0	
<b>TOTAL</b>		<b>100</b>

• Location of building site relative to floodplain

	Points	Score
<input checked="" type="checkbox"/> Not in the floodplain	200	200
<input type="checkbox"/> Within 500-year floodplain	0	
<input type="checkbox"/> Within 100-year floodplain	-200	
<b>TOTAL</b>		<b>200</b>

• Access to building site relative to floodplain

	Points	Score
<input checked="" type="checkbox"/> Not in the floodplain	200	200
<input type="checkbox"/> Within 500-year floodplain	0	
<input type="checkbox"/> Within 100-year floodplain	-200	
<b>TOTAL</b>		<b>200</b>

• Expected Impact of Proposed Development on Existing Road\*

	Points	Score
<input checked="" type="checkbox"/> Current Road Adequate, No Changes Required	150	150
<input type="checkbox"/> Minor Improvements Needed	0	
<input type="checkbox"/> Major Improvements Needed	-150	
<input type="checkbox"/> Additional Off-Site Improvements Needed**	-150	
<b>TOTAL</b>		<b>150</b>

\* Determination of anticipated traffic impacts from traffic study using assumed trip generation models. Minor/major improvements determined by County Engineer based on evaluation of degree of surface alterations required to meet the impact. Maximum points given for improvements funded by developer.

\*\* Additional off-site improvements include addition of turning lanes, improvement of drainage structures and similar improvements that are not re-surfacing improvements. If alteration of surface and additional off-site improvements are needed, both point totals shall apply. No points subtracted for improvements funded by developer.

**TOTAL POINTS AVAILABLE:** **1150 Points**

## FACTOR 6

### Transportation Test

---

• Adequacy of the Access Road Surface

	Points	Score
<input type="checkbox"/> Paved	150	
<input type="checkbox"/> Gravel w/ 24' roadbed	100	
<input type="checkbox"/> Gravel w/ 22' roadbed	50	
<input checked="" type="checkbox"/> Gravel w/ 20' roadbed	0	0
<input type="checkbox"/> Gravel w/ 18' or less roadbed	-50	
<input type="checkbox"/> Unimproved	-100	
<input type="checkbox"/> Trail or Undeveloped	-150	
<b>TOTAL</b>		<b>0</b>

• Distance from site to Paved Road

	Points	Score
<input type="checkbox"/> Direct access onto paved road	150	
<input checked="" type="checkbox"/> Within .25 mi	100	100
<input type="checkbox"/> .25 to .49 mi	50	
<input type="checkbox"/> .50 to .99 mi	0	
<input type="checkbox"/> 1-3 miles	-50	
<input type="checkbox"/> Over 3 miles	-100	
<b>TOTAL</b>		<b>100</b>

• Distance from site to major/minor trafficway

	Points	Score
<input type="checkbox"/> Direct access onto major/minor trafficway or frontage road	150	
<input checked="" type="checkbox"/> Within .5 mi	100	100
<input type="checkbox"/> .5 to .99 mi	50	
<input type="checkbox"/> 1 to 2.9 mi	0	
<input type="checkbox"/> 3-5 miles	-50	
<input type="checkbox"/> Over 5 miles	-100	
<b>TOTAL</b>		<b>100</b>

### Efficient Development Test

---

• Distance from a City\*

	Points	Score
<input type="checkbox"/> Contiguous to City Limit	200	
<input type="checkbox"/> Within .25 mile of City Limit	150	
<input type="checkbox"/> .26 to .5 mile from City Limit	100	
<input type="checkbox"/> .51 to 1 mile from City Limit	50	
<input type="checkbox"/> 1.1 to 3 miles from City Limit	0	
<input checked="" type="checkbox"/> Beyond 3 miles from City Limit	-50	-50
<b>TOTAL</b>		<b>-50</b>

\* Any Incorporated City within Riley County

• Distance from Nearest Public School\*

	Points	Score
<input type="checkbox"/> Within 1 mile	200	
<input type="checkbox"/> 1.1 mile - 2 miles	100	
<input type="checkbox"/> 2.1 miles - 3 miles	0	
<input checked="" type="checkbox"/> Beyond 3 miles	-100	-100
<b>TOTAL</b>		<b>-100</b>

\* Distance to Either Elementary or Secondary School  
Using the Shortest Travel Distance Via Improved Roads

**TOTAL POINTS AVAILABLE:**

**850**

## FACTOR 7

### CONFORMANCE TO THE COMPREHENSIVE PLAN

#### Future Land Use Map Test

---

- Conformance of the Proposal to the Future Land Use Map

- Within a Designated Growth Area (DGA)
- Within ¼ mile of DGA
- Between ¼ and ½ mile of DGA
- Over ½ mile from DGA

Points	Score
1000	
500	
250	
0	0
<b>TOTAL</b>	<b>0</b>

**TOTAL POINTS AVAILABLE:**

**1000 Points**

## SUMMARY SCORESHEET

Factor	Score
<b>1</b> <u>Agricultural Character Test</u>	
Percent of Cropland/Grassland	165
Overall Housing Density	250
Number of Non-Farm Residences	250
Number of Tracts Less Than 20 acres	250
<b>2</b> <u>Compatible Zoning Test</u>	
Perimeter Component	100
Proximity Component	225
<u>Compatible Land Use Test</u>	
Perimeter Component	200
Proximity Component	225
<b>3</b> <u>Crop Capability Test</u>	199
<u>Rangeland Productivity Test</u>	193
<u>Site Suitability Test</u>	
Site Size	45
Site Isolation	125
<b>4</b> <u>Agricultural Conflict Test</u>	
Proximity to CAFO	0
Proximity to Other Ag Activities	175
Proximity to Livestock Enclosures	125
<u>Non-Agricultural Conflict Test</u>	
Proximity to Fort Riley Noise Zones	125
<b>5</b> <u>Public Health Test</u>	
Availability of Sewer	0
Availability of Water	200
<u>Public Safety Test</u>	
Fire Protection Rating	100
Site to Floodplain	200
Access in Floodplain	200
<b>6</b> <u>Transportation Test</u>	
Adequacy of Road Surface	0
Distance to Paved Road	100
Distance to Trafficways	100
Impact on Existing Road	150
<u>Efficient Development Test</u>	
Distance to City Limits	-50
Distance to Schools	-100
<b>7</b> <u>Future Land Use Map Test</u>	0
<b>SUBTOTAL</b>	<b>3552</b>
ADDITIONAL POSITIVE/NEGATIVE POINTS	
<b>1</b> <u>Rural Character Test</u>	500
<b>4</b> <u>Additional +/- Points</u>	
Effect on Valuation	0
<b>5</b> <u>New/Additional Public Sewer System</u>	0
<u>New/Additional Public Water System</u>	150
<b>SUBTOTAL:</b>	<b>500</b>
<b>GRAND TOTAL:</b>	<b>4052</b>

## DRAINAGE MEMORANDUM

Date: November 4, 2015

To: Leon Hobson, PE, Riley County Public Works Director

From: Bradley J. Waller, PE, Project Manager  
Alfred Benesch & Co.

Michael Heigert, PE, Project Engineer  
Alfred Benesch & Co.

Project: Drainage Study  
Perry Addition



### Introduction

Alfred Benesch and Company conducted a drainage study for the development of a three lot residential plat herein referred to as Perry Addition, located in Riley County Kansas. Perry Addition is composed of three lots located north of Anderson Avenue as shown on the attached site plan. Two of the three lots are currently wooded areas and the other lot is a developed residential lot. The west edge of the subdivision is Kitten Creek Road. The proposed development will include a new access road 24 feet wide composed of gravel that connects to Kitten Creek Road. The road will have a one percent crown and ditches on each side with four to one cross slopes (max) and a two foot ditch bottom. The road will end with a cul-de-sac. The two undeveloped lots will be graded to accommodate two new residential houses. The project site can be seen on the concept map in the Appendix.

This memorandum will provide calculations for pre-development and post-development runoff conditions for the 2, 10, and 100 year rainfall events. It will also provide preliminary recommendations for the sizing and locations of storm systems and detention as needed. It will also provide recommendations for any necessary mitigation techniques.

### Design Criteria and Assumptions

1. Proposed Runoff for full development must be less than or equal to existing runoff for the 2, 10, and 100 year storm events.
2. Rainfall Intensities were determined from the "1997 Rainfall Intensity Tables for Kansas Counties" developed for the Kansas Department of Transportation.
3. The Rational Method is used to determine Peak Flows
  - a.  $Q=CiA$

Q=Flow in Cubic Feet Per Second (CFS)

C=Rainfall runoff coefficient

I=Rainfall intensity, inch/hour

A=Drainage Area, acre

4. The time of Concentration is developed using the FAA Method.
  - a.  $T=1.8(1.1-c)L^{1/2}/(100*S)^{1/3}$ 
    - T=Time of Concentration, minutes
    - C= Rainfall runoff coefficient
    - L= Length of longest watercourse within watershed, ft
    - S= Average slope of watercourse, ft/ft
5. Detention is designed to accommodate a 100 year storm event and maintain at least one foot of freeboard.
6. 0.85 is used for the rainfall coefficient for impervious areas.
7. 0.50 is used for gravel streets.
8. 0.27 is used for the rainfall coefficient for pervious areas.
9. Each proposed developed lot is assumed to have 2,500 sq ft of impervious surfacing for future development.
10. Detention System and stormwater Modeling is performed by using Hydraflow Hydrographs Extension for AutoCad Civil 3D. Modeling results can be found in the attachments.

### Appendix and Attachments

The following attached items coincide with the following report which are located in the Appendix.

1. Concept/Site Layout Map
2. Existing Conditions Map (with drainage areas)
3. Proposed Conditions Map (with drainage areas)
4. Hydrograph and Detention Analysis
5. Riley County Rainfall Intensities Table
6. Erosion Control Details

### Pre Development Conditions

The existing 11.5 acre site includes one drainage area (DA). Offsite tracts, Tract one and Tract two west of Perry Addition is included in the study to account for the additional runoff entering Perry Addition. The entire site drains east from Kitten Creek Road to the existing creek bordering the east edge of Perry Addition. The Creek then drains to the south. The slopes generally range from five to thirteen percent across the entire site. The existing drainage area can be seen on the Existing Conditions Map located in the appendix. Also shown is the floodplain following along the creek. The two existing tracts bordering the proposed subdivision are residential developments consisting of one house per lot.

The total run-off for the existing site analyzed for the pre-development conditions are located in the table below. Along with the run-off, Table 1 shows the breakdown of grass, gravel, and impervious surfacing for the drainage area. As shown in Table 1, the pre-development runoff for a 100 year storm for the total site is 18.21 cfs and occurs 30 minutes into the rain event.

**TABLE 1-PRE DEVELOPMENT CONDITIONS**

Pre Development Conditions									
Drainage Area	Grass (SF)	Impervious (SF)	Gravel (SF)	Total Area (SF)	C Value	Tc	Storm Event		
							Q2(CFS)	Q10(CFS)	Q100(CFS)
DA1	487,693	7,489	5,769	500,951	0.28	29	8.79	12.55	18.21
<b>Total Q(CFS)</b>							<b>8.79</b>	<b>12.55</b>	<b>18.21</b>

**Post Development Conditions**

The proposed 11.5 acre site for post-development will have two drainage areas. The difference from the existing conditions is that DA 1 and DA 2 slightly increase in pervious and gravel surfacing due to the addition of the new access road and residential housing. DA 1 still drains to the east into the creek where it turns south until it leaves the site. DA 2 consists of the access road and the two tracts from the offsite residential properties bordering Perry Addition. DA 2 all drains south of the cul-de-sac where it enters the creek. As shown in the table below DA one has 14.31 cfs of runoff during a 100 year event at 29 minutes. DA two’s runoff is 5.54 cfs at 27 minutes during the same 100 year event. When DA one and two are combined the maximum runoff from the site for a 100 year event is 18.64 cfs at 28 minutes. The runoff for the 2 year and 10 year events are also shown.

**TABLE 2- POST DEVELOPMENT CONDITIONS**

Drainage Area	Grass (SF)	Impervious (SF)	Gravel (SF)	Total Area (SF)	C Value	Tc	Storm Event		
							Q2(CFS)	Q10(CFS)	Q100(CFS)
DA1	356,610	7,437	9,672	373,719	0.29	29	6.92	9.87	14.31
DA2	117,135	2,500	7,597	127,232	0.30	27	2.70	3.84	5.54
MAX	Max Runoff Reached at 28 Minutes (CFS) =						9.03	12.87	18.64

To summarize, the table below presents an overview and comparison of the calculated runoff between the existing and proposed conditions. The net increase in storm water runoff for a 100 year storm from existing conditions to proposed conditions is 0.43 cfs.

**TABLE 3-PRE VS POST DEVELOPMENT RUNOFF**

Stage	Q2(CFS)	Q10(CFS)	Q100(CFS)
Existing Conditions	8.79	12.55	18.21
Proposed Conditions	9.03	12.87	18.64
Net Increase From Existing Conditions	0.24	0.32	0.43

**Storm System Detention**

In order to alleviate the 0.43 cfs increase from the 100 year rainfall event, detention is needed. Hydrograph routing was modeled using Hydraflow to determine the approximate sizing of the detention storage and outlet structure needed. In order to provide the least impact to the proposed lots it is determined that the best location for the pond is directly south of the proposed cul-de-sac. The future driveway for lot two will provide a berm that is utilized as a detention pond outlet structure. The detention pond limits can be seen in the proposed conditions map located in the appendix. DA 2 is routed through the detention pond. Water along the north side of Angelia’s Way will be routed under the proposed street by an 18” CMP. The detention pond will provide a maximum storage of 9,000 cubic feet. During a 100 year rain event the pond will only utilize 2,900 cubic feet, therefore providing capacity for several feet of freeboard and provide additional relief to the watershed system than what exists today. The outlet structure is a 10” CMP at 80 feet in length. The pipe will discharge near the west bank of the creek. The stage storage and stage discharge hydrographs can be found in the Appendix.

The following post detention runoff can be seen in the table below. After the detention is in place it shows the new post development runoff as 17.48 cfs for a 100 year event at 28 minutes.

**TABLE 4- POST DETENTION CONDITIONS**

Post Detention Conditions									
Drainage Area	Grass (SF)	Impervious (SF)	Gravel (SF)	Total Area (SF)	C Value	Tc	Storm Event		
							Q2(CFS)	Q10(CFS)	Q100(CFS)
DA1	356,610	7,437	9,672	373,719	0.29	29	6.92	9.87	14.31
DA2	117,135	2,500	7,597	127,232	0.30	30	1.93	2.51	3.25
MAX	Max Runoff Reached at 28 Minutes (CFS) =						8.84	12.35	17.48

### Stormwater Mitigation

Due to the site having a moderate slopes and being near the 100 year floodplain, erosion control methods are recommended as shown on the site layout plan. Silt fence ditch checks are recommended along the proposed Angela's Way and Silt fence is recommend along the east side of the grading limits to prevent any sediment from entering the floodplain.

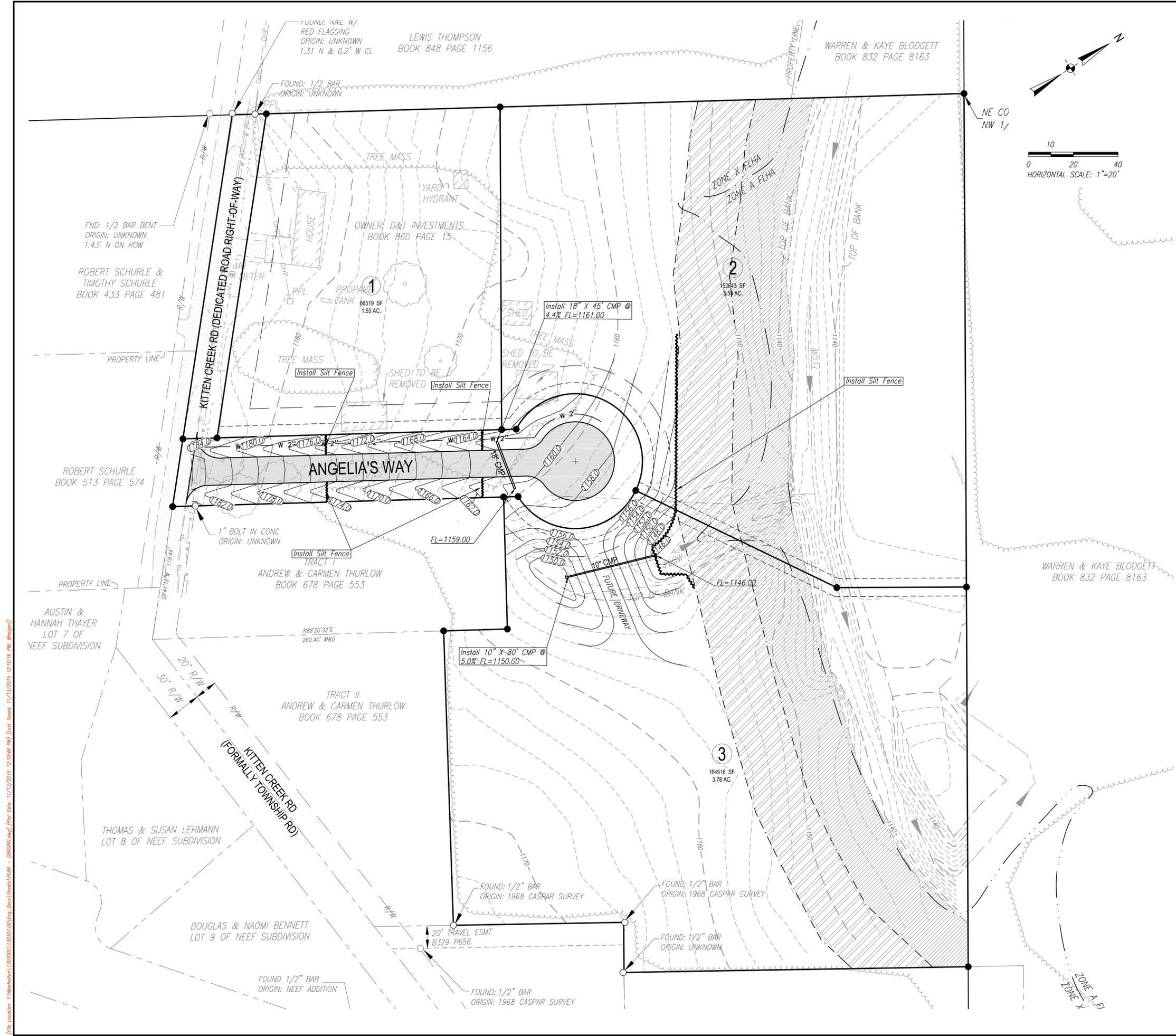
### Conclusion

The existing runoff for a 100 year event for the studied area is 18.21 cfs. The proposed development runoff will increase to 18.64 cfs. It is determined that a detention system is required to reduce the outflow to meet existing conditions which would be a reduction of 0.43 cfs for the 100 year event. Therefore an above ground detention is designed to be placed south of the proposed Angela's Way. It is determined that in order to reduce the proposed runoff by 0.43 cfs that a 10" outlet structure would be required. The table below illustrates the pre and post flows based on the recommendations in this report. It shows the net difference during a 2, 10, and 100 year event. The table shows a decrease in runoff during the 10 and 100 year events and slight increase in the 2 year event.

### EXISTING RUNOFF VS POST DETENTION

Stage	Q2(CFS)	Q10(CFS)	Q100(CFS)
Existing Conditions	8.79	12.55	18.21
Post Detention	8.84	12.35	17.48
Net Difference	0.05	-0.20	-0.73

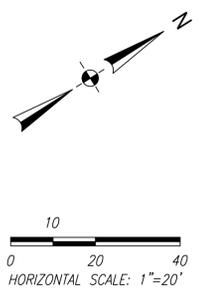
# Appendix



### LEGEND

**GENERAL**

- EXISTING GRADE CONTOURS
- FINISH GRADE CONTOURS
- PROPERTY LINE
- DRAINAGE ARROWS
- DRAINAGE FLOW PATTERN
- SILT FENCE



### GRADING NOTES

1. THE GRADING CONTRACTOR SHALL COORDINATE THE SITE GRADING WITH PROPOSED UTILITIES CONSTRUCTION.
2. THE PROPOSED CONTOURS REPRESENT TOP OF PAVEMENT, SIDEWALK, & GRADING ELEVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE CROSS SECTION DEPTH AND SHALL ADJUST THE SUBGRADE ELEVATIONS AND QUANTITIES ACCORDINGLY PRIOR TO BEGINNING GRADING OPERATIONS.
3. THE EXISTING AND PROPOSED FINISHED GROUND SURFACES ARE AVAILABLE ELECTRONICALLY VIA E-MAIL (AUTOCAD FORMAT). THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE EXISTING GROUND SURFACE ELEVATIONS.
4. EARTHWORK SHALL BE MOVED, STORED, AND COMPACTED PER THE GEOTECHNICAL REQUIREMENTS AS OUTLINED IN THE SOILS REPORT FOR THIS PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE WATER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL. THE CONTRACTOR SHALL COMPLY WITH ALL THE GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SEDIMENT CONTROL BARRIERS FOR A PERIOD THAT IS COMPLIANT WITH THE STATE STORMWATER DISCHARGE PERMIT ISSUED FOR THIS PROJECT.
7. ALL SLOPES ARE TO BE 4:1 OR FLATTER UNLESS OTHERWISE INDICATED.
8. CONTRACTOR SHALL GRADE ALL LOW SPOTS TO DRAIN.
9. SLOPES OF CURB & GUTTER SHALL SLOPE TO MATCH PROPOSED DRAINAGE.

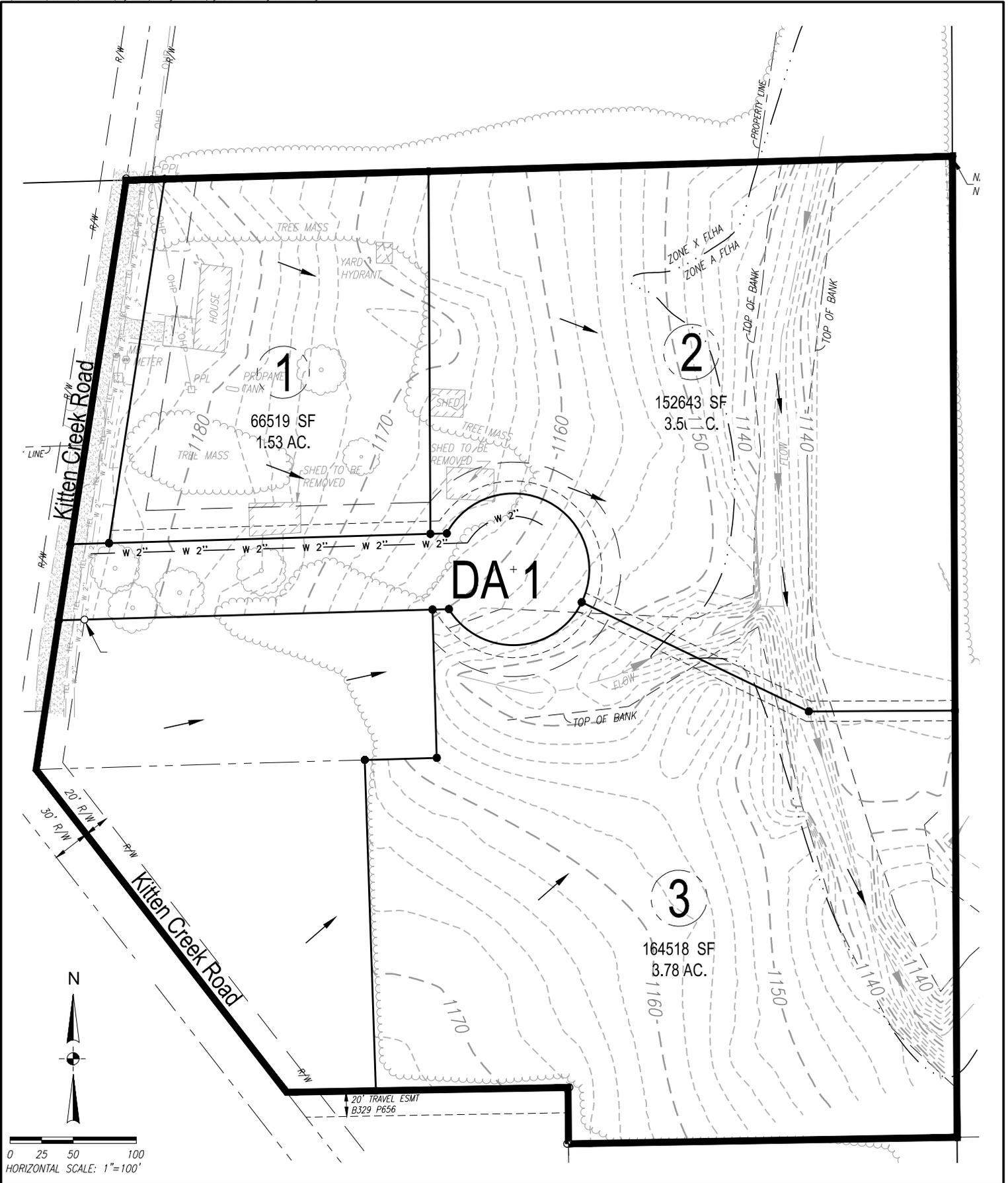
NO.	REVISIONS	DATE

**FIGURE 1**  
**CONCEPT / SITE LAYOUT**

**PERRY ADDITION**  
**RILEY COUNTY, KS**

PROJECT	Perry Addition
DATE	11/10/2015
JOB NO.	00130307.00

File Location: X:\Workstation\13010051\1301007001\Eng\_Docs\Sheets\PLAN - 080001.dwg [Plot Date: 11/13/2015 12:10:48 PM] [Last Saved: 11/13/2015 12:10:16 PM, Mwppl]



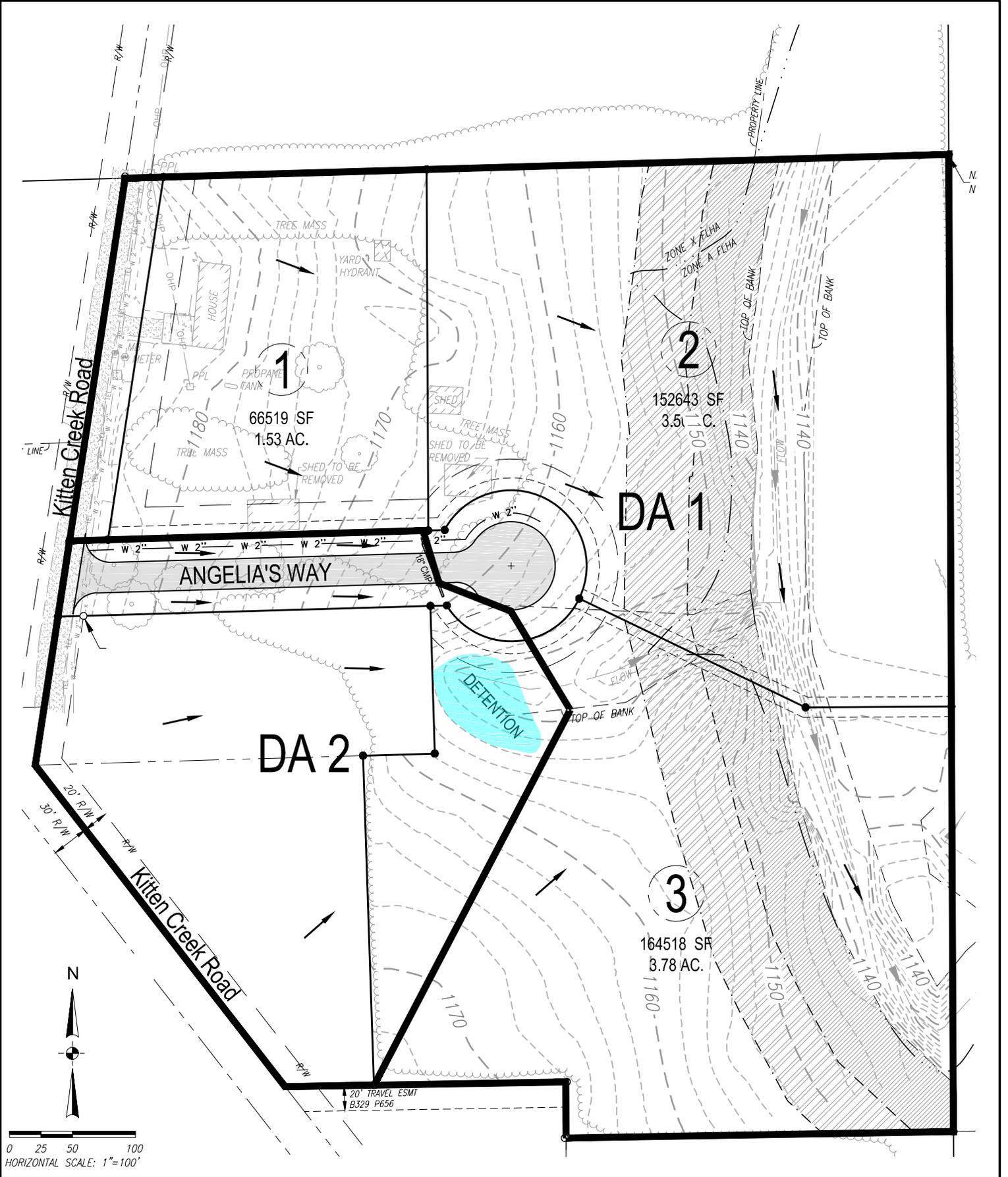
PERRY ADDITION  
RILEY COUNTY, KANSAS

FIGURE 2  
EXISTING DRAINAGE  
AREAS

**benesch**  
Alfred Benesch & Company  
3226 Kimball Avenue  
Manhattan, Kansas 66503  
785-539-2202

PROJECT PERRY ADDITION	SHEET NO.
DATE NOVEMBER 2015	FIG. 2
JOB NO.	

Job No. -



PERRY ADDITION  
RILEY COUNTY, KANSAS

FIGURE 3  
PROPOSED DRAINAGE  
AREAS



Alfred Benesch & Company  
3226 Kimball Avenue  
Manhattan, Kansas 66503  
785-539-2202

Job No. -

PROJECT  
PERRY ADDITION

DATE  
NOVEMBER 2015

JOB NO.

SHEET NO.

FIG. 3

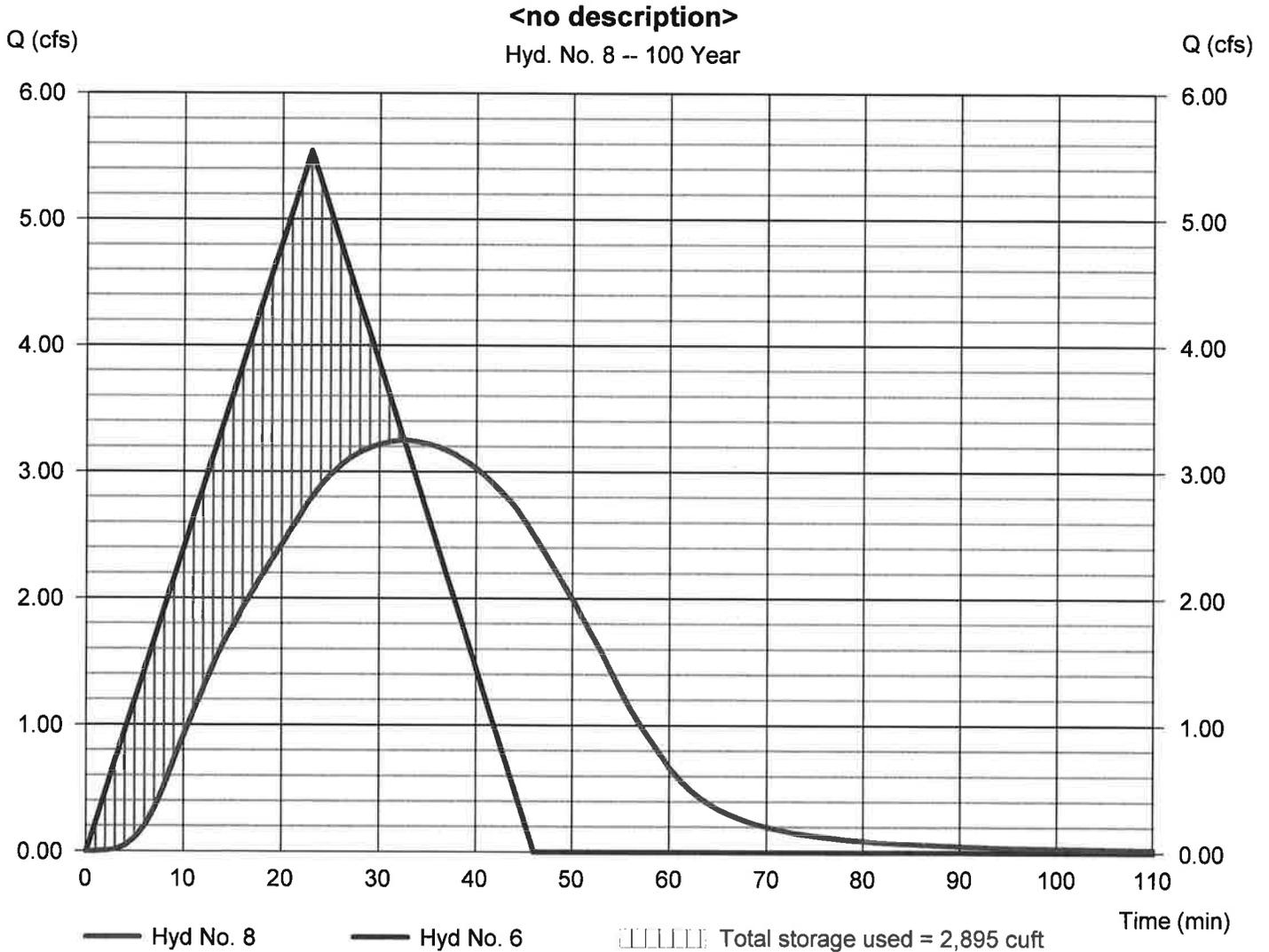
# Hydrograph Report

## Hyd. No. 8

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 3.246 cfs
Storm frequency	= 100 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 7,640 cuft
Inflow hyd. No.	= 6 - proposed detention pond	Max. Elevation	= 101.95 ft
Reservoir name	= <New Pond>	Max. Storage	= 2,895 cuft

Storage Indication method used.



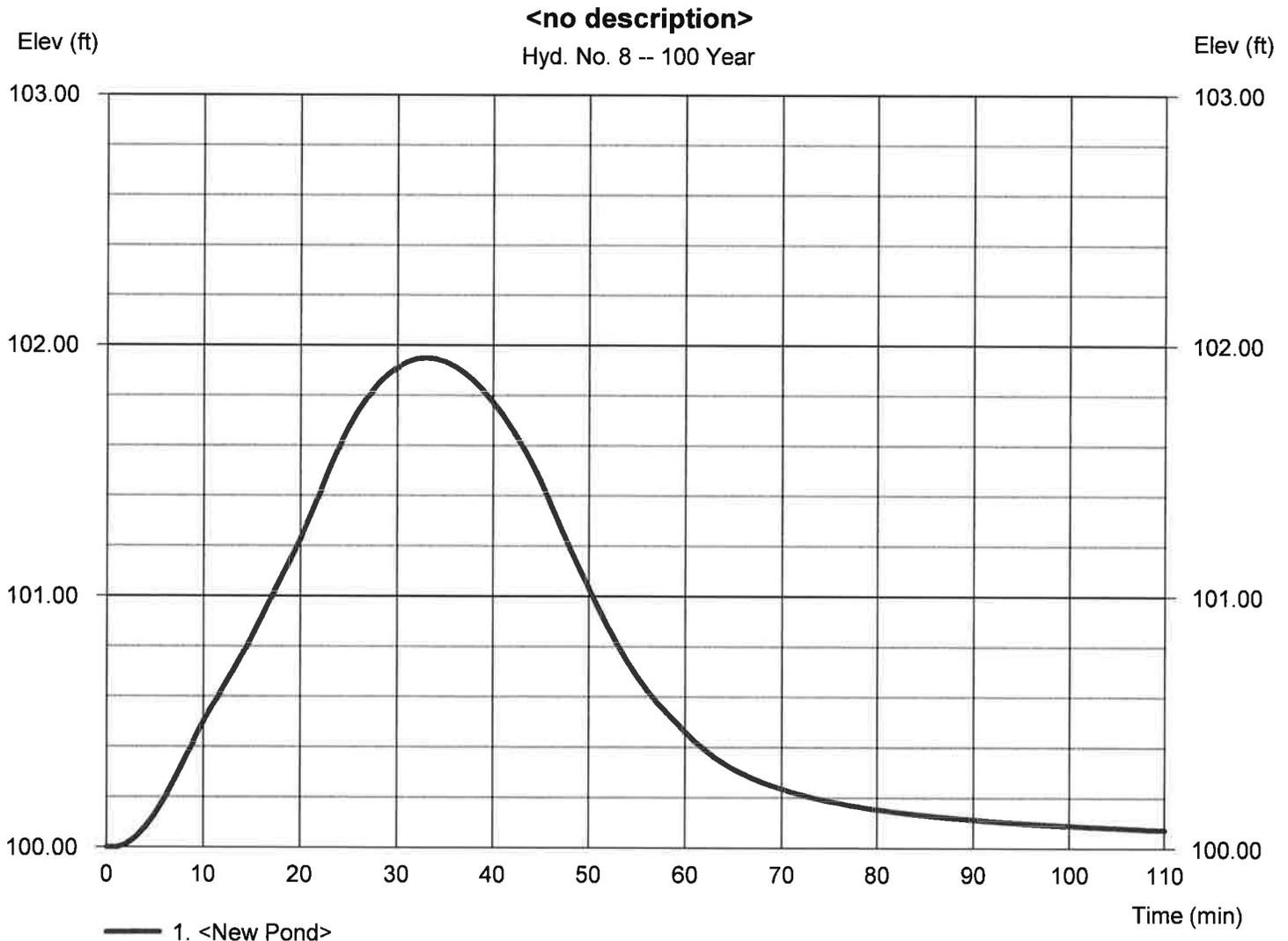
# Hydrograph Report

## Hyd. No. 8

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 3.246 cfs
Storm frequency	= 100 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 7,640 cuft
Inflow hyd. No.	= 6 - proposed detention pond	Max. Elevation	= 101.95 ft
Reservoir name	= <New Pond>	Max. Storage	= 2,895 cuft

Storage Indication method used.



RAINFALL INTENSITY TABLE

RILEY COUNTY  
KANSAS

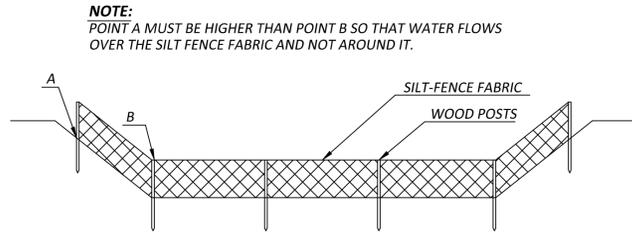
THIS TABLE CONTAINS AVERAGE RAINFALL INTENSITIES  
IN INCHES PER HOUR.

DURATION, HR:MIN	RETURN PERIOD						
	1 YR	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
0:05	4.63	5.40	6.48	7.26	8.41	9.31	10.20
0:06	4.44	5.19	6.23	6.99	8.10	8.98	9.84
0:07	4.28	5.00	6.02	6.76	7.84	8.68	9.52
0:08	4.12	4.83	5.82	6.54	7.58	8.41	9.22
0:09	3.98	4.66	5.62	6.32	7.34	8.14	8.93
0:10	3.84	4.50	5.43	6.11	7.10	7.87	8.64
0:11	3.70	4.34	5.25	5.91	6.86	7.61	8.36
0:12	3.57	4.19	5.07	5.71	6.64	7.36	8.09
0:13	3.45	4.05	4.91	5.53	6.43	7.14	7.84
0:14	3.33	3.92	4.76	5.36	6.24	6.92	7.61
0:15	3.22	3.80	4.62	5.21	6.06	6.73	7.40
0:16	3.12	3.69	4.49	5.07	5.91	6.56	7.21
0:17	3.03	3.58	4.37	4.94	5.76	6.40	7.04
0:18	2.94	3.49	4.26	4.82	5.63	6.26	6.89
0:19	2.86	3.40	4.16	4.71	5.50	6.12	6.74
0:20	2.78	3.31	4.07	4.61	5.39	6.00	6.60
0:21	2.71	3.23	3.98	4.51	5.28	5.88	6.48
0:22	2.64	3.16	3.89	4.42	5.18	5.77	6.36
0:23	2.58	3.09	3.81	4.33	5.08	5.66	6.24
0:24	2.52	3.02	3.74	4.25	4.99	5.56	6.13
0:25	2.46	2.95	3.67	4.17	4.90	5.46	6.03
0:26	2.41	2.89	3.60	4.10	4.81	5.37	5.93
0:27	2.36	2.84	3.53	4.03	4.73	5.28	5.83
0:28	2.31	2.78	3.47	3.96	4.65	5.20	5.74
0:29	2.26	2.73	3.41	3.89	4.58	5.11	5.65
0:30	2.22	2.68	3.35	3.83	4.50	5.03	5.56
0:31	2.18	2.63	3.30	3.76	4.43	4.96	5.48
0:32	2.14	2.59	3.24	3.70	4.37	4.88	5.39
0:33	2.10	2.54	3.19	3.65	4.30	4.81	5.31
0:34	2.06	2.50	3.14	3.59	4.24	4.74	5.24
0:35	2.03	2.46	3.09	3.54	4.17	4.67	5.16
0:36	1.99	2.42	3.05	3.48	4.11	4.60	5.09
0:37	1.96	2.38	3.00	3.43	4.05	4.54	5.01
0:38	1.93	2.35	2.96	3.38	4.00	4.47	4.95
0:39	1.90	2.31	2.91	3.34	3.94	4.41	4.88
0:40	1.87	2.28	2.87	3.29	3.88	4.35	4.81
0:41	1.84	2.24	2.83	3.24	3.83	4.29	4.75
0:42	1.81	2.21	2.79	3.20	3.78	4.23	4.68
0:43	1.79	2.18	2.75	3.16	3.73	4.18	4.62
0:44	1.76	2.15	2.72	3.11	3.68	4.12	4.56
0:45	1.74	2.12	2.68	3.07	3.63	4.07	4.50

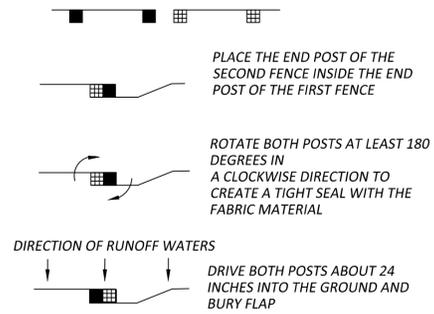
X:\PUBLICWORKS\ENGINEERING\STANDARD SPECIFICATIONS\CITY STD-DETAILS &DWGS\MANHATTAN STANDARD DRAWINGS (MSDXXXX) CAD\MSD\_2820 - EROSION CONTROL SILT FENCE DETAILS.DWG

PLOT DATE: 3/12/2014 11:14 AM

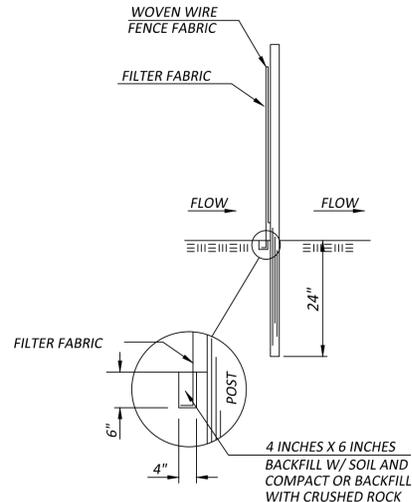
PLOTTED BY: THOMAS MERREN



**ELEVATION**  
**SILT FENCE DITCH CHECKS**  
(NOT TO SCALE)



**ATTACHING TWO SILT FENCES**  
(NOT TO SCALE)



**ANCHOR TRENCH DETAIL**  
(NOT TO SCALE)

**MATERIAL SPECIFICATION:**

SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE POSTS USED TO SUPPORT THE SILT FENCE FABRIC SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. SILT FENCE FABRIC SHOULD BE ATTACHED TO THE WOODEN POSTS WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**PLACEMENT:**

PLACE SILT FENCE IN DITCHES WHERE IT IS UNLIKELY THAT IT WILL BE OVERTOPPED. WATER SHOULD FLOW THROUGH A SILT FENCE DITCH CHECK, NOT OVER IT. SILT FENCE DITCH CHECKS OFTEN FAIL WHEN OVERTOPPED. SILT FENCE DITCH CHECKS SHOULD BE PLACED PERPENDICULAR TO THE FLOWLINE OF THE DITCH. THE SILT FENCE SHOULD EXTEND FAR ENOUGH SO THAT THE GROUND LEVEL AT THE ENDS OF THE FENCE IS HIGHER THAN THE TOP OF THE LOW POINT OF THE FENCE. THIS PREVENTS WATER FROM FLOWING AROUND THE CHECK. SILT FENCE DITCH CHECKS SHOULD NOT BE PLACED IN DITCHES WHERE HIGH FLOWS ARE EXPECTED. ROCK CHECKS SHOULD BE USED INSTEAD. SILT FENCE SHOULD BE PLACED IN DITCHES WITH SLOPES OF 6% OR LESS. FOR SLOPES STEEPER THAN 6%, ROCK CHECKS SHOULD BE USED.

**THE FOLLOWING TABLE PROVIDES CHECK SPACING FOR A GIVEN DITCH GRADE:**

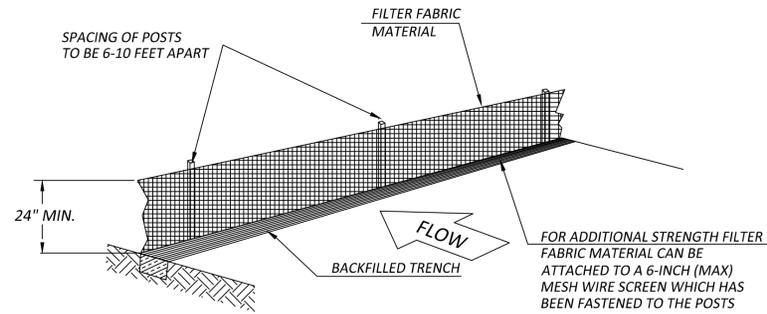
DITCH CHECK GRADE (%)	SPACING CHECK (FEET)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

**PROPER INSTALLATION METHOD:**

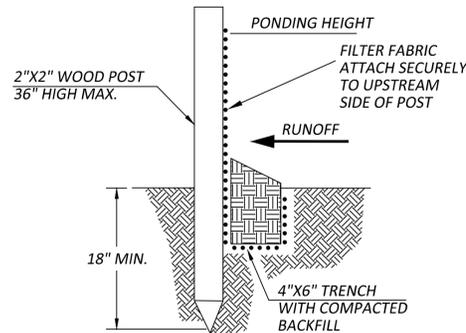
EXCAVATE A TRENCH PERPENDICULAR TO THE DITCH FLOWLINE THAT IS AT LEAST 12" DEEP BY 6" WIDE. EXTEND THE TRENCH IN A STRAIGHT LINE ALONG THE ENTIRE LENGTH OF THE PROPOSED DITCH CHECK. PLACE THE SOIL ON THE UPSLOPE SIDE OF THE TRENCH FOR LATER USE. ROLL OUT A CONTINUOUS LENGTH OF SILT FENCE FABRIC ON THE DOWNSLOPE SIDE OF THE TRENCH. PLACE THE EDGE OF THE FABRIC IN THE TRENCH STARTING AT THE TOP UPSLOPE EDGE OF THE TRENCH. LINE TWO SIDES OF THE TRENCH WITH THE FABRIC AS SHOWN ON DETAIL. BACKFILL OVER THE FABRIC IN THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT. AFTER FILLING THE TRENCH, APPROXIMATELY 24" TO 36" OF SILT FENCE FABRIC SHOULD REMAIN EXPOSED. LAY THE EXPOSED SILT FENCE ON THE UPSLOPE SIDE OF THE TRENCH TO CLEAR AN AREA FOR DRIVING IN THE POSTS. JUST DOWNSTREAM OF THE TRENCH, DRIVE POSTS INTO THE GROUND TO A DEPTH OF AT LEAST 24". PLACE POSTS NO MORE THAN 4' APART. ATTACH THE SILT FENCE TO THE ANCHORED POST WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**INSPECTION AND MAINTENANCE:**

SILT FENCE DITCH CHECKS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION: DOES WATER FLOW AROUND THE DITCH CHECK? DOES WATER FLOW UNDER THE DITCH CHECK? DOES THE SILT FENCE SAG EXCESSIVELY? HAS THE SILT FENCE TORN OR BECOME DETACHED FROM THE POSTS? DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE DITCH CHECK?



**SILT FENCE BARRIERS**  
(NOT TO SCALE)



**ANCHOR DETAIL**  
(NOT TO SCALE)

**MATERIAL SPECIFICATION:**

SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE POSTS USED TO SUPPORT THE SILT FENCE FABRIC SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. SILT FENCE FABRIC SHOULD BE ATTACHED TO THE WOODEN POSTS WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**PLACEMENT:**

A SLOPE BARRIER SHOULD BE USED AT THE TOE OF A SLOPE WHEN A DITCH DOES NOT EXIST. THE SLOPE BARRIER SHOULD BE PLACED ON NEARLY LEVEL GROUND 5' TO 10' AWAY FROM THE TOE OF A SLOPE. THE BARRIER IS PLACED AWAY FROM THE TOE OF THE SLOPE TO PROVIDE ADEQUATE STORAGE FOR SETTLING OUT SEDIMENT. WHEN PRACTICABLE, SILT FENCE SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. SILT FENCE SLOPE BARRIERS CAN ALSO BE PLACED ALONG RIGHT-OF-WAY FENCE LINES TO KEEP SEDIMENT FROM CROSSING ONTO ADJACENT PROPERTY. WHEN PLACED IN THIS MANNER, THE SLOPE BARRIER WILL NOT LIKELY FOLLOW CONTOURS.

**PROPER INSTALLATION METHOD:**

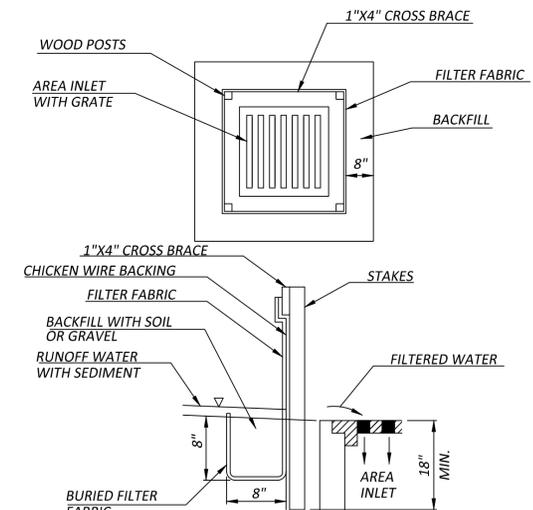
EXCAVATE A TRENCH THE LENGTH OF THE PLANNED SLOPE BARRIER THAT IS 6" DEEP BY 4" WIDE. MAKE SURE THAT THE TRENCH IS EXCAVATED ALONG A SINGLE CONTOUR. WHEN PRACTICABLE, SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. PLACE THE SOIL ON THE UPSLOPE SIDE OF THE TRENCH FOR LATER USE. ROLL OUT A CONTINUOUS LENGTH OF SILT FENCE FABRIC ON THE DOWNSLOPE SIDE OF THE TRENCH. PLACE THE EDGE OF THE FABRIC IN THE TRENCH STARTING AT THE TOP UPSLOPE EDGE. LINE ALL THREE SIDES OF THE TRENCH WITH THE FABRIC. BACKFILL OVER THE FABRIC IN THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT. AFTER FILLING THE TRENCH, APPROXIMATELY 24" TO 36" OF SILT-FENCE FABRIC SHOULD REMAIN EXPOSED. LAY THE EXPOSED SILT FENCE UPSLOPE OF THE TRENCH TO CLEAR AN AREA FOR DRIVING IN THE POSTS. JUST DOWNSLOPE OF THE TRENCH, DRIVE POSTS INTO THE GROUND TO A DEPTH OF AT LEAST 18". PLACE POSTS NO MORE THAN 4' APART. ATTACH THE SILT FENCE TO THE ANCHORED POST WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:**

WHEN PRACTICABLE, DO NOT PLACE SILT FENCE SLOPE BARRIERS ACROSS CONTOURS. SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. WHEN THE FLOW CONCENTRATES, IT OVERTOPS THE BARRIER AND THE SILT FENCE SLOPE BARRIER QUICKLY DETERIORATES. DO NOT PLACE SILT-FENCE POSTS ON THE UPSLOPE SIDE OF THE SILT FENCE FABRIC. IN THIS CONFIGURATION, THE FORCE OF THE WATER IS NOT RESTRICTED BY THE POSTS, BUT ONLY BY THE STAPLES (WIRE, ZIP TIES, NAILS, ETC.). THE SILT FENCE WILL RIP AND FAIL. DO NOT PLACE SILT FENCE SLOPE BARRIERS IN AREAS WITH SHALLOW SOILS UNDERLAIN BY ROCK. IF THE BARRIER IS NOT SUFFICIENTLY ANCHORED, IT WILL WASH OUT. SILT FENCE SLOPE BARRIERS MUST BE DUG INTO THE GROUND-SILT FENCE AT GROUND LEVEL DOES NOT WORK BECAUSE WATER WILL FLOW UNDERNEATH.

**INSPECTION AND MAINTENANCE:**

SILT FENCE SLOPE BARRIERS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION: ARE THERE ANY POINTS ALONG THE SLOPE BARRIER WHERE WATER IS CONCENTRATING? DOES WATER FLOW UNDER THE SLOPE BARRIER? DO THE SILT FENCES SAG EXCESSIVELY? HAS THE SILT FENCE TORN OR BECOME DETACHED FROM THE POSTS? DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE SLOPE BARRIER?



**SILT FENCE BARRIERS FOR AREA INLETS**  
(INLET PROTECTION)  
(NOT TO SCALE)

**MATERIAL SPECIFICATION:**

SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE WIRE OR POLYMERIC MESH BACKING USED TO HELP SUPPORT THE SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE POSTS USED TO SUPPORT THE SILT FENCE FABRIC SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. THE MATERIAL USED TO FRAME THE TOPS OF THE POSTS SHOULD BE 1" BY 4" BOARDS. SILT FENCE FABRIC AND SUPPORT BACKING SHOULD BE ATTACHED TO THE WOODEN POSTS AND FRAME WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**PLACEMENT:**

PLACE A SILT FENCE DROP INLET BARRIER IN A LOCATION WHERE IT IS UNLIKELY TO BE OVERTOPPED. WATER SHOULD FLOW THROUGH SILT FENCE, NOT OVER IT. SILT FENCE BARRIERS FOR AREA INLETS OFTEN FAIL WHEN REPEATEDLY OVERTOPPED. WHEN USED AS A BARRIER FOR AREA INLETS, SILT FENCE FABRIC AND POSTS MUST BE SUPPORTED AT THE TOP BY A WOODEN FRAME. WHEN A SILT FENCE BARRIER FOR AREA INLETS IS LOCATED NEAR AN INLET THAT HAS STEEP APPROACH SLOPES, THE STORAGE CAPACITY BEHIND THE BARRIER IS DRASTICALLY REDUCED. TIMELY REMOVAL OF SEDIMENT MUST OCCUR FOR A BARRIER TO OPERATE PROPERLY IN THIS LOCATION.

**PROPER INSTALLATION METHOD:**

EXCAVATE A TRENCH AROUND THE PERIMETER OF THE AREA INLET THAT IS AT LEAST 8" DEEP BY 8" WIDE. DRIVE POSTS TO A DEPTH OF AT LEAST 18" AROUND THE PERIMETER OF THE AREA INLET. THE DISTANCE BETWEEN POSTS SHOULD BE 4' OR LESS. IF THE DISTANCE BETWEEN TWO ADJACENT CORNER POSTS IS MORE THAN 4', ADD ANOTHER POST(S) BETWEEN THEM. CONNECT THE TOPS OF ALL THE POSTS WITH A WOODEN FRAME MADE OF 1" BY 4" BOARDS. USE NAILS OR SCREWS FOR FASTENING. ATTACH THE WIRE OR POLYMERIC-MESH BACKING TO THE OUTSIDE OF THE POST/FRAME STRUCTURE WITH STAPLES, WIRE, ZIP TIES, OR NAILS. ROLL OUT A CONTINUOUS LENGTH OF SILT FENCE FABRIC LONG ENOUGH TO WRAP AROUND THE PERIMETER OF THE AREA INLET. ADD MORE LENGTH FOR OVERLAPPING THE FABRIC JOINT. PLACE THE EDGE OF THE FABRIC IN THE TRENCH, STARTING AT THE OUTSIDE EDGE OF THE TRENCH. LINE ALL THREE SIDES OF THE TRENCH WITH THE FABRIC. BACKFILL OVER THE FABRIC IN THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT. AFTER FILLING THE TRENCH, APPROXIMATELY 24" TO 36" OF SILT FENCE FABRIC SHOULD REMAIN EXPOSED. ATTACH THE SILT FENCE TO THE OUTSIDE OF THE POST/FRAME STRUCTURE WITH STAPLES, WIRE, ZIP TIES, OR NAILS. THE JOINT SHOULD BE OVERLAPPED TO THE NEXT POST.

NOTE: WHEN A SILT FENCE BARRIER FOR AREA INLET IS PLACED IN A SHALLOW MEDIAN DITCH, MAKE SURE THAT THE TOP OF THE BARRIER IS NOT HIGHER THAN THE PAVED ROAD. IN THIS CONFIGURATION, WATER MAY SPREAD ONTO THE ROADWAY CAUSING A HAZARDOUS CONDITION.

**LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:**

WATER SHOULD FLOW THROUGH A SILT FENCE BARRIER FOR AREA INLET-NOT OVER IT. PLACE A SILT FENCE BARRIER FOR AREA INLET IN A LOCATION WHERE IT IS UNLIKELY TO BE OVERTOPPED. SILT FENCE BARRIER FOR AREA INLETS OFTEN FAIL WHEN REPEATEDLY OVERTOPPED. DO NOT PLACE POSTS ON THE OUTSIDE OF THE SILT FENCE BARRIER FOR AREA INLET. IN THIS CONFIGURATION, THE FORCE OF THE WATER IS NOT RESISTED BY THE POSTS, BUT ONLY BY THE STAPLES (WIRE, ZIP TIES, NAILS, ETC.). THE SILT FENCE WILL RIP AND FAIL. DO NOT INSTALL SILT FENCE BARRIER FOR AREA INLETS WITHOUT FRAMING THE TOP OF THE POSTS. THE CORNER POSTS AROUND AREA INLETS ARE STRESSED IN TWO DIRECTIONS WHEREAS A NORMAL SILT FENCE IS ONLY STRESSED IN ONE DIRECTION. THIS ADDED STRESS REQUIRES MORE SUPPORT.

**INSPECTION AND MAINTENANCE:**

SILT FENCE BARRIER FOR AREA INLETS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION: DOES WATER FLOW UNDER THE SILT FENCE? DOES THE SILT FENCE SAG EXCESSIVELY? HAS THE SILT FENCE TORN OR BECOME DETACHED FROM THE POSTS? DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE AREA INLET BARRIER?

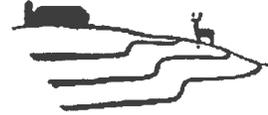
1	03/14	TM	UPDATE FONTS AND TEXT
REV. #	REV. DATE	REV. BY	REVISION DESCRIPTION
<b>MANHATTAN STANDARD DETAILS</b> <b>MSD 2820 EC SILT FENCE DETAILS</b>			
CITY ENGINEER: BRIAN JOHNSON, P.E. DESIGN BY: BRIAN JOHNSON, P.E.			
CITY PROJ. #:			
DATE: MARCH 2014	DRAWN BY: MERREN	PAGE	OF





## Riley County Conservation District

3705 Miller Parkway - Suite A, Manhattan, KS 66503-7604  
Phone 785 537 8764 ext 1301 FAX 855 533-5069



September 22, 2015

-----  
Bob Isaac- Planner  
Planning & Development  
110 Courthouse Plaza  
Manhattan, KS 66502

Re: D&T Investments, LLC Plat review

Dear Mr. Isaac,

The tract of land in question was evaluated on site by our office. While we never like to see land taken from the Agricultural District to the Residential Planned Unit Development, this is an especially troubling plan. With the past and current flooding issues on Wildcat Creek, we do not believe that further development of this tributary area would be advisable.

As it stands, infiltration is relatively good but added development will lead to increased runoff from roofs, driveways and roads. There is also a large concern about sedimentation from construction making its way into Kitten and Wildcat creeks. To top it off, there will be some concern with septic systems becoming flooded in this area and leaking sewage into the creeks.

Although we respect the rights of private property owners we feel now is the time for Riley County to begin the process of limiting development in critical areas of the Wildcat Creek Watershed. Denying this rezoning request may be that first step in starting to make the difficult decisions that must be made.

If you would like some help developing a resource conservation plan for this plot, please don't hesitate to call us.

For the Board of Supervisors,

*Aubrey Evans*  
District Manager

**From:** [Evans, Aubrey - CD, Manhattan, KS](#)  
**To:** [Bob Isaac](#)  
**Subject:** Benesch subdivision  
**Date:** Friday, December 04, 2015 2:14:25 PM

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Bob,

I have reviewed the drainage study provided. All seems well with it, however the Board has not had the opportunity to discuss it. Since I know you are under a time restriction I would like to tentatively say that nothing seems amiss with the study, however, please realize that the Board will be going over it at our next meeting on Thursday the 10<sup>th</sup>. I don't foresee they will have any issues, but it is my job to make sure that it is THEIR opinion of the study that gets forwarded on, not just mine.

Thank you for including us in your plans, and for taking our comments under consideration.

*Aubrey Evans*

District Manager, Riley County Conservation District  
3705 Miller Pkwy Manhattan, KS 66503  
(785) 537-8764 x 1301

*"In short, a land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such." - Aldo Leopold*

**PLAT LEGAL DESCRIPTION**

A TRACT OF LAND SITUATED IN THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER (SE $\frac{1}{4}$  OF NW $\frac{1}{4}$ ) IN SECTION THIRTY-SIX (36), TOWNSHIP NINE (9) SOUTH, RANGE SIX (6) EAST OF THE 6TH P.M., IN RILEY COUNTY, KANSAS, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE CENTERLINE OF KITTEN CREEK ROAD (PREVIOUSLY KNOWN AS TOWNSHIP ROAD) AND THE NORTH LINE OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION 36,

THENCE S08°41'16"W, ALONG THE CENTERLINE OF SAID KITTEN CREEK ROAD, A DISTANCE OF 352.73 FEET;

THENCE N88°20'32"E, ALONG THE NORTH LINE OF A TRACT OF LAND RECORDED IN BOOK 678 ON PAGE 553 IN THE RILEY COUNTY REGISTER OF DEEDS, A DISTANCE OF 295.95 FEET;

THENCE S01°39'28"E, ALONG THE EAST LINE OF SAID TRACT OF LAND, A DISTANCE OF 117.50 FEET;

THENCE S88°20'32"W, ALONG THE SOUTH LINE OF SAID TRACT OF LAND, A DISTANCE OF 57.00 FEET;

THENCE S01°54'51"E, ALONG THE EAST LINE OF SAID TRACT OF LAND, A DISTANCE OF 262.16 FEET;

THENCE N89°02'08"E, ALONG THE NORTH LINE OF A TRACT OF LAND RECORDED IN BOOK 329 ON PAGE 655 IN THE RILEY COUNTY REGISTER OF DEEDS, A DISTANCE OF 152.17 FEET;

THENCE S00°26'17"E, ALONG THE EAST LINE OF SAID TRACT OF LAND, A DISTANCE OF 44.59 FEET;

THENCE N89°02'08"E, ALONG THE NORTH LINE OF A TRACT OF LAND RECORDED IN BOOK 836 ON PAGE 620 IN THE RILEY COUNTY REGISTER OF DEEDS, A DISTANCE OF 307.67 FEET TO A POINT ON THE EAST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;

THENCE N00°16'21"W, ALONG THE EAST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36, A DISTANCE OF 777.03 FEET TO THE NORTHEAST CORNER OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION 36;

THENCE S88°20'32"W, ALONG THE NORTH LINE OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION 36, A DISTANCE OF 654.42 FEET TO THE POINT OF BEGINNING, CONTAINING AN AREA OF 421,626.60 SQUARE FEET, 9.679 ACRES.

SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.

**OWNER'S STATEMENT**

AS THE OWNERS OF LAND IDENTIFIED BY THE BOUNDARIES OF LITTLE KITTEN ADDITION; TOM ABBOTT, MEMBER OF D&T INVESTMENTS, LLC HAVE AN INTEREST IN AND THE CAPACITY TO EFFECTUATE THIS DEVELOPMENT PLAN.

TOM ABBOTT, MEMBER - D&T INVESTMENTS, LLC

**ZONING - EXISTING**

SF-4 (SINGLE FAMILY RESIDENTIAL)  
AG (AGRICULTURAL DISTRICT)

**ZONING - PROPOSED**

RPUD: (RESIDENTIAL PLANNED UNIT DEVELOPMENT)

**FLOODPLAIN INFORMATION**

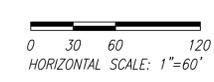
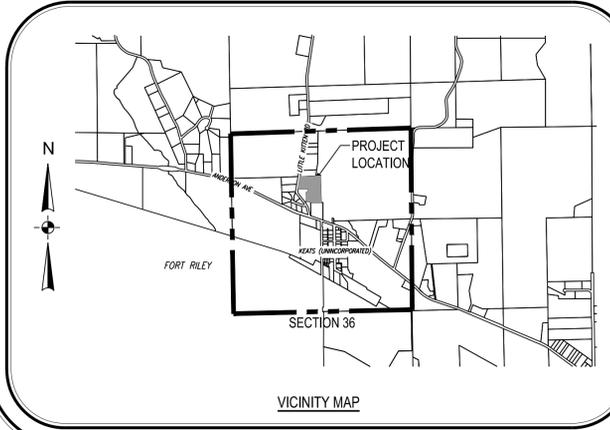
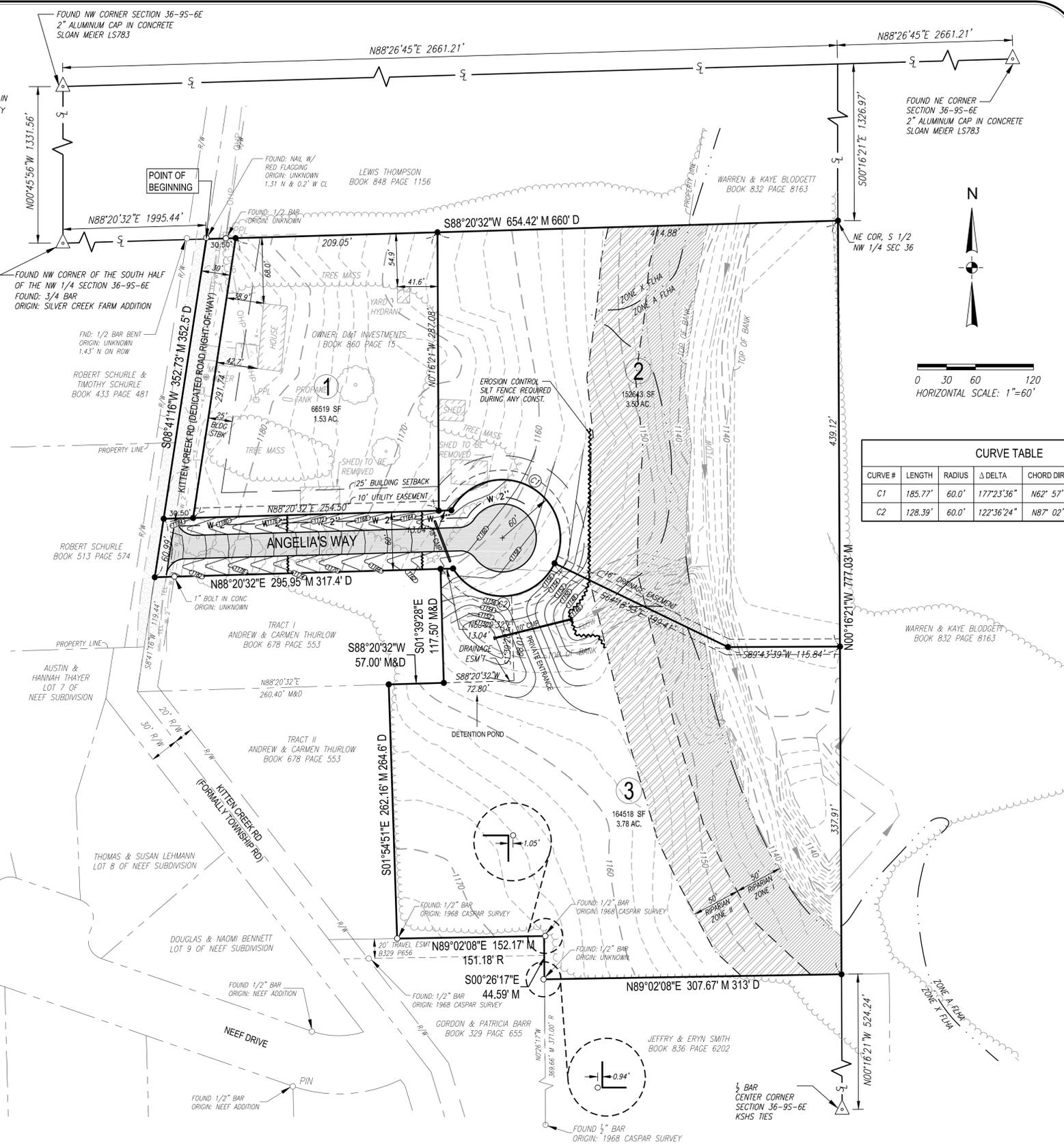
FIRM MAP PANEL NO: 20161C03276  
COUNTY: RILEY  
STATE: KANSAS  
EFFECTIVE DATE: MARCH 16, 2015  
ZONES: PROPERTY IS IDENTIFIED AS BEING IN ZONE A AND ZONE X. ZONE A HAS "NO BASE FLOOD ELEVATIONS DETERMINED" AND ZONE X STATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN".

**PERMITTED USES:**

ALL PERMITTED USES IN THE "SF-1" (SINGLE FAMILY RESIDENTIAL) ZONING DISTRICT, SUBJECT TO THE USE LIMITATIONS OF THAT DISTRICT.

**PERMITTED STRUCTURES:**

- ONE SINGLE FAMILY RESIDENTIAL DWELLING PER LOT SUBJECT TO THE RESTRICTIONS NOTED HEREIN.
- ACCESSORY BUILDINGS AND USES OF SF-1 AS PER THE REQUIREMENTS OF SECTION 13 - ACCESSORY BUILDINGS & USES IN THE RILEY COUNTY ZONING REGULATIONS.



CURVE TABLE					
CURVE #	LENGTH	RADIUS	Δ DELTA	CHORD DIRECTION	CHORD LENGTH
C1	185.77'	60.0'	177°23'36"	N62° 57' 40"W	119.97'
C2	128.39'	60.0'	122°36'24"	N87° 02' 20"E	105.26'

**LINE & SYMBOL LEGEND**

- PLAT BOUNDARY
- - - UTILITY EASEMENT
- ~ EROSION CONTROL/SILT FENCE
- MONUMENT FOUND AS NOTED
- ½"X30" REBAR W/ ORANGE PLASTIC CAP LS#1305 SET
- M MEASURED DISTANCE
- D DEED DISTANCE
- R RECORD DISTANCE

- NOTES:**
- ALL STRUCTURES ARE SHOWN IN APPROXIMATE LOCATIONS
  - WATER SERVICE TO BE PROVIDED BY RILEY COUNTY RURAL WATER DISTRICT NO. 1.
  - THE DEVELOPMENT SHALL BE SERVED BY AN INDIVIDUAL SEPTIC TANK AND LATERAL FIELD ON LOT 1 & SEPTIC LAGOONS ON LOT 2 & 3.
  - IF AN ENTRANCE PIPE IS REQUIRED, THE MINIMUM SIZE SHALL BE CALCULATED IN ACCORDANCE WITH THE RILEY COUNTY STANDARDS AND SPECIFICATIONS. IN NO CASE SHALL THE PIPE DIAMETER BE LESS THAN 15 INCHES.
  - NO COMMON AREAS ARE PROPOSED.
  - PARENT TRACTS ARE RECORDED IN BOOK 860 PAGE 15 IN THE RILEY COUNTY REGISTER OF DEEDS OFFICE.
  - A FORT RILEY, KANSAS AREA OF MILITARY IMPACT REAL ESTATE DISCLOSURE FORM PROVIDED BY RILEY COUNTY PLANNING AND DEVELOPMENT SHALL BE COMPLETED AND FILED ALONG WITH THE PLAT IN THE OFFICE OF THE REGISTER OF DEEDS.
  - THERE SHALL BE NO MOBILE HOMES OR MANUFACTURED HOMES.
  - ALL DRIVES AND PARKING AREAS SHALL CONSIST OF ALL WEATHER SURFACE.
  - AREAS MARKED AS RIPARIAN ZONES ARE SUBJECT TO THE REQUIREMENTS OF SECTION 21C DEVELOPMENT STANDARDS IN THE RILEY COUNTY ZONING REGULATIONS.
  - THE SUBDIVIDING OF ANY LOT SHOWN HEREON SHALL REQUIRE THIS FINAL DEVELOPMENT PLAN TO BE FORMALLY AMENDED.
  - PROPERTY OWNERS SHALL BE REQUIRED TO MAINTAIN ALL DRAINAGE EASEMENTS GRANTED TO THE PUBLIC, NATURAL OR NON-NATURAL STRUCTURES OR VEGETATIVE BARRIERS (INCLUDING BUT NOT LIMITED TO TREES, SHRUBBERY, BERMS, FENCES, AND WALLS) ARE PROHIBITED WITHIN PUBLICLY GRANTED DRAINAGE EASEMENTS.
  - AN AGRICULTURAL PROTECTION EASEMENT SHALL BE FILED WITH THE FINAL PLAT.
  - NET DENSITY PROPOSED EQUALS 1 DWELLING UNIT / 3.2 ACRES.

**BASIS OF BEARING**  
BASIS OF BEARING IS S88°20'32"W ON THE NORTH LINE OF THE SE $\frac{1}{4}$  OF THE NW $\frac{1}{4}$  OF SECTION 36, TOWNSHIP 9 SOUTH, RANGE 6 EAST.

PRELIMINARY PLAT / PRELIMINARY DEVELOPMENT PLAN

# PERRY ADDITION

A RESIDENTIAL PLANNED UNIT DEVELOPMENT

RILEY COUNTY, KANSAS

PREPARED BY

**benesch**  
engineers • scientists • planners

3226 Kimball Ave. • Manhattan, KS • 66503  
(785) 539-2202 • www.benesch.com

[File Location: P:\Manhattan\1303005\1303007\01\Survey\Survey\Survey\1303007.dwg] [Plot Date: 12/7/2015 11:50:39 AM] [Last Saved: 12/7/2015 8:16:44 AM, Birembay]





# PLANNING & DEVELOPMENT

## STAFF REPORT

### Platting and Rezoning

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- PETITION:** (#15-24) Rezone from "SF-5" (Single Family Residential) to "AG" (Agricultural District)  
(#15-25) Plat
- APPLICANT:** Russell M. Simons  
7765 Falcon Rd  
Riley, Kansas 66531
- PROPERTY OWNER:** Russell M. & Karla Simons  
7765 Falcon Rd  
Manhattan, KS 66531
- TYPE OF REQUEST:** Vacate and rezone a portion of Lot 1 of Simons Subdivision from "SF-5" (Single Family Residential) to "AG" (Agricultural District) and replat the remainder of Lot 1 into two (2) lots.
- SIZE OF TRACT:** The subject site is approximately 16.56 acres.
- LOCATION:** Generally located approximately 2000 feet north of Madison Road, on the west side of Falcon Road; Section 35, Township 8 South, Range 5 East; Madison Township.
- JURISDICTION:** This application is subject to the requirements of the Riley County Subdivision Regulations.
- 



**BACKGROUND:** The subject site consists of Lot 1 of Simons Subdivision, which was platted and rezoned from “AG” (Agricultural District) to “SF-5” (Single Family Residential) in February 2010. The applicant stated that he investigated the possibility of developing that portion of Lot 1 situated west of the second order stream transecting the property (approximately half the lot), but found that it wasn’t financially feasible to do so. The applicant currently leases this portion to his neighbor (Scott Howe) for agricultural purposes. Mr. Howe has expressed interest in purchasing said portion to continue farming it. Thus, the applicant is requesting to vacate the aforementioned portion of the lot, rezone it from “SF-5” (Single Family Residential) to “AG” (Agricultural District) to match the land use, and divide the remainder of Lot 1 into two (2) residential lots.

**DESCRIPTION:**

Physical site characteristics: The subject property is transected by an un-named tributary (dry creek), bounded by several mature trees, that flows from north to south in a zigzag pattern. The dry creek drains south through a culvert under Falcon Road. The majority of the portion of the tract east of the stream is within the designated 1% annual chance floodplain and consists of prime agricultural soils, while the portion of the tract west of the stream is hilly, reducing the ability to fully develop the property (see Figure 1).

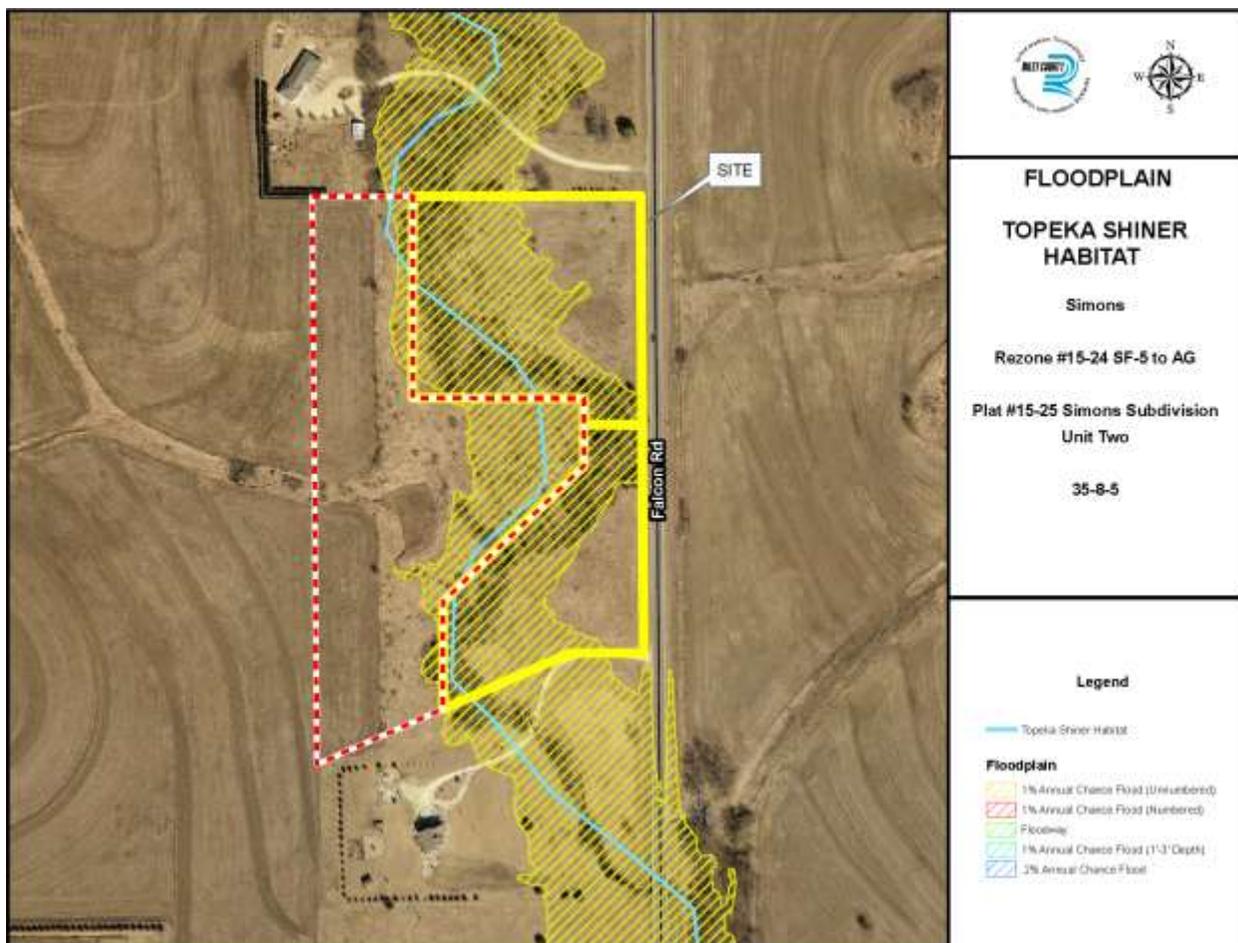


Figure 1. Floodplain map

Riparian Buffer: As per Section 21C – Development Standards of the Riley County Zoning Regulations, all new development shall be required to provide a riparian buffer along any perennial, intermittent or ephemeral stream. The second order stream that runs through the

property will require a 50-foot buffer Zone 1 and a 25-foot buffer Zone II; a distance total of 75 feet measured horizontally and perpendicular to the stream bank. The riparian buffer shall not be applied to that portion of site proposed for vacation.

Agricultural Buffer: As per Section 21C – Development Standards of the Riley County Zoning Regulations, a minimum setback for a residence or a structure for animal habitation shall be 200 feet from all property lines adjoining an existing agricultural use. However, the regulation also provides for the use of an “adequate existing buffer”, (i.e. topography, water bodies, roadways, trees, etc.) that acts as a physical separation to reduce conflict between non-farm and agricultural uses. Paired with the Riparian Buffer and the 80-ft. setback from a minor arterial (farming operations to the east), both of which shall be shown on the proposed final plat, additional setback distances are unnecessary. Furthermore, the subject site lies entirely within a designated growth area, as per the Vision 2025: A Comprehensive Plan for Riley County, Kansas. Previous discussions with the Planning Board concluded that in order to encourage development within designated growth areas and allow for the efficient development of these areas, the establishment of agricultural buffers should be optional.

General character of the area: The area is a mix of suburban/rural, large lot residential development, extending north from the city limits of Riley and Riley County High School on Falcon Road.

**SUITABILITY OF ZONING:**

Zoning History: The subject lot was rezoned from “G-1” (General Agricultural) to “A-5” (Single Family Residential) (Pet. #10-02).

Current zoning: In May 2012, the “A-5” (Single Family Residential) zoning district was renamed “SF-5” (Single Family Residential). The zoning of the subject property has not been changed since that time.

Proposed zoning: As mentioned previously, the applicant wishes to rezone that portion of original Lot 1 (to be vacated with this plat) from “SF-5” (Single Family Residential) to “AG” (Agricultural District) in order to return that portion back to agricultural use.

SURROUNDING ZONING/LAND USE		
	ADJACENT ZONING	LAND USE
<b>NORTH</b>	“SF-5” (Single Family Residential)	Residential
<b>SOUTH</b>	“SF-5” (Single Family Residential)	Residential
<b>EAST</b>	“AG” (Agricultural District)	Crops/hay
<b>WEST</b>	“AG” (Agricultural District)	Crops/hay

**POTENTIAL IMPACT:**

**Public facilities and services:**

Streets and bridges: The subject property has direct access to Falcon Road, a paved, two-lane Kansas highway. The applicant has received permission from KDOT to create a new entrance for proposed Lot 2, while Lot 1 will be served by an existing entrance.

Water and sewer: Although City of Riley water is available to the site (east side of Falcon Road), on-site services are being proposed. The applicant is proposing that Lot 1 will enter into an agreement to share a well located on current Lot 2 of Simons Subdivision, while proposed Lot 2 will be served by a separate well. Each new lot will be served by individual wastewater lagoons.

Fire: Riley County Fire District #1 will serve the site. The nearest County Fire Station is located at 327 Main Street in Riley. The subject site is located within five road miles of a fire station.

Effect on public facilities and services: It is not anticipated that the proposed development will have an adverse impact on public facilities and/or services.

Stormwater Drainage: Although the total area proposed to be disturbed (cleared/developed) is relatively small in relation to the size of the entire site, the subject property drains into a Wildcat Creek tributary. Thus, staff recommended that a stormwater drainage study be completed.

A stormwater drainage study was completed and submitted by SMH Consultants (see attached). The analysis of drainage impacts considers the existing and post-development drainage impacts (one new home) as a result of the proposed plat. Conservative assumptions were made regarding the impermeable areas that will result when one additional home is constructed, based on the impermeable areas of other homes in the area. The study states that when considering the impacts, the most comprehensive approach involves considering the entire 924-acre basin upstream of the point that the basin discharges from the subject tract.

The study concluded that the addition of one new home to the basin, as a result of the proposed platting, will have no drainage impact on the basin itself. This is because the increase of impermeable area that results from one new home in the basin is not large enough to increase the weighted runoff curve number for the drainage area. Therefore, the calculated 100-year event runoff flow rate, as a result of the additional home, does not change between the pre and post-development conditions.

Although less comprehensive, the drainage impacts to just each building site being created as a result of the re-plat were also considered. Conservative assumptions were made regarding the impermeable areas that result with the addition of a home on each lot. The results show that when each assumed 0.61 acre area to be platted is constructed with a home, the increase in the rate of flow from each home site is 0.11 CFS. This additional rate of flow can be attenuated back to a pre-development flow rate with a detention basin on each lot that provides 820 cubic feet of storage, with an equivalent 5-inch diameter pipe for an outfall structure.

The study cautioned that if basins are constructed, there would be no overall impact to the drainage basin *below* the proposed Simons Subdivision Unit 2, as calculated utilizing standard procedures. The amount of detention required to attenuate the developed condition on each lot is not enough to reduce the rate of flow from the approximately 915 acres *above* Simons Subdivision Unit 2.

Fort Riley: The noise contours depicted in the Joint Land Use Study (2005) reflect an annualized noise measure that converts noise varying from peak bursts to relative quiet into a steady measure of acoustic energy over a 24 hour period. The contours essentially take all operations that occur at Fort Riley over the year and divide by 365 days, producing the average day-night sound level (DNL). Noise Zone III is generally associated with the impact areas, totally within the boundaries of Fort Riley. Noise Zone II, although not as intense as Noise Zone III, is considered incompatible with residential land uses. The Land Use Planning Zone (LUPZ), from heavy weapons firing covers over 36,000 acres off post primarily to the north and east of Fort

Riley. The noise contours for the LUPZ, 65 ADNL and 62 CDNL, represent an annual *average*. Since the completion of the Joint Land Use Study, these noise zones have been updated/adjusted

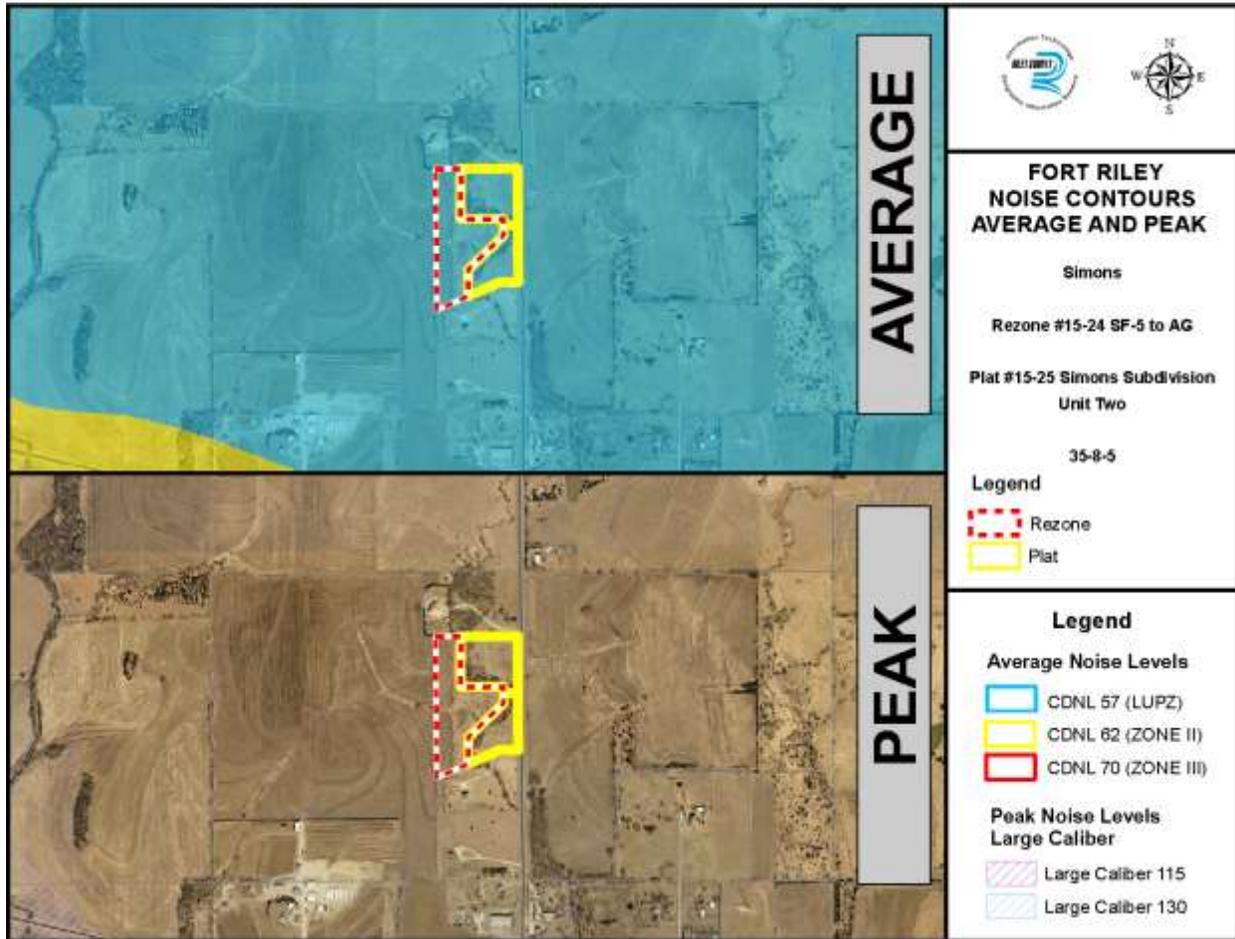


Figure 2. Fort Riley Noise Zones

by Fort Riley to reflect more accurate data collection and the on-going military activities on Fort Riley. The subject property is still located within the LUPZ (see Figure 2.).

**CONFORMANCE TO THE LAND USE PLAN:**

The request was reviewed with the 2009 Vision 2025 Riley County Comprehensive Plan, specifically the Development Guidance System (Chapter 12). The analysis is as follows:

**Conformance to the Goals, Objectives and Policies**

Goal for residential:

*To allow for the development of a diversity of housing types, sizes and price levels to meet the changing needs of all county residents.*

Objective R4: Allow for adequate amounts of single family housing in suitable locations throughout the county.

Policies:

R4.1 All new multiple-lot residential development should be encouraged to provide direct access onto a paved road.

R4.2 Roads serving residential developments should safely accommodate anticipated traffic.

R4.3 All new residential development should be encouraged to locate in identified growth areas of the county.

R4. 4 Water and sewer systems serving all new residential development shall comply with all applicable standards.

**Future Land Use Map**

According to the Future Land Use Map North (Figure 11.2) found in the Plan, the subject property is located within a designated growth area.

**The Land Evaluation/Site Assessment (LESA) Score**

A LESA analysis was generated for the original plat in 2010, with a final score of 4605 points (Strong for Development), with no bonus points factored into the analysis. Due to the nature of the request, no new LESA analysis was generated.

**Hardship on the landowner**

There currently is no hardship being claimed by the Applicant/property owner.

Staff analysis: The subject property is a suburban residential tract is located within a designated growth area. Due to the topography and natural features of the lot, it was concluded that only certain portions of the lot were suitable for residential development, while certain portions of the lot were better utilized for agricultural purposes. Thus, it is not anticipated that rezoning (while vacating) that portion of the property back to agricultural and replatting the remainder into two (2) lots will be contrary to the goals, objectives or policies of the Plan. Therefore, the platting and rezoning proposed by the Applicant is consistent with the Plan.

**Portions of Plat to be Vacated:**

According to information provided by 1-800-DIG-SAFE (Kansas One Call) and Riley County records, the following utilities were identified as possibly being located in the general vicinity of the subject area:

- CenturyLink (CTLQN) – Utility release form sent with telephone follow up; no contact with business could be made.
- City of Riley
- Twin Valley Telephone
- Westar Energy

Signed Utility Release forms provided by SMH, Consultants, were obtained by all persons, entities and/or utility companies, having property rights or interests in those portions of utility easements and/or rights-of-way, as shown on the Final Plat of Simons Subdivision, to be vacated by this replat. With the exception of CenturyLink (CTLQN), the Utility Release forms affirmed that there are no existing utilities using the 20 ft.-wide easement situated along the west boundary line of that portion of original Lot 1 of Simons Subdivision proposed to be vacated. There were no objections to vacating said easement. Riley County Planning and Development has confirmed these utility releases.

**COMMENTS AND CONCERNS:**

ENVIRONMENTAL HEALTH: The Environmental Health staff has reviewed this plat and found it is in compliance with the Riley County Sanitary Code.

RILEY COUNTY CONSERVATION DISTRICT: Review was sent; no reply.

**COUNTY ENGINEER:** The County Engineer has reviewed the request and the Stormwater Drainage Study submitted by SMH for the proposed platting of Simmons Subdivision Unit 2. He stated that he concurred that they have adequately addressed any increased runoff from this re-plat.

**STAFF RECOMMENDATIONS:**

Staff recommends that the Planning Board forward a recommendation of approval to the Board of County Commissioners of the request to rezone the subject property from “SF-5” (Single Family Residential) to “AG” (Agricultural District) for the following reasons:

- The proposed development is generally in conformance with Vision 2025: A Comprehensive Plan for Riley County, Kansas.
- This action is to accommodate new development within a designated growth area, while simultaneously returning several acres of platted land back to agricultural use and agricultural zoning.
- Although this request allows for an increase of residential density for the property (from one to two homes), the improvement also requires the recordation of an Agricultural Protection Easement and Fort Riley, Kansas Area of Military Impact Real Estate Disclosure Form along with the Final Plat.

Staff also recommends that the Board approve the Final Plat of Simons Subdivision Unit Two, as it has been determined to meet the minimum requirements of the Riley County Subdivision and Zoning Regulations and Sanitary Code.

**POSSIBLE MOTION(S)**

**ACTION NEEDED FOR REZONING:**

A. Move to approve the request to rezone the subject property from “SF-5” (Single Family Residential) to “AG” (Agricultural District) for the following reasons:

- The rezoning is compatible with the character of the neighborhood.
- The rezoning is compatible with the zoning and uses of properties nearby.
- The subject property is not suitable for the uses allowed by the current zoning.
- Removal of the current restrictions by rezoning will not detrimentally affect nearby property.
- The subject property has remained vacant as zoned for a substantial time period.
- The gain to the public health, safety and welfare by denying rezoning is not as great as the hardship imposed upon the individual landowner.
- The rezoning is consistent with the recommendations of permanent or professional staff.
- The rezoning conforms to the adopted comprehensive plan.
- The rezoning will not detrimentally affect the conservation of the natural resources of the County.
- The rezoning will result in the efficient expenditure of public funds.
- The rezoning will promote the health, safety, convenience, prosperity and general welfare of the inhabitants of the County.

**Or**

B. Move to deny the request to rezone the subject property for the following reasons:

- The rezoning is incompatible with the character of the neighborhood.
- The rezoning is incompatible with the zoning and uses of properties nearby.
- The subject property is not suitable for the uses allowed by the proposed zoning.

- ❑ Removal of the current restrictions by rezoning will detrimentally affect nearby property.
- ❑ The subject property is developed or utilized as zoned for a substantial time period.
- ❑ The gain to the public health, safety and welfare by denying rezoning is greater than the hardship imposed upon the individual landowner.
- ❑ The rezoning is inconsistent with the recommendations of permanent or professional staff.
- ❑ The rezoning does not conform to the adopted comprehensive plan.
- ❑ The rezoning may detrimentally affect the conservation of the natural resources of the County.
- ❑ The rezoning will result in the inefficient expenditure of public funds.
- ❑ The rezoning will diminish the health, safety, convenience, prosperity and general welfare of the inhabitants of the County.

**ACTION NEEDED FOR PLAT:**

A. Motion to approve the request to plat the subject property into two (2) lots, as it has been determined that it meets the requirements of the Riley County Subdivision Regulations.

Or

B. Motion to deny the request to plat the subject property into two (2) lots, as it has been determined that it does not meet the requirements of the Riley County Subdivision Regulations.

**ATTACHMENTS:**

- Vicinity/site map
- Surrounding zoning map
- Fire Stations map
- Floodplain map
- Fort Riley Noise map
- Final Plat map

Prepared by: Bob Isaac, Planner  
December 7, 2015



## VICINITY AND SITE

**Simons**

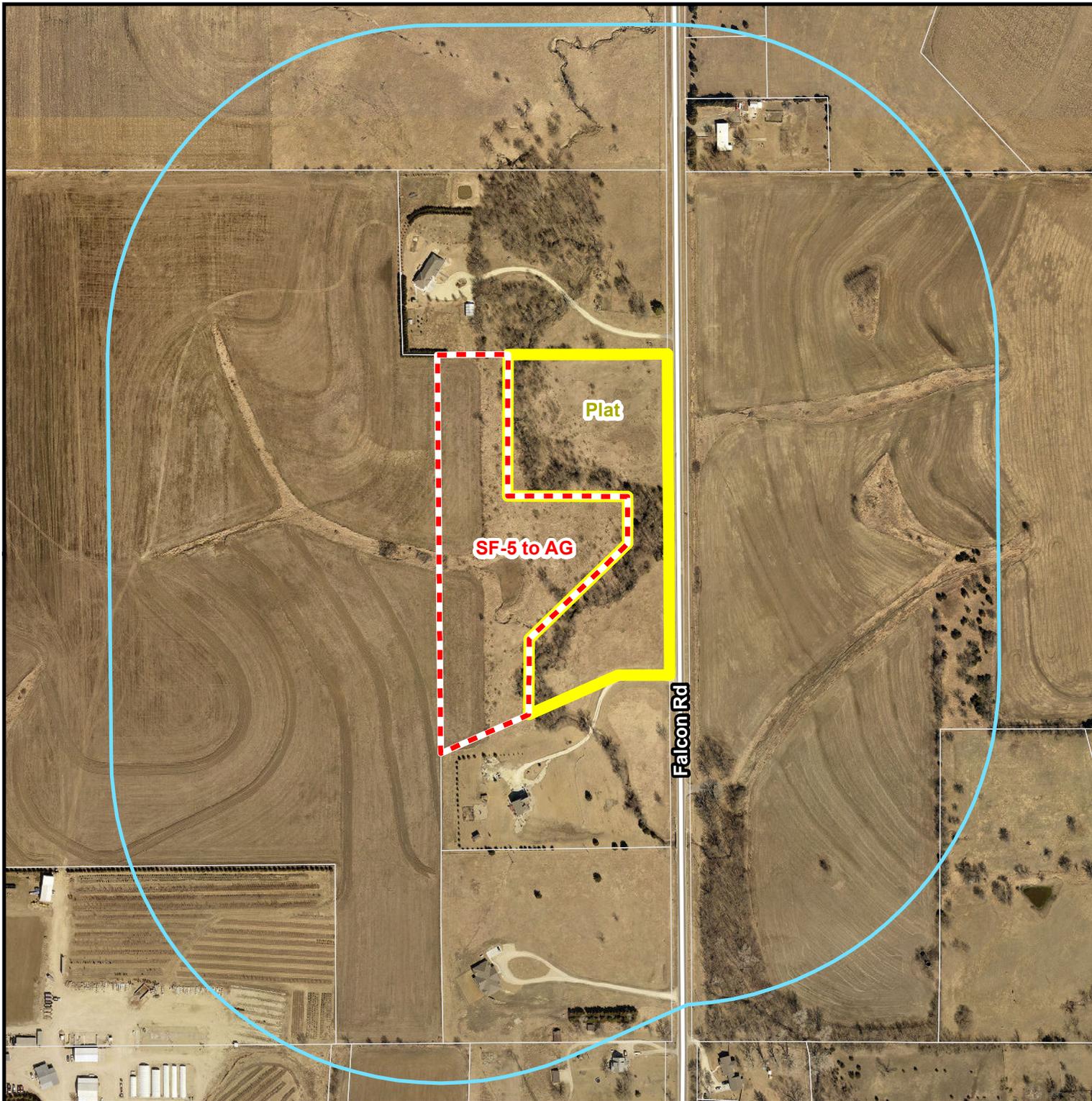
**Rezone #15-24 SF-5 to AG**

**Plat #15-25 Simons Subdivision  
Unit Two**

**35-8-5**

### Legend

-  1000' Buffer
-  Rezone
-  Plat





## SURROUNDING ZONING

Simons

Rezone #15-24 SF-5 to AG

Plat #15-25 Simons Subdivision  
Unit Two

35-8-5

### Legend

-  1000' Buffer
-  Rezone
-  Plat

- |  |   |
|--|---|
|  SF-1 Single Family   |  AG Agricultural   |
|  SF-2 Single Family   |  N-1 Noise Hazard  |
|  SF-3 Single Family   |  PUD Planned Unit Dev  |
|  SF-4 Single Family   |  U University  |
|  SF-5 Single Family   |  City Boundaries   |
|  B-1 Two Family       |  Fort Riley  |
|  B-2 Multiple Family  |   |
|  B-3 Mobile Home Park |   |
|  C-1 Neighborhood Bus |  Special Zoning:<br>Conditional Use<br>Designator Lot<br>Special Use<br>Variance |
|  C-2 Shopping Dist    |   |
|  C-3 General Business |   |
|  C-4 Highway Business |   |
|  D-1 Industrial Park  |   |
|  D-2 Light Industrial |   |
|  D-3 Heavy Industrial |   |
|  D-4 Business Park    |   |





## FIRE STATIONS

Simons

Rezone #15-24 SF-5 to AG

Plat #15-25 Simons Subdivision  
Unit Two

35-8-5

SITE

Falcon Rd

Madison Rd

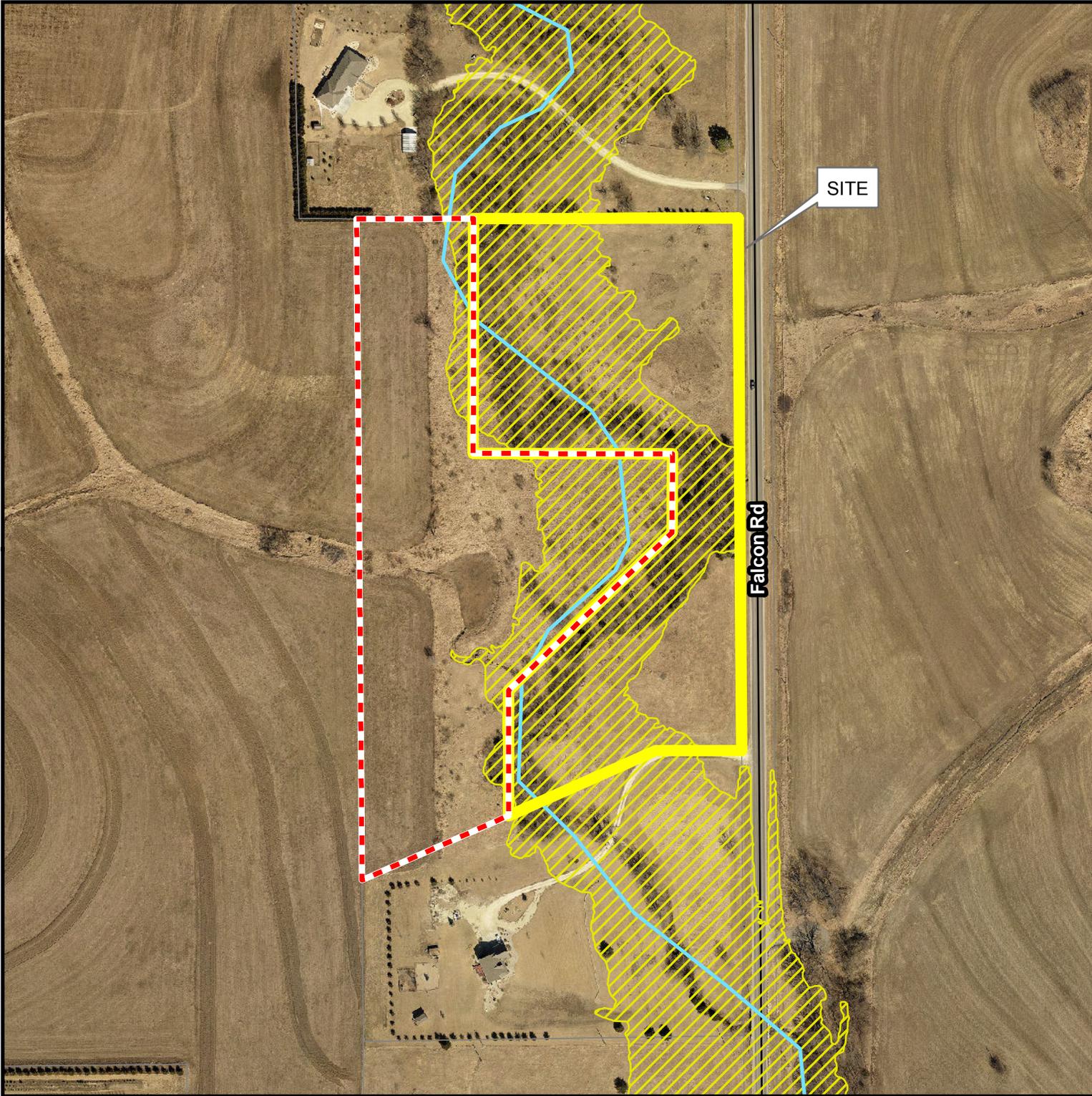
Riley Rural  
Fire Station

Riley City  
Fire Station

 Fire Station

 Within 5 Miles  
of a Fire Station

 Not within 5 Miles  
of a Fire Station



SITE

Falcon Rd

## FLOODPLAIN

### TOPEKA SHINER HABITAT

Simons

Rezone #15-24 SF-5 to AG

Plat #15-25 Simons Subdivision  
Unit Two

35-8-5

#### Legend

 Topeka Shiner Habitat

#### Floodplain

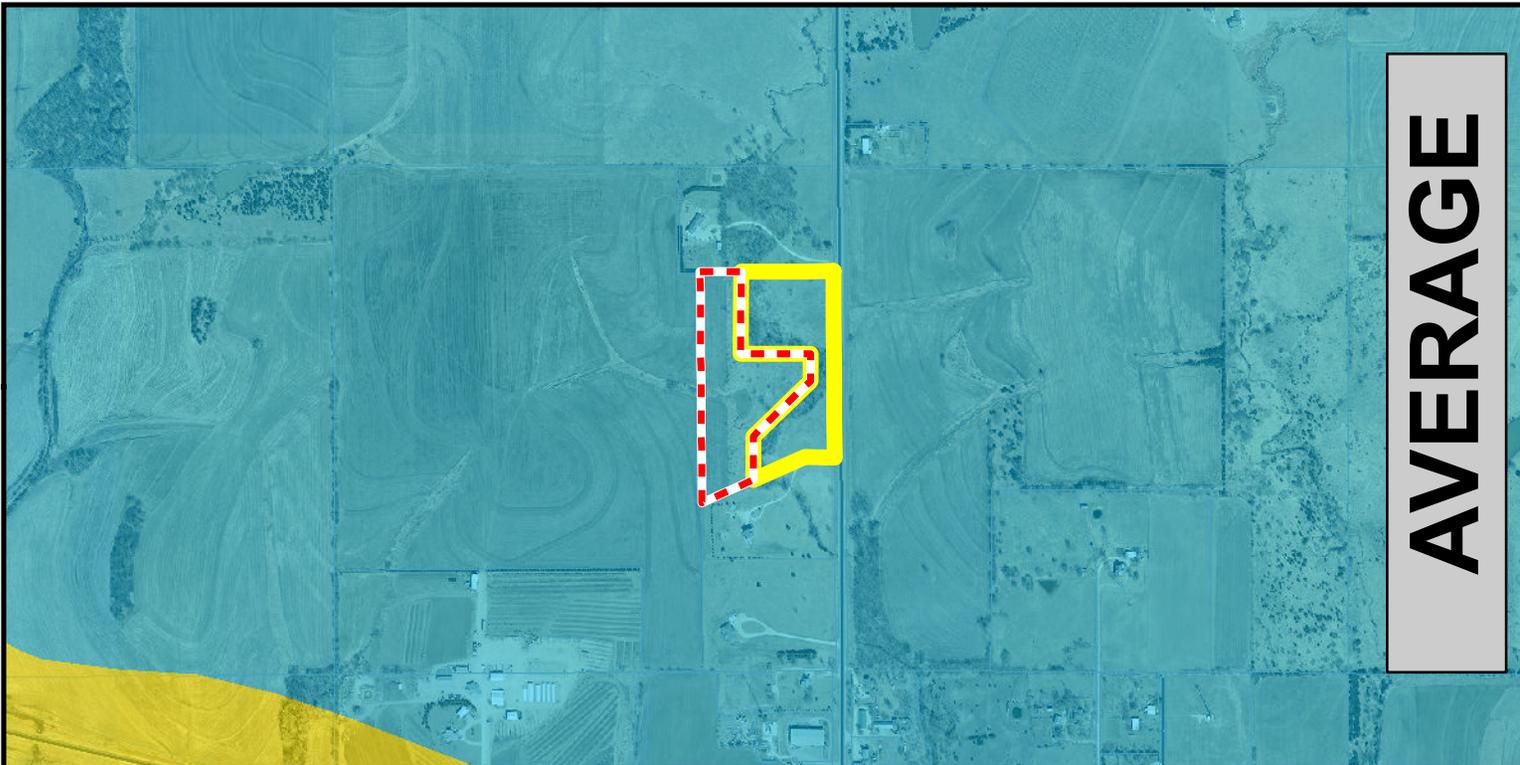
 1% Annual Chance Flood (Unnumbered)

 1% Annual Chance Flood (Numbered)

 Floodway

 1% Annual Chance Flood (1'-3' Depth)

 .2% Annual Chance Flood



**AVERAGE**

### FORT RILEY NOISE CONTOURS AVERAGE AND PEAK

Simons

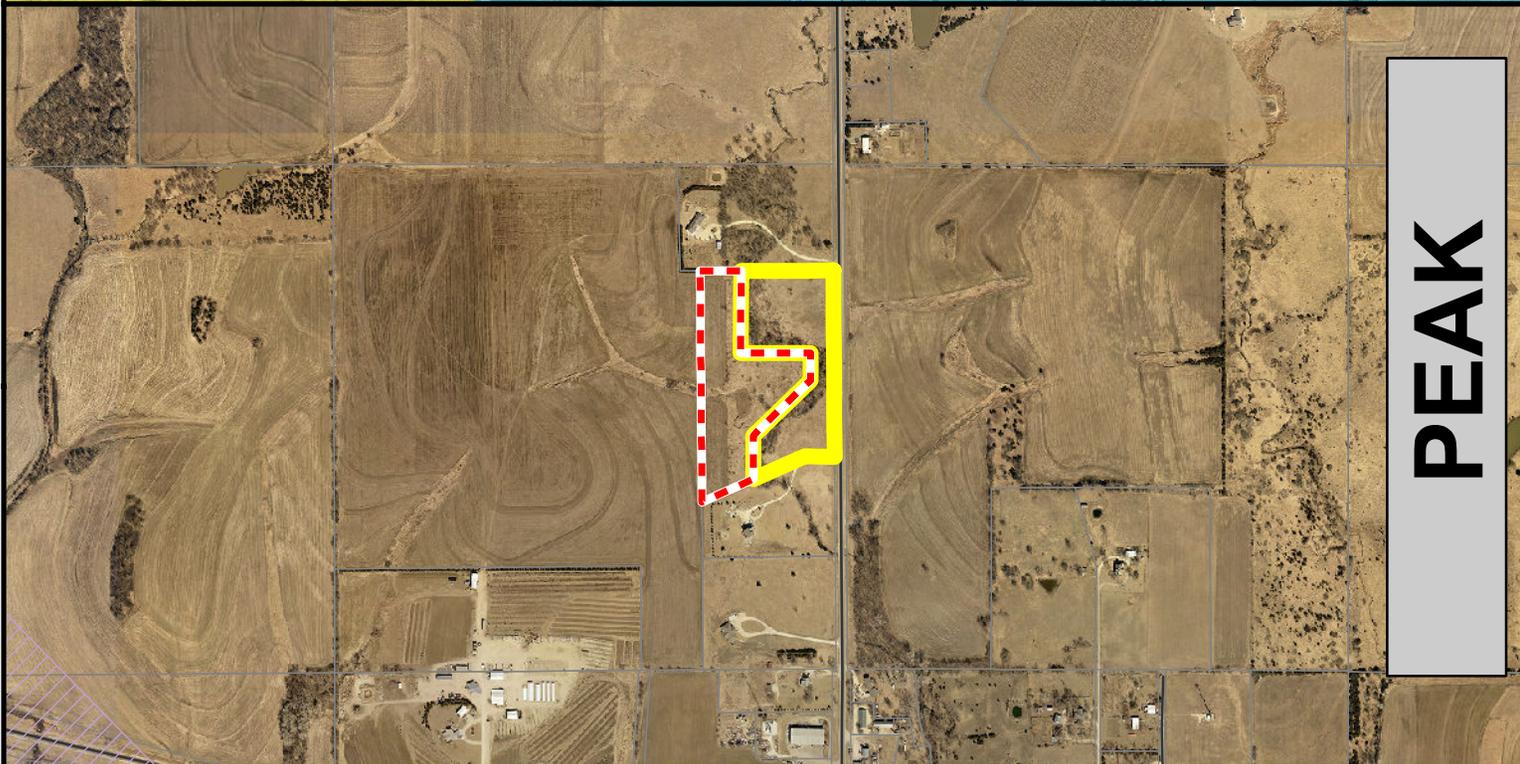
Rezone #15-24 SF-5 to AG

Plat #15-25 Simons Subdivision  
Unit Two

35-8-5

#### Legend

- Rezone
- Plat



**PEAK**

#### Legend

##### Average Noise Levels

- CDNL 57 (LUPZ)
- CDNL 62 (ZONE II)
- CDNL 70 (ZONE III)

##### Peak Noise Levels Large Caliber

- Large Caliber 115
- Large Caliber 130



December 3, 2015

Mr. Bob Isaac  
Planner  
Riley County  
110 Courthouse Plaza  
Manhattan, KS 66502

Dear Mr. Isaac:

As requested, SMH Consultants has analyzed the drainage impacts of the proposed platting of Simons Subdivision Unit 2. This plat generally involves splitting what was one buildable lot into two buildable lots.

The subject property is located between the City of Riley and the Riley County High School on the west side of Falcon Road. The two lots being created as a result of the platting will total 8.41-acres. Storm water from the site drains southerly and the site is located in the headwaters of Wildcat Creek. The total drainage area measured upstream from where storm water discharges the site is 924-acres consisting generally of agricultural and range land. A map of the overall contributing drainage basin is included with this letter.

This analysis of drainage impacts considers the existing and post-development drainage impacts (one new home) as a result of the proposed plat. Conservative assumptions have been made regarding the impermeable areas that will result when one additional home is constructed based on the impermeable areas of other homes in the area.

When considering the impacts, the most comprehensive approach involves considering the entire 924-acre basin upstream of the point that the basin discharges from the subject tract. On the next page are the existing and post-development land and drainage characteristics of the basin as calculated utilizing Google Earth and the NRCS Runoff Curve Number procedure.

As the results demonstrate the addition of one new home to the basin, as a result of the proposed platting, will have no drainage impact on the basin itself. This is because the increase of impermeable area that results from one new home in the basin is not large enough to increase the weighted runoff curve number for the drainage area. Therefore, the calculated 100-year event runoff flow rate as a result of the additional home does not change between the pre and post-development conditions.

<b>Drainage Basin Characteristics (924 Acres)</b>		
	<b>Existing</b>	<b>Post Development</b>
School Area (Acres)	13.87	13.87
Homes Sites Area (Acres)	1.40	2.00
Roads Area (Acres)	5.56	5.56
Agriculture/Range Land Area (Acres)	903.17	902.57
Average Basin Slope	0.577%	0.577%
Longest Flow Path (Ft)	13,354	13,354
Time of Concentration (Minutes)	292	292
Cumulative Weighted Runoff Curve Number (CN)	84	84
100-Year/924 Acre Flow Rate from Simons (CFS)	869	869

Although less comprehensive, the drainage impacts to just each building site being created as a result of the re-plat was also considered. Again, conservative assumptions have been made regarding the impermeable areas that result with the addition of a home on each lot. The table below provides a summary of this analysis utilizing the Modified Rational Method for calculating peak flow rates from an assumed drainage area of each home measuring 0.61 acres.

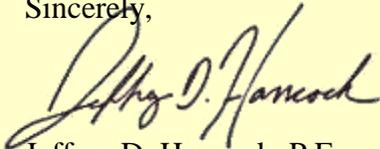
<b>Drainage Basin Characteristics for Each Home Site (0.61 Acres)</b>		
	<b>Existing</b>	<b>Post Development</b>
Homes Sites Area (Acres)	0	0.11
Agriculture/Range Land Area (Acres)	0.61	0.50
Time of Concentration (Minutes)	10	10
Cumulative Weighted Runoff Coefficient (C)	0.11	0.26
100-Year/0.61 Acre Flow Rate from Each Lot (CFS) (No Detention)	0.58	0.69
100-Year/0.61 Acre Flow Rate from Each Lot (CFS) (With 820 CF of Detention on Each Lot)	NA	0.46

The results show that when each assumed 0.61 acre area to be platted is constructed with a home the increase in the rate of flow from each home site is 0.11 CFS. This additional rate of flow can be attenuated back to a pre-development flow rate with a detention basin on each lot that provides 820 cubic feet of storage with an equivalent 5-inch diameter pipe for an outfall structure.

It is important to understand that if basins are constructed, there is no overall impact to the drainage basin below the proposed Simons Subdivision Unit 2 as calculated utilizing standard procedures. The amount of detention required to attenuate the developed condition on each lot is not enough to reduce the rate of flow from the approximately 915 acres above Simons Subdivision Unit 2.

If you have any questions about this analysis or require further information please let us know.

Sincerely,

A handwritten signature in black ink that reads "Jeffrey D. Hancock". The signature is written in a cursive, flowing style.

Jeffrey D. Hancock, P.E.  
SMH Consultants

Attachments:

1. USGS Drainage Area Map
2. Aerial Photography Drainage Area Map
3. Existing Condition Hydraflow Report (924 Acres)
4. Post-Development Condition Hydraflow Report (924 Acres)
5. Existing Condition Hydraflow Report (0.61 Acres)
6. Post-Development Condition Hydraflow Report (0.61 Acres)
7. Post-Development Pond Routing (0.61 Acres)

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Thursday, Dec 3, 2015

## Hyd. No. 1

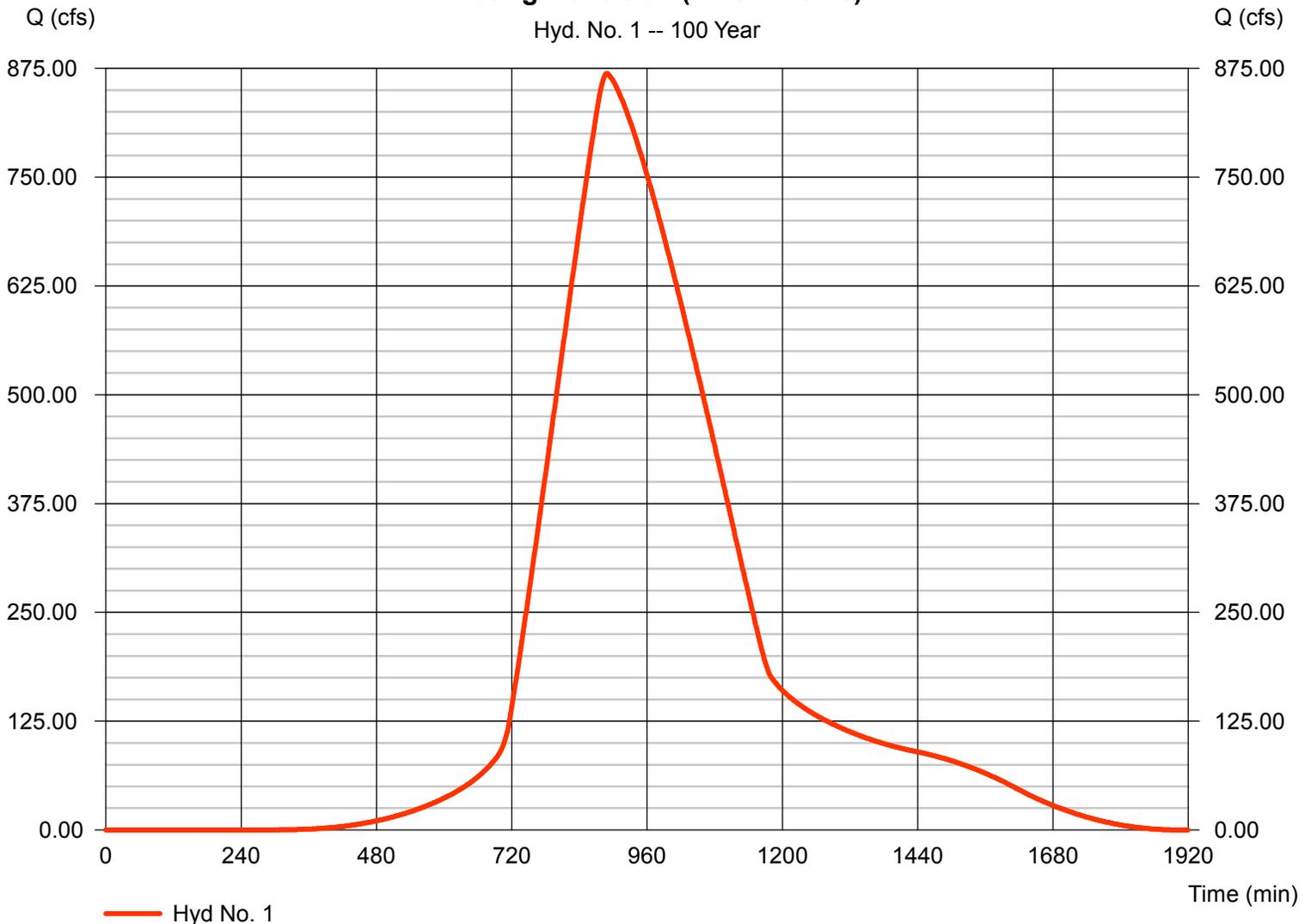
Existing Condition (1 New Home)

Hydrograph type = SCS Runoff  
Storm frequency = 100 yrs  
Time interval = 2 min  
Drainage area = 924.000 ac  
Basin Slope = 0.6 %  
Tc method = LAG  
Total precip. = 7.40 in  
Storm duration = 24 hrs

Peak discharge = 869.24 cfs  
Time to peak = 888 min  
Hyd. volume = 18,517,590 cuft  
Curve number = 84\*  
Hydraulic length = 13354 ft  
Time of conc. (Tc) = 292.30 min  
Distribution = Type II  
Shape factor = 484

\* Composite (Area/CN) =  $[(13.870 \times 98) + (1.400 \times 98) + (5.560 \times 98) + (903.170 \times 84)] / 924.000$

### Existing Condition (1 New Home)



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Thursday, Dec 3, 2015

## Hyd. No. 2

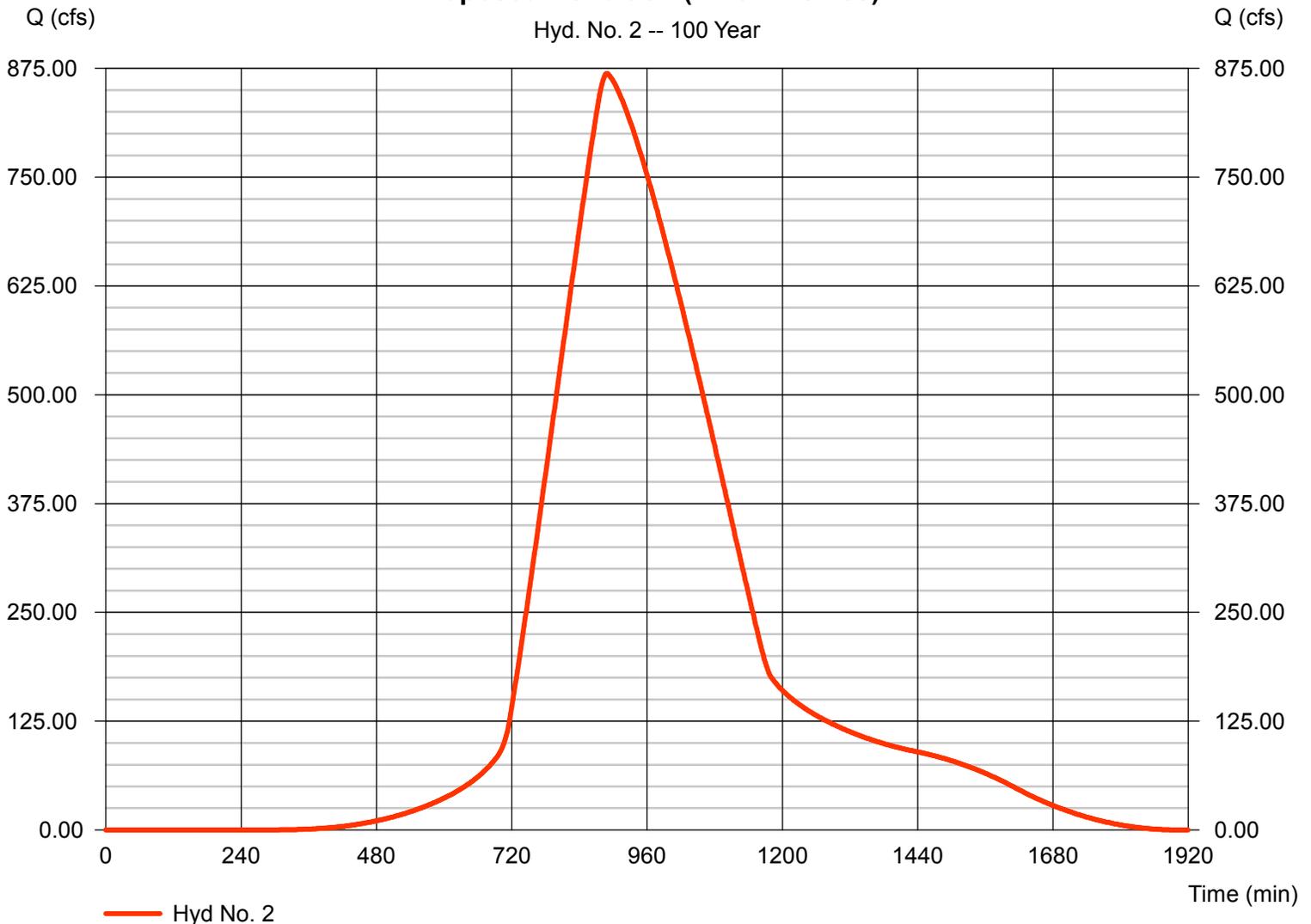
Proposed Condition (2 New Homes)

Hydrograph type = SCS Runoff  
Storm frequency = 100 yrs  
Time interval = 2 min  
Drainage area = 924.000 ac  
Basin Slope = 0.6 %  
Tc method = LAG  
Total precip. = 7.40 in  
Storm duration = 24 hrs

Peak discharge = 869.24 cfs  
Time to peak = 888 min  
Hyd. volume = 18,517,590 cuft  
Curve number = 84\*  
Hydraulic length = 13354 ft  
Time of conc. (Tc) = 292.30 min  
Distribution = Type II  
Shape factor = 484

\* Composite (Area/CN) =  $[(13.870 \times 98) + (2.000 \times 98) + (5.560 \times 98) + (902.570 \times 84)] / 924.000$

### Proposed Condition (2 New Homes)



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Thursday, Dec 3, 2015

## Hyd. No. 7

One House Un-Developed

Hydrograph type = Mod. Rational  
Storm frequency = 100 yrs  
Time interval = 1 min  
Drainage area = 0.610 ac  
Intensity = 8.657 in/hr  
IDF Curve = ManhattanRileyCounty.IDF  
Target Q = 0.000 cfs

Peak discharge = 0.581 cfs  
Time to peak = 10 min  
Hyd. volume = 349 cuft  
Runoff coeff. = 0.11\*  
Tc by User = 10.00 min  
Storm duration = 1.0 x Tc  
Est. Req'd Storage = 0 cuft

\* Composite (Area/C) =  $[(0.110 \times 0.95) + (0.500 \times 0.11)] / 0.610$



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Thursday, Dec 3, 2015

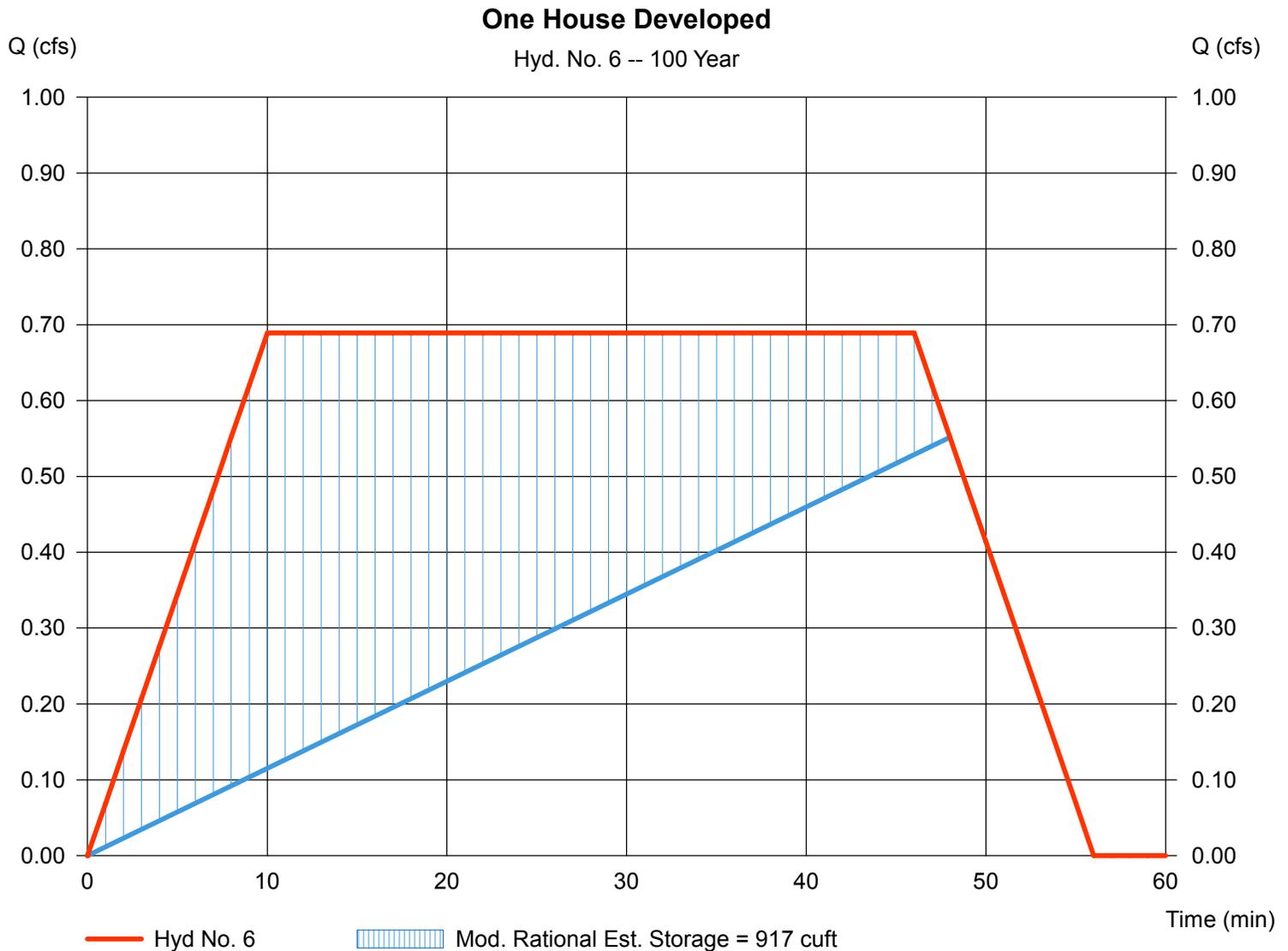
## Hyd. No. 6

One House Developed

Hydrograph type = Mod. Rational  
Storm frequency = 100 yrs  
Time interval = 1 min  
Drainage area = 0.610 ac  
Intensity = 4.346 in/hr  
IDF Curve = ManhattanRileyCounty.IDF  
Target Q = 0.581 cfs

Peak discharge = 0.689 cfs  
Time to peak = 10 min  
Hyd. volume = 1,944 cuft  
Runoff coeff. = 0.26\*  
Tc by User = 10.00 min  
Storm duration = 4.7 x Tc  
Est. Req'd Storage = 917 cuft

\* Composite (Area/C) =  $[(0.110 \times 0.95) + (0.500 \times 0.11)] / 0.610$



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Thursday, Dec 3, 2015

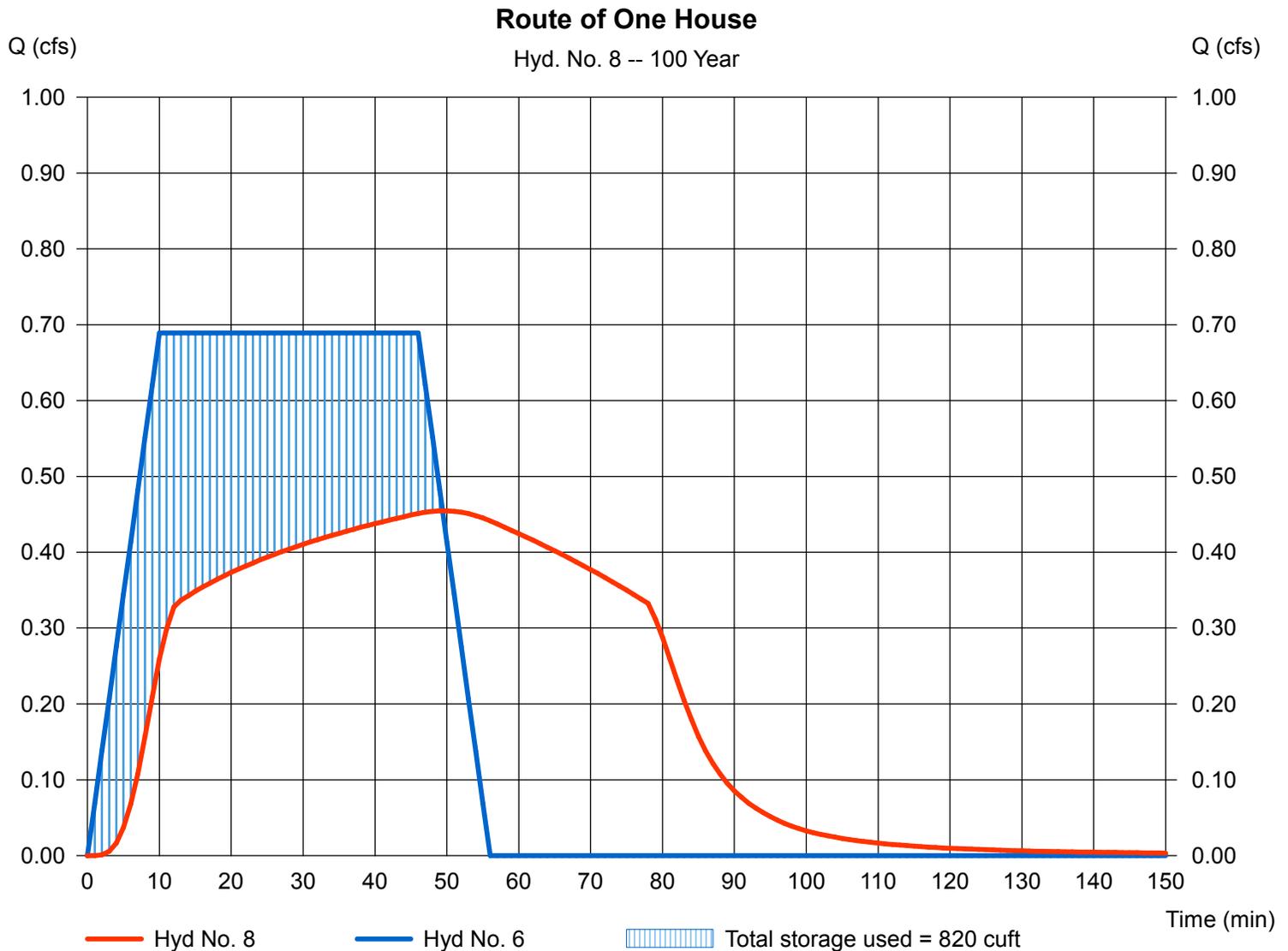
## Hyd. No. 8

Route of One House

Hydrograph type = Reservoir  
Storm frequency = 100 yrs  
Time interval = 1 min  
Inflow hyd. No. = 6 - One House Developed  
Reservoir name = Simons Pond for One House

Peak discharge = 0.455 cfs  
Time to peak = 49 min  
Hyd. volume = 1,895 cuft  
Max. Elevation = 1295.39 ft  
Max. Storage = 820 cuft

Storage Indication method used.



**Description:**

A tract of land in Lot 1, Simons Subdivision, Riley County, Kansas described as follows:

Beginning at the Northeast Corner of said Lot 1, Simons Subdivision; thence S00°06'25"W 974.94 feet to the Southeast Corner of said Lot 1; thence N89°53'35"W 148.85 feet to a point of deflection in the South Line of said Lot 1; thence S66°13'12"W 294.58 feet along the South Line of said Lot 1; thence N00°06'25"E 229.64 feet; thence N46°00'47"E 416.07 feet; thence N00°06'25"E 143.75 feet; thence N89°53'35"W 364.39 feet; thence N00°06'25"E 433.40 feet to the North Line of said Lot 1; thence S89°38'50"E 483.78 feet to the point of beginning, containing 8.41 acres.

Subject to easements and restrictions of record.

**OWNER'S CERTIFICATE**

STATE OF KANSAS) SS  
COUNTY OF RILEY)

This is to certify that the undersigned is/are the owner(s) of the land hereon described on this plat, and that said owner(s) has/have caused the same to be surveyed and subdivided as indicated thereon, for the uses and purposes herein set forth, and does hereby acknowledge and adopt the same under style and title indicated.

All street rights-of-way as shown on this plat are hereby dedicated to the public. Any easements or licenses as shown on this plat, to locate, construct and maintain or authorize the location, construction and maintenance of poles, wires, conduits, water, gas and sewer pipes or required drainage channels or structures upon the area marked for easements on this plat, are hereby granted to the public.

Given under my hand at \_\_\_\_\_, Kansas this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

Russell M. Simons \_\_\_\_\_  
Karla Simons \_\_\_\_\_

**NOTARY CERTIFICATE**

STATE OF KANSAS) SS  
COUNTY OF RILEY)

BE IT REMEMBERED, that on this \_\_\_\_\_ day of \_\_\_\_\_ A.D. 2015, before me, the undersigned, a notary public in and for the County and State aforesaid, came

Russell M. Simons and Karla Simons, husband and wife

personally known to me to be the same persons who executed the foregoing Owner's Certificate, and duly acknowledged their execution of the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my notarial seal on the day and year last above written.

Notary Public \_\_\_\_\_

My appointment expires: \_\_\_\_\_

**CERTIFICATE OF THE COUNTY COMMISSION**

STATE OF KANSAS) SS  
COUNTY OF RILEY)

Approved this \_\_\_\_\_ day of \_\_\_\_\_, 2016.  
Board of Commissioners, Riley County, Kansas.

Chairperson \_\_\_\_\_ Commissioner \_\_\_\_\_

Commissioner \_\_\_\_\_ Attest: County Clerk \_\_\_\_\_

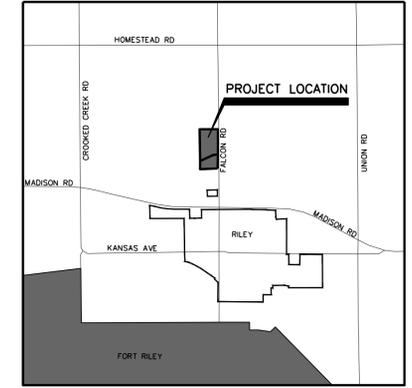
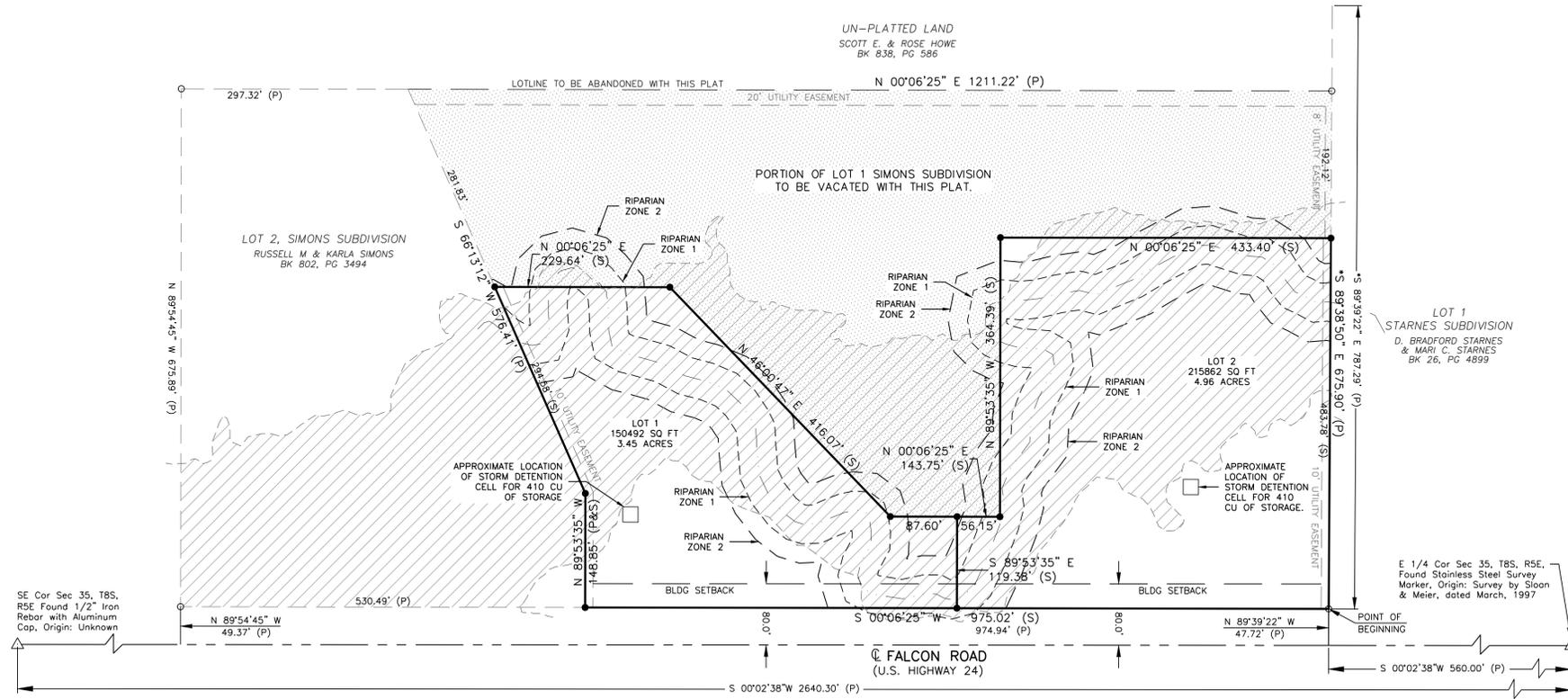
**CERTIFICATE OF THE REGISTER OF DEEDS**

STATE OF KANSAS) SS  
COUNTY OF RILEY)

This instrument was filed for record on the \_\_\_\_\_ day of \_\_\_\_\_ A.D. 2016, at \_\_\_\_\_ O'clock \_\_\_\_M. and duly recorded in Book \_\_\_\_\_ on Page \_\_\_\_\_.

Register of Deeds \_\_\_\_\_

Deputy \_\_\_\_\_



VICINITY MAP (NOT TO SCALE)

**NOTE:**  
If an entrance pipe is required, the minimum size shall be calculated in accordance with the Riley County Standards and Specifications. In no case shall the diameter of the pipe be less than 15 inches.

No existing buildings are shown, as per agreement with the owners.

Areas marked as riparian zones are subject to the requirements of Section 21C Development Standards in the Riley County Zoning Regulations.

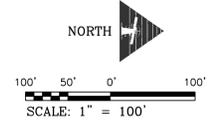
Property owner is required to maintain all drainage easements granted to the public. Natural or non-natural structure or vegetative barriers (including but not limited to trees, shrubbery, berms, fences and walls) are prohibited within publicly granted drainage easements.

All persons, entities and/or utility companies, having property rights or interests in any alley, road/street, easement, access control or other public reservation proposed to be vacated by this plat, have affirmed no existing use or future interest in such alley, road/street, easement, access control or other public reservation, and expressed no objections to such vacation.

Flood Insurance Rate Map, Map Number 20161C0212C, identifies this property as situated in Zone A. Zone A stated as "No Base Flood Elevations determined".  
FIRM effective date: March 16, 2015.

Lot 1 shall potentially share water well with Lot 2 of Simons Subdivision based on a shared water well agreement as recorded in Office of the Register of Deeds Bk \_\_\_\_\_ Pg \_\_\_\_\_.

Lot 1 and Lot 2 each shall provide a storm water detention volume of 820 cubic feet with an equivalent 5-inch diameter outfall pipe each. The approximate locations of storm water detention as proposed are approximate and may change as necessary to best accommodate construction on each lot.



- LEGEND**
- - Monument Found (1/2" Iron Rebar), Origin: Survey completed by SMH Consultants, dated February 2010
  - - 1/2"x24" Rebar w/LS56 Cap Set
  - △ - Section Corner, NOTE: All section corner monument origins are unknown unless otherwise noted.
  - - Assumed Bearing
  - (P) - Plot Dimension
  - (S) - Surveyed Dimension
  - Centerline Creek
  - 1% Annual Chance Floodplain
  - Area being Vacated

**APPROVAL OF COUNTY OFFICERS**

STATE OF KANSAS) SS  
COUNTY OF RILEY)

County Engineer \_\_\_\_\_

County Counselor \_\_\_\_\_

Environmental Health Specialist \_\_\_\_\_

**RILEY COUNTY PLANNING BOARD CERTIFICATE**

STATE OF KANSAS) SS  
COUNTY OF RILEY)

Approved this \_\_\_\_\_ day of \_\_\_\_\_ A.D. 2015.

Riley County Planning Board.

Chairperson \_\_\_\_\_ Member \_\_\_\_\_

Member \_\_\_\_\_ Member \_\_\_\_\_

Member \_\_\_\_\_

**RILEY COUNTY PLAT REVIEW SURVEYOR SIGNATURE BLOCK**

This plat has been reviewed and approved for filing pursuant to and in compliance with K.S.A 58-2005 and with the requirements of Riley County Resolution No.082913-58. No other warranties are extended or implied.

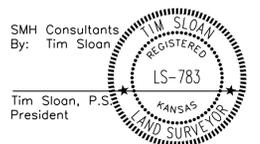
Approved: \_\_\_\_\_  
License Number: \_\_\_\_\_ Date: \_\_\_\_\_

**SURVEYOR'S CERTIFICATE**

STATE OF KANSAS) SS  
COUNTY OF RILEY)

I, the undersigned, do hereby certify that I am a Registered Land Surveyor in the State of Kansas, with experience and proficiency in land surveying; and that the heretofore described property was surveyed and subdivided by me, or under my supervision, that all subdivision regulations of Riley County, Kansas, have been complied with in the preparation of this plat, and that all the monuments shown herein actually exist and their positions are correctly shown to the best of my knowledge and belief.

Given under my hand and seal at Manhattan, Kansas this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 2015.



SMH Consultants  
By: Tim Sloan  
Tim Sloan, P.S.  
President

*Final Plat*  
**SIMONS SUBDIVISION,  
UNIT TWO**  
*a replat in the Southeast Quarter  
of Section 35, T8S, R5E,  
Riley County, Kansas*



2017 Vonesta Place, Suite 110 • Manhattan, Kansas 66503  
(785) 776-0541 • FAX 776-9760 • Email: tim@sloanandmeier.com  
Project #1510MN1309 DD #TDS42

DECEMBER 2015