

DRAINAGE PLAN  
FRENCH QUARTER 2<sup>ND</sup>  
ADDITION  
TO  
WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY



01 OCTOBER 2013



# DRAINAGE PLAN FRENCH QUARTER 2<sup>ND</sup> ADDITON

## FINAL REPORT

Prepared by Baughman Company, P.A.  
01 October 2013

By Trevor R. Kurth, P.E., CFM  
N. Brent Wooten, P.E., L.S.



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# PROJECT NARRATIVE

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## EXISTING CONDITIONS

The site is located at the intersection of 14<sup>th</sup> Street North and Kansas in Wichita, Kansas. The site is located at 3 of the 4 intersections of the above referenced streets. There are multi-unit homes located at the northwest, southwest, and southeast corners of the intersection. This development will raze and re-construct duplex style homes in these areas. The northeast corner of the intersection was previously re-developed in this method with French Quarter Addition.

There is storm water sewer pipe running down the center of the southeast corner of the site. This pipe is 12" and connects to the SWS in 14<sup>th</sup> Street. The remaining portion of the site appears to drain to the surrounding streets with the internal SWS picking up runoff from in between buildings and nuisance water. There are sparse trees located throughout the property and its perimeter.

The property is located in a FEMA SFHA Zone X-Shaded as of this report. The drainage patterns as defined above can be seen on the Existing Conditions Exhibit.

## PROPOSED CONDITIONS

The property will be razed and rebuilt with new multi-unit multi-family homes with associated parking and utilities. The proposed site plan is shown which portrays 14 duplex type units with a clubhouse on the southeast corner of the intersection and an additional 10 units facing east along Kansas. The interior of the site will drain via a 24" SWS while the Kansas facing lots will sheet drain into the street as they do today. Water Quality will be provided via a HydroWorks Hydroguard unit installed with the updated SWS at the southeast portion of the development.

For a half-scale copy of the Plat, see Exhibit 3.

## OFFSITE CONDITIONS

There is storm water sewer located in the area along 14<sup>th</sup> and 15<sup>th</sup> Streets. The existing system located on this property will be reconfigured with a larger 24" pipe and additional inlets as well as with the installation of the water quality unit.

The area where this property is located is currently developed as this is a redevelopment project. The surrounding properties appear to drain to the surrounding streets and provide no detention or water quality protection as of this date. There does not appear to be any offsite runoff encroaching the property.

The Hydrog-geodatabase can be seen with the site location plotted as Exhibit 1. The Aerial for this area can be viewed as Exhibit 2.

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# EXISTING CONDITIONS RUNOFF CALCULATIONS

## DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in calculating the existing conditions runoff values.

- STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
  - 2-yr Rainfall Depth = 3.4 in
  - 10-yr Rainfall Depth = 5.0 in
  - 100-yr Rainfall Depth = 7.9 in
  
- FLOW DATA
  - Areas per LIDAR data, USGS Quadrangle Sheet, Aerial Photos, and Site Visits
  - Rational Method used for Existing Flows ( $C = 0.73$  Based on 45% Impervious Area)
  - Time of Concentration: Lag Method (minimum 15 min)

## SITE CHARACTERISTICS

The site consists of approximately 5.9 acres of currently developed multi-family units with associated parking and utilities. The westerly sites are relatively flat and appear to drain to the surrounding streets. The east site sheet drains to the surrounding streets while the interior is conveyed to the north via the internal 12" SWS pipe which is located at the center of the property.

The existing site characteristics can be seen from the aerial exhibit (Exhibit 2) and the Drainage Plan.

## EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site was analyzed for existing conditions using the Rational Method. The Rational Method was used primarily since there the property is only 5.9 acres, is already developed with no detention, and is served by storm water sewer at the north end of the property. A 'C' Factor of 0.73 was used based on a 1/8 acre lot with 45% coverage in a Soil Type C. Although technically classified as a multi-family unit, the overall impervious coverage corresponds more closely to the 1/8 acre lot. A time of concentration of 15 minutes was used. Based on the aerial and the City of Wichita GIS impervious area layer, we estimate that there is currently 116,000 sq feet of impervious area on the site. This figure is accounting for buildings and sidewalks on the property.

## DOWNSTREAM DRAINAGE CAPACITY

The surrounding area of this property is already developed into mostly residential housing. There is storm water sewer which drains this site along the north line located in 14<sup>th</sup> Street. The site drains via a 12" RCP which ties directly into the 36" SWS in 14<sup>th</sup> Street. This system drains the developed area east to the Wichita Drainage Canal.

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# POST-DEVELOPMENT HYDROLOGIC ANALYSIS

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## DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in developing the drainage and grading plans.

- STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events Modeled
  - 1.2" Water Quality Flow
  - Rational Method utilized for Developed Flows
  - C = 0.71 (Soil Type C – 1/8 acre residential lot)
  - Time of Concentration; Lag Method, minimum Tc = 15min

## DEVELOPED CONDITIONS HYDROLOGIC ANALYSIS

The site plan is shown on the Developed portion of the Drainage Plan. Based on the site plan, the proposed re-development will have approximately 13,500 ft<sup>2</sup> of impervious area. The site is currently a multi-family multi-unit site, only a different layout and configuration. For this type of development, a 'C' factor of 0.71 was used. This 'C' factor is used for a 1/8 acre lot in a residential layout. The % of impervious cover is less than the use of this property, so the corresponding 'C' factor was adjusted down.

## DETENTION FACILITIES

There is no detention being proposed on the site. With the redevelopment of this site, the total impervious area of the site will not increase, and actually will be less than existing conditions. Therefore, no detention is being proposed at this time.

## DISCHARGE POINTS SUMMARY

The site is proposed to continue to discharge as previous, however, a 24" RCP will replace the existing 12". The front yards/frontage areas will continue to sheet flow into the surrounding streets as it does today.

## WATER QUALITY

Water quality will be provided on the site due to the disturbance of more than 1 acre. We anticipate this to be done via a HydroWorks Hydroguard Water Quality Unit installed along the 24" SWS at the south end of the property. This unit has been sized per the total overall disturbance but will technically only treat the flow which is conveyed by the internal SWS system.

## DOWNSTREAM CHANNEL PROTECTION

Due to the site not adding more than 1 acre of impervious surface, and the discharge directly into an existing SWS which drains to the Wichita Drainage Canal, no channel protection is needed on this site.

## POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

Due to the site utilizing existing SWS in the area and on site, and less impervious area will be onsite than was there as existing, no upstream or downstream impacts are anticipated with this development.

## FLOODPLAIN SUBMITTAL

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### SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X - Shaded. The location of the property, on FEMA FIRM Panel 355 of 700 for Sedgwick County, Kansas, effective February 2, 2007, is attached as Exhibit 5.

## FEDERAL, STATE, & LOCAL PERMITTING

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### US ARMY CORPS OF ENGINEERS

There does not appear to be any jurisdictional waters of the US on this site.

### KANSAS DEPT OF AGRICULTURE – DWR PERMITTING

There does not appear to be any DWR permitting needed on the proposed site at this time.

### FEMA

No FEMA permitting is expected at this time.

### KANSAS DEPT OF TRANSPORTATION

There does not appear to be any KDOT permitting needed on the proposed project.

### SEDGWICK COUNTY PERMITTING

There does not appear to be Sedgwick County permitting needed at this time.

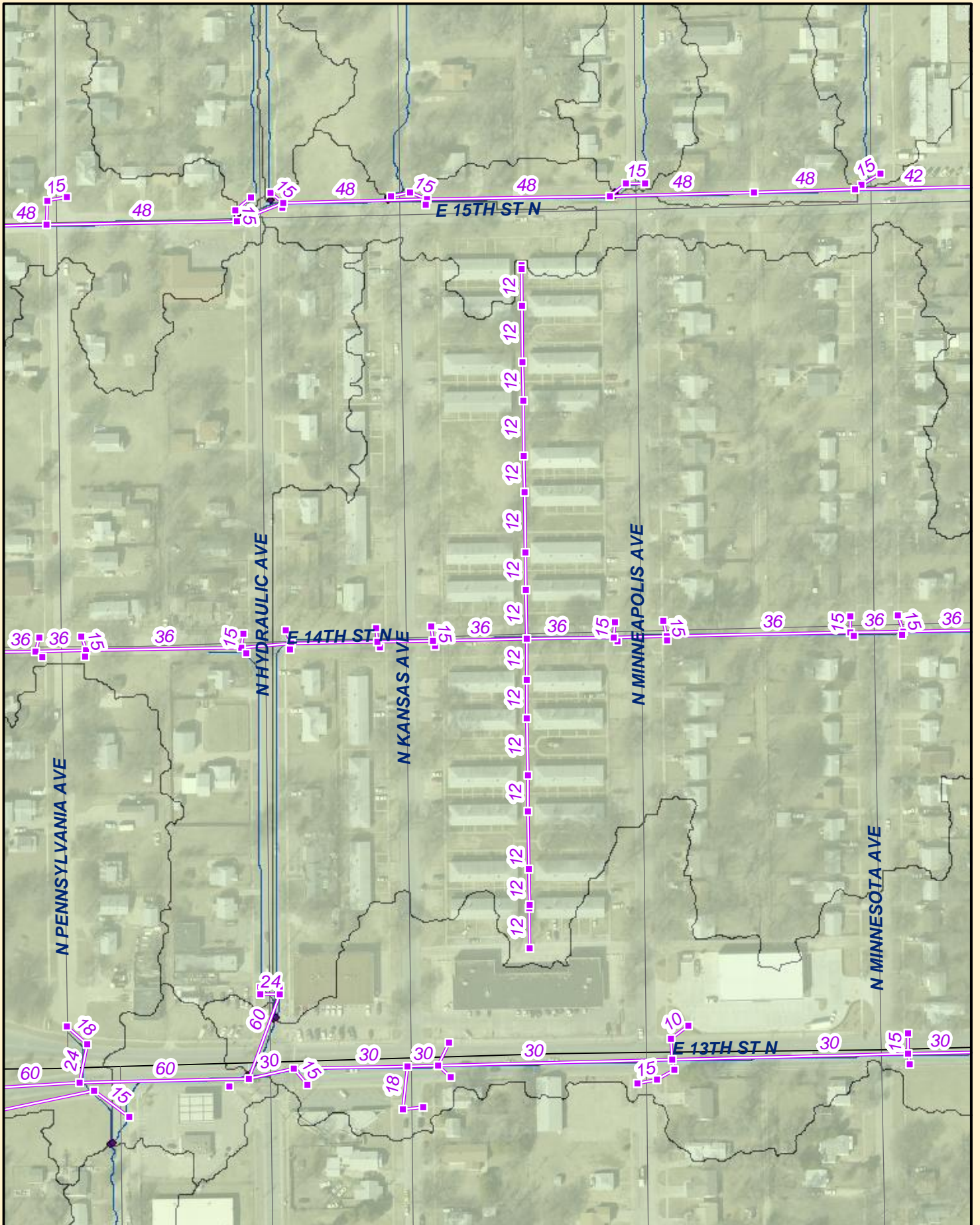
EXHIBIT 1: Site Location Map

EXHIBIT 2: Aerial Photo Exhibit with Lidar Topography

EXHIBIT 3: Plat – Half Scale

EXHIBIT 4: Drainage Plan – Half Scale

EXHIBIT 5: Floodplain Location (FIRM)



**SITE LOCATION**

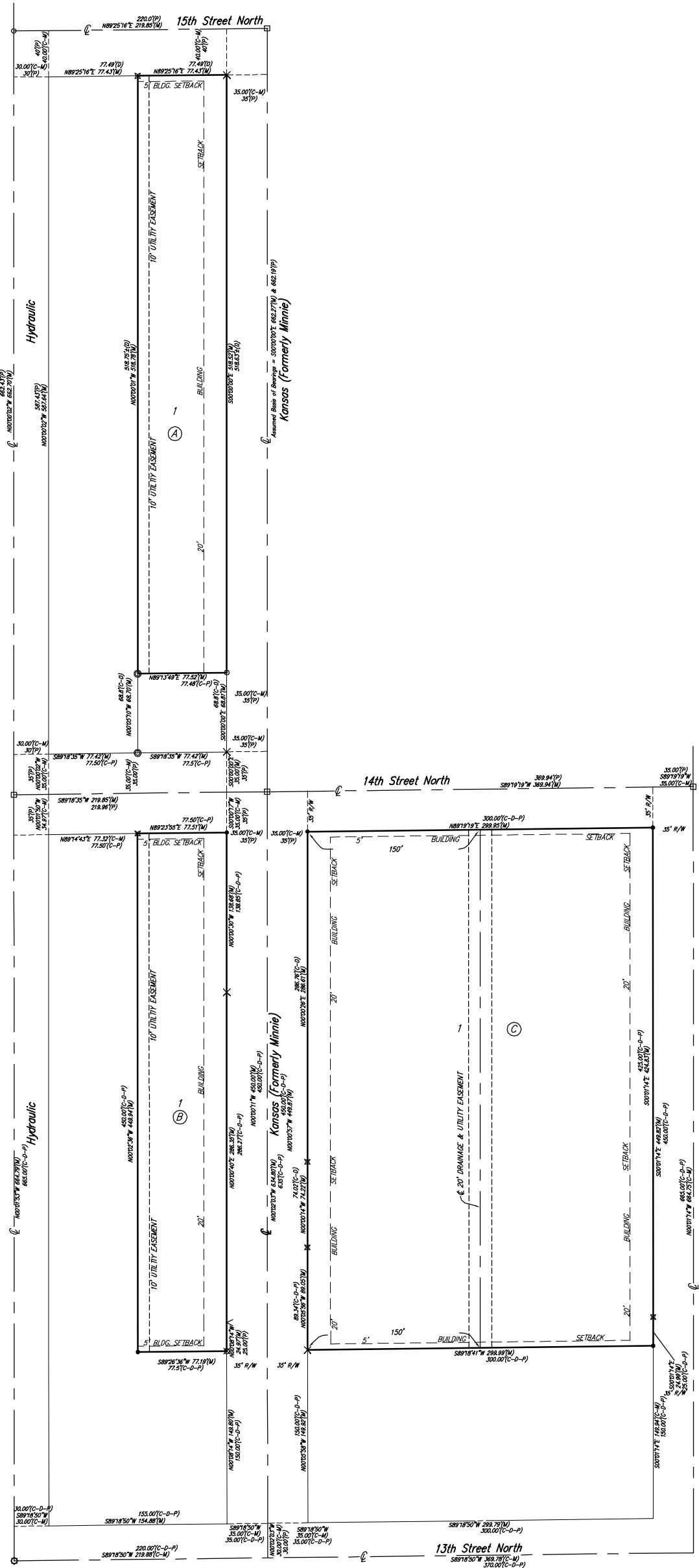




**AERIAL EXHIBIT**



FINAL PLAT  
**FRENCH QUARTER 2ND ADDITION**  
 WICHITA, SEDGWICK COUNTY, KANSAS



State of Kansas) SS We, Baughman Company, P.A., Surveyors in  
 Sedgwick County) aforesaid county and state do hereby certify that we have surveyed and  
 platted "FRENCH QUARTER 2ND ADDITION", Wichita, Sedgwick County,  
 Kansas and that the accompanying plat is a true and correct exhibit of  
 the property surveyed, described as A tract lying within vacated Block 6,  
 Ohio Addition to Wichita, Kansas, Sedgwick County, Kansas, lying within the  
 Southwest Quarter of Section 10, Township 27 South, Range 1 East of the  
 6th P.M., Sedgwick County, Kansas, described as commencing at the  
 southeast corner of Lot 93 in said Block 6; thence north along the west  
 right of way line of Herbert Avenue now Minneapolis Avenue, 150.00 feet to  
 the point of beginning, said point also being the southeast corner of Lot  
 81 in said Block 6; thence west along the south line of Lots 81 and 82  
 in said Block 6, 300.00 feet to the southwest corner of said Lot 82 in  
 said Block 6, said point also being on the east right of way line of Minnie  
 Avenue now Kansas Avenue; thence north along the west line of said Block  
 6, and the east right of way line of said Kansas Avenue, 450.00 feet to  
 the northwest corner of Lot 45 in said Block 6, said point also being on  
 the south right of way line of 14th Street North; thence east along the  
 north line of Lots 45 and 47 in said Block 6, and the south line of 14th  
 Street North right of way, 300.00 feet to the northeast corner of Lot 47  
 in said Block 6, also being the west right of way line of said Minneapolis  
 Avenue, thence south along the west right of way line of said Minneapolis  
 Avenue, 450.00 feet to the Point of Beginning, TOGETHER WITH, a tract  
 lying within vacated Block 5, Ohio Addition to Wichita, Kansas, Sedgwick  
 County, Kansas, lying within the Southwest Quarter of Section 10, Township  
 27 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas,  
 described as commencing at the southeast corner of Lot 93 in said Block 5;  
 thence north along the west right of way line of Minnie Avenue now  
 Kansas Avenue, 150.00 feet to the southeast corner of Lot 81 in said  
 Block 5, and for a point of beginning; thence west along the south line of  
 Lot 81 in said Block 5, 77.50 feet more or less to a point on the west  
 line of the east half of said Block 5, 450.00 feet to a point in the north  
 line of Lot 47 in said Block 5, and the south right of way line of 14th Street  
 North; thence east along the north line of Lot 47 in said Block 5, and the  
 west right of way line of said Kansas Avenue, 450.00 feet to the Point of  
 Beginning, TOGETHER WITH, a tract lying within vacated Block 4, Ohio  
 Addition to Wichita, Kansas, Sedgwick County, Kansas, described as beginning  
 at the northeast corner of Lot 1, Block B, French Quarter Addition, Wichita,  
 Sedgwick County, Kansas; thence west along the north line of Lot 1 in said  
 Block B, 77.50 feet to a point on the west line of the east half of said Block  
 4, 518.75 feet more or less to a point in the north line of Lot 1 in said  
 Block 4, and a point in the south right of way line of 15th Street North;  
 thence east along the north line of Lot 1 in said Block 4, and the south  
 right of way line of 15th Street North, 77.50 feet more or less to the  
 northeast corner of Lot 1 in said Block 4, and on the west line of Minnie  
 Avenue now Kansas Avenue; thence south along the west line of said  
 Kansas Avenue, 518.63 feet more or less to the Point of Beginning.

All being situated in the Southwest Quarter of Sec. 10,  
 Twp. 27-S, R-1-E of the 6th P.M., Sedgwick County, Kansas  
 Existing public easements and dedications  
 being vacated by virtue of K.S.A. 12-512b.  
 Baughman Company, P.A.  
 \_\_\_\_\_, Surveyor  
 Michael G. Conroy

Know all men by these presents that we,  
 the undersigned, have caused the land in the surveyors certificate to be  
 platted into Lots and Blocks, to be known as "FRENCH QUARTER 2ND  
 ADDITION", Wichita, Sedgwick County, Kansas. The utility easement is  
 hereby granted as indicated for the construction and maintenance of all  
 public utilities. The drainage and utility easement is hereby granted as  
 indicated for drainage purposes and for the construction and maintenance  
 of all public utilities.  
 French Quarter, LLC,  
 a Kansas limited liability company  
 \_\_\_\_\_, Managing  
 Member  
 Andrew L. Bias, President of Kansas  
 Affordable Housing Corporation,  
 a Kansas not-for-profit corporation

State of Kansas) SS The foregoing instrument acknowledged before  
 Sedgwick County) me, this \_\_\_\_\_ day of \_\_\_\_\_, 2013, by Andrew L. Bias, President  
 of Kansas Affordable Housing Corporation, a Kansas not-for-profit  
 corporation, as Managing Member of French Quarter, LLC, a Kansas  
 limited liability company, on behalf of the limited liability company.  
 \_\_\_\_\_, Notary Public  
 My App't. Exp. \_\_\_\_\_

We, the undersigned holders of a mortgage on the  
 above described property, do hereby consent to this plat of "FRENCH  
 QUARTER 2ND ADDITION", Wichita, Sedgwick County, Kansas.  
 Mennonite Housing Rehabilitation Services, Inc.,  
 a Kansas not-for-profit corporation  
 \_\_\_\_\_, (M)

State of Kansas) SS The foregoing instrument acknowledged be-  
 Sedgwick County) fore me, this \_\_\_\_\_ day of \_\_\_\_\_, 2013, by \_\_\_\_\_,  
 \_\_\_\_\_ of Mennonite Housing Rehabilitation Services, Inc.,  
 a Kansas not-for-profit corporation, on behalf of the corporation.  
 \_\_\_\_\_, Notary Public  
 My App't. Exp. \_\_\_\_\_

This plat of "FRENCH QUARTER ADDITION",  
 Wichita, Sedgwick County, Kansas has been submitted to and approved by  
 the Wichita-Sedgwick County Metropolitan Area Planning Commission,  
 Wichita, Kansas.  
 Dated this \_\_\_\_\_ day of \_\_\_\_\_, 2013.  
 Wichita-Sedgwick County Metropolitan Area Planning Commission  
 \_\_\_\_\_, Chair  
 Don Klausmeyer  
 \_\_\_\_\_, Secretary  
 John L. Schlegel

This plat approved and all dedications  
 shown hereon accepted by the City Council of the City of Wichita,  
 Kansas, this \_\_\_\_\_ day of \_\_\_\_\_, 2013.  
 \_\_\_\_\_, Mayor  
 Carl Brewer  
 \_\_\_\_\_, City Clerk  
 Karen Sublett

State of Kansas) SS This is to certify that this plat has been  
 Sedgwick County) filed for record in the office of the Register of Deeds, this \_\_\_\_\_ day  
 of \_\_\_\_\_, 2013 at \_\_\_\_\_ o'clock \_\_\_\_\_ M, and is duly recorded.  
 \_\_\_\_\_, Register of Deeds  
 Bill Meek  
 \_\_\_\_\_, Deputy  
 Tonya Buckingham

Tricia L. Robella, L.S. #1246  
 Deputy County Surveyor  
 Sedgwick County, Kansas  
 Entered on transfer record this \_\_\_\_\_ day  
 of \_\_\_\_\_, 2013.  
 Kelly B. Arnold, County Clerk

(C) = Calculated  
 Ch. = Chord Length  
 Ch. BR. = Chord Bearing  
 Δ = Delta Angle  
 D = Degree of Curve  
 (D) = Described  
 L = Arc Length  
 (M) = Measured  
 (P) = Platted  
 (Pr) = Planted  
 R = Radius

• = #4 Baughman Rebar Set  
 ○ = #4 Baughman Rebar Found  
 □ = 1/2" Iron Pipe Found (Origin Unknown)  
 △ = 3/4" Iron Pipe Found (Origin Unknown)  
 X = Chiseled "X" Found (Origin Unknown)  
 ⊗ = Chiseled "X" Set  
 ⊕ = Chiseled "Y" Notch Found  
 ⊙ = #4 L.S. 950 Rebar Found  
 ⊖ = 1/2" Iron Pipe Found  
 ⊗ = 1/2" Iron Pipe in Thimble Found  
 ✕ = #4 Rebar Found

NOTE:  
 A drainage plan has been developed for this subdivision and is on file with  
 the City of Wichita, Kansas. Drainage intent shall remain as depicted or as  
 modified with the approval of the City Engineer of the City of Wichita,  
 Kansas. No obstructions which impede the flow of this drainage plan shall  
 be allowed.

30 SEPTEMBER 2013

**FRENCH QUARTER  
 2ND ADDITION**

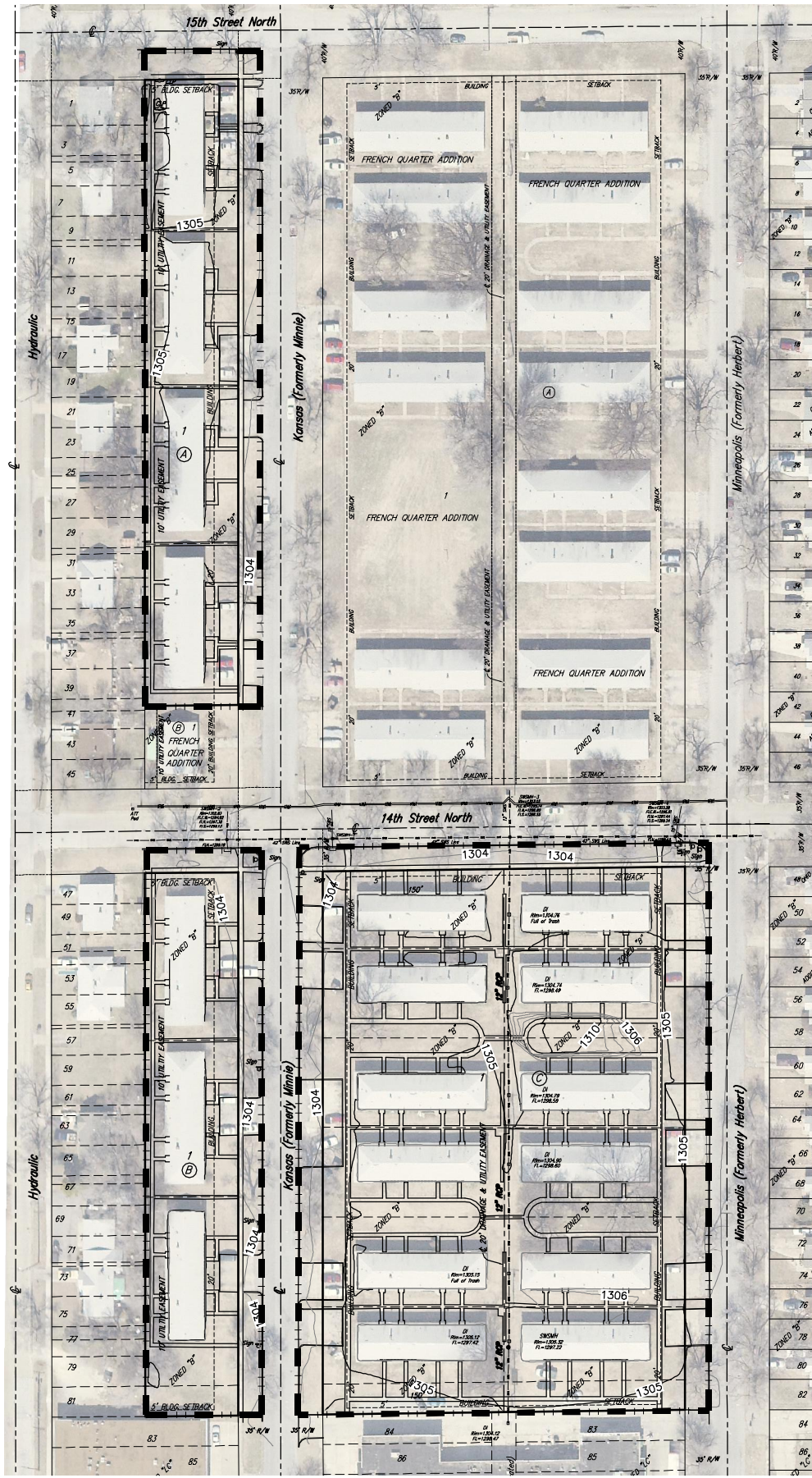
Baughman Company, P.A.  
 315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149  
 ENGINEERING SURVEYING PLANNING LANDSCAPE ARCHITECTURE

DATE OF PREPARATION: 30 SEPTEMBER 2013

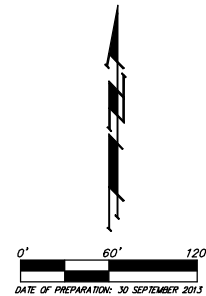
# DRAINAGE PLAN

## FRENCH QUARTER 2ND ADDITION

### WICHITA, SEDGWICK COUNTY, KANSAS



**EXISTING SITE**  
 45% Impervious  
 Area = 5.9 acres  
 C' = 0.73  
 Tc = 15  
 Q<sub>2</sub> = 17 cfs  
 Q<sub>5</sub> = 20 cfs  
 Q<sub>10</sub> = 22 cfs  
 Q<sub>25</sub> = 26 cfs  
 Q<sub>100</sub> = 31 cfs



**PROPOSED SITE**  
 44% Impervious  
 Area = 5.9 acres  
 C' = 0.71  
 Tc = 15  
 Q<sub>2</sub> = 16 cfs  
 Q<sub>5</sub> = 19 cfs  
 Q<sub>10</sub> = 22 cfs  
 Q<sub>25</sub> = 25 cfs  
 Q<sub>100</sub> = 31 cfs

Land Use	Hydrologic Soil Group				Land Use	Curve Numbers			
	A	B	C	D		A	B	C	D
Undisturbed	0.02	0.03	0.04	0.05	Undisturbed	55	71	80	84
Turf or Disturbed Soils	0.15	0.2	0.22	0.25	Turf or Disturbed Soils	71	80	84	88
Impervious Cover	0.95	0.95	0.95	0.95	Impervious Cover	98	98	98	98

Weighted Volumetric Runoff Coef. (R <sub>v</sub> ) (eq. 4-24*)											
Basin #	Undist. #	Dist. #	Ex. Imp. #	New Imp. #	Total Area #	U %	D %	Redev. I %	I %	R <sub>v</sub> %	WQ <sub>v</sub> ft <sup>3</sup>
1	0	144,325	113,550	0	257,875	0.000	0.123	0.125	0.000	0.2486	6,411

**Water Quality Peak Flow**  
 Basin #4

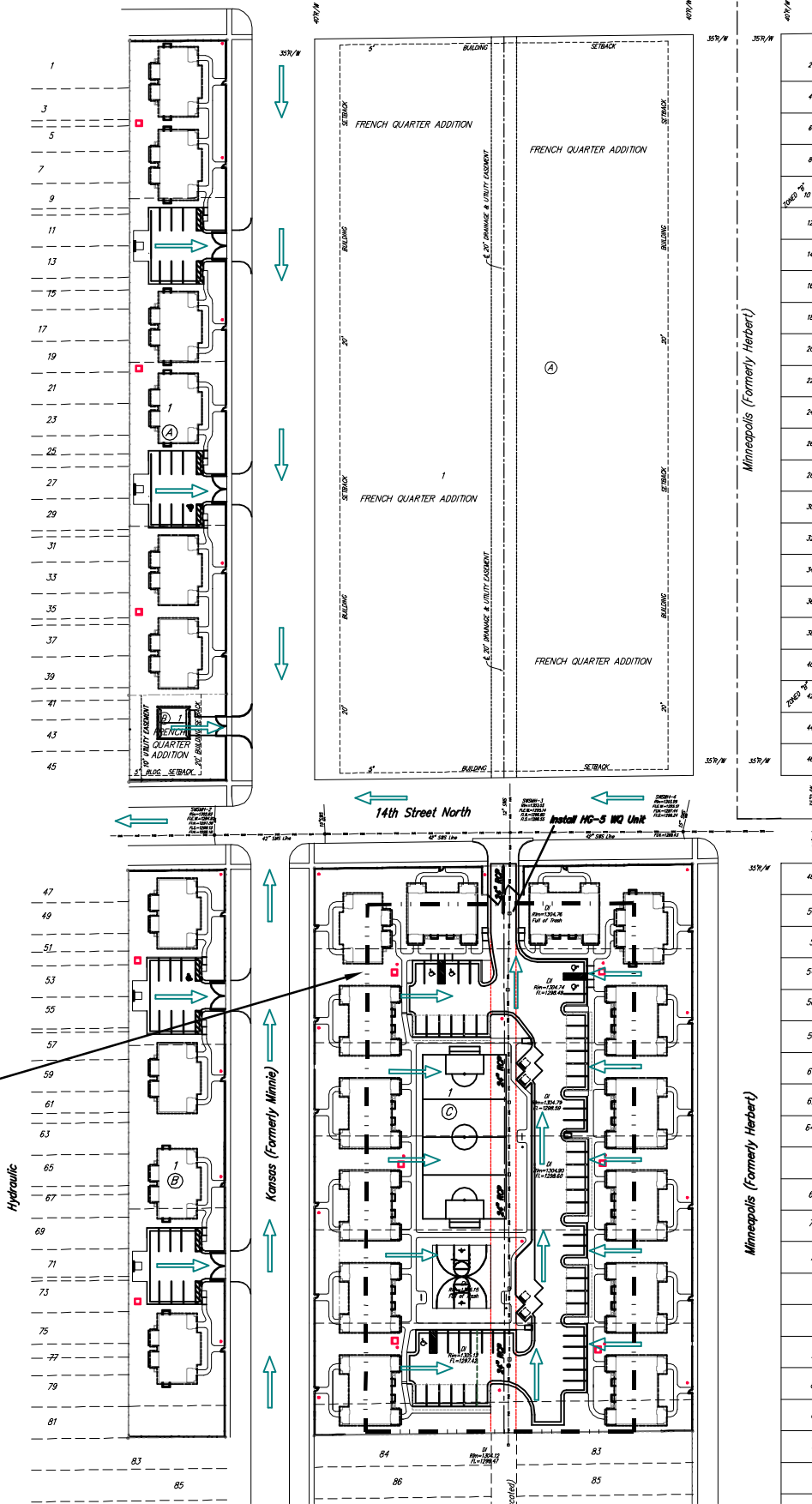
eq. 4-15\*  
 $Q_p = q_u \cdot A \cdot C_w \cdot F_p$

Table 4-9  
 CN = 90  
 $I_a/P = 0.19$   
 $T_c = 15$  min  
 $q_u = 675$  Figure 4-8  
 $A = 257,875$  ft<sup>2</sup>  
 5.92 acre  
 0.00925 mi<sup>2</sup>  
 $R_v = 0.2486$  Eq. 4-24  
 $P = 1.2$  Sedg. Std  
 $C_w = 0.2983457$  eq. 4-26  
 $F_p = 1.00$  Table 4-11  
 $Q_p = 1.86$  cfs

**Treatment Area**  
 This area is approximately 2 acres and will be treated by the HG Unit. This area is approximately 35% of the total disturbed area. The remaining 3.9 acres of area will drain to the adjacent streets untreated.

The existing site drains via sheet flow to the surrounding streets. The interior drainage from the east portion drains to the north via a 12" SWS to the SWS system in 14th Street.

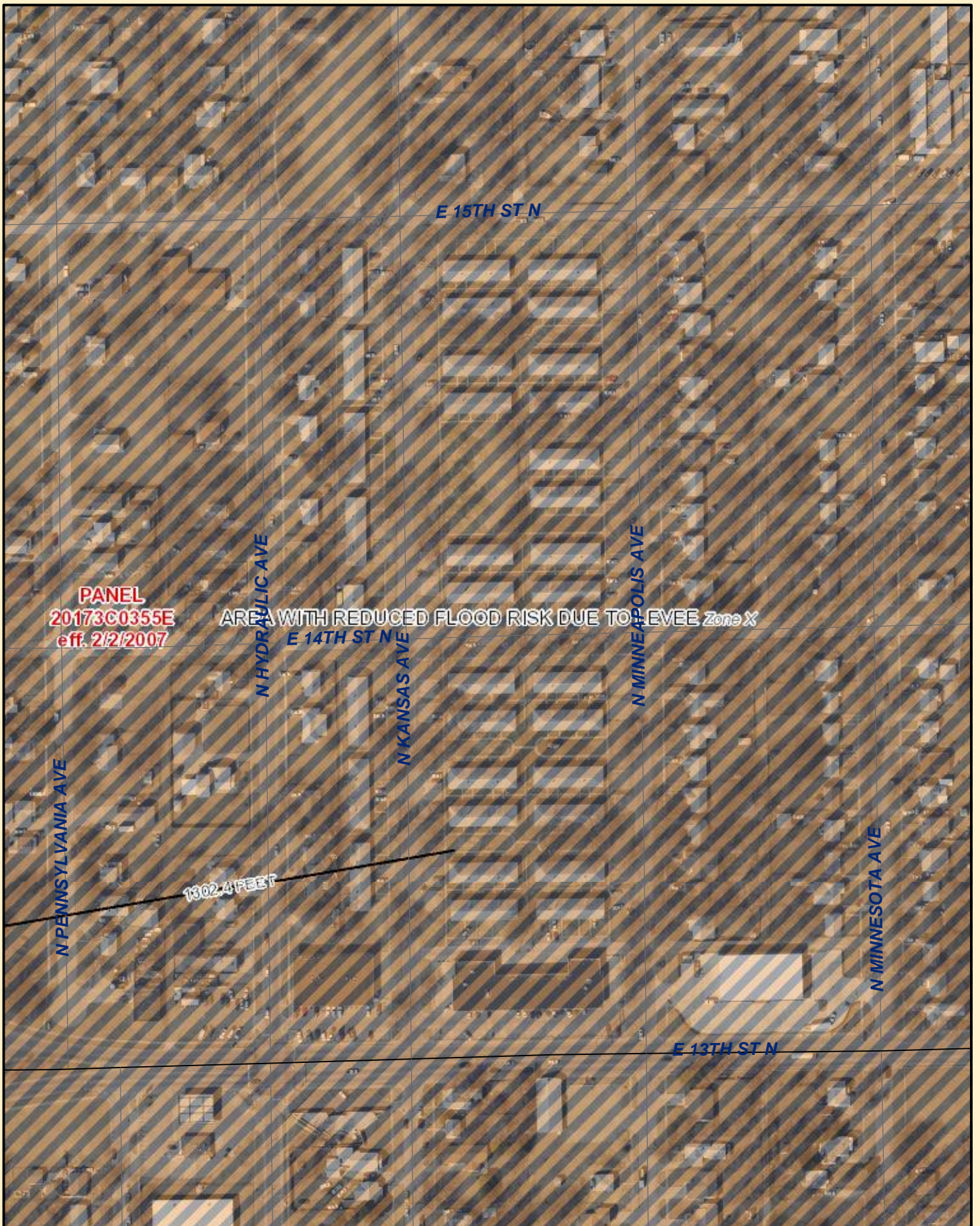
The proposed SWS system will replace (in place) the 12" SWS with a 24" RCP. The 24" RCP will connect to the existing SWS in 14th Street North.



**PROPOSED**

**DRAINAGE PLAN**  
**FRENCH QUARTER 2ND ADD**  
 REV 07 OCT 2013  
 01 OCT 2013

**EXISTING**



# FLOODPLAIN MAP



## SUPPORTING CALCULATIONS

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APPENDIX A : Water Quality Worksheet

# Water Quality Worksheet

Table 4-13 Volumetric Runoff Coefficients by Land Use and Hydrologic Soil Group

Land Use	Hydrologic Soil Group				Land Use	Hydrologic Soil Group			
	A	B	C	D		A	B	C	D
Undisturbed	0.02	0.03	<b>0.04</b>	0.05	Undisturbed	55	71	<b>80</b>	84
Turf or Disturbed Soils	0.15	0.2	<b>0.22</b>	0.25	Turf or Disturbed Soils	71	80	<b>84</b>	88
Impervious Cover	0.95	0.95	<b>0.95</b>	0.95	Impervious Cover	98	98	<b>98</b>	98

Weighted Volumetric Runoff Coef. (R <sub>v</sub> ) (eq. 4-24*)											
Basin #	Undist. ft <sup>2</sup>	Dist. ft <sup>2</sup>	Total Prop Imp Area		Total Area ft <sup>2</sup>	U %	D %	Redev. I * %	I %	R <sub>v</sub> %	WQ <sub>v</sub> ft <sup>3</sup>
			Ex. Imp. ft <sup>2</sup>	New Imp. ft <sup>2</sup>							
1		144,325	113,550		257,875	0.000	0.123	0.125	0.000	<b>0.2486</b>	<b>6,411</b>
CN	0	47	43	0	<b>90</b>						

Water Quality Peak Flow Basin # 4	
eq. 4-18*	
Q <sub>p</sub> = q <sub>u</sub> * A * Q <sub>wv</sub> * F <sub>p</sub>	
CN =	90 Table 4-9
la/P =	0.19
Tc =	15 min
q <sub>u</sub> =	675 Figure 4-6
A =	257,875 ft <sup>2</sup>
	5.92 acre
	0.00925 mi <sup>2</sup>
R <sub>v</sub> =	0.2486 Eq. 4-24
P =	1.2 Sedg. Std.
Q <sub>wv</sub> =	0.2983457 eq. 4-26
F <sub>p</sub> =	1.00 Table 4-10
<b>Q<sub>p</sub> =</b>	<b>1.86 cfs</b>

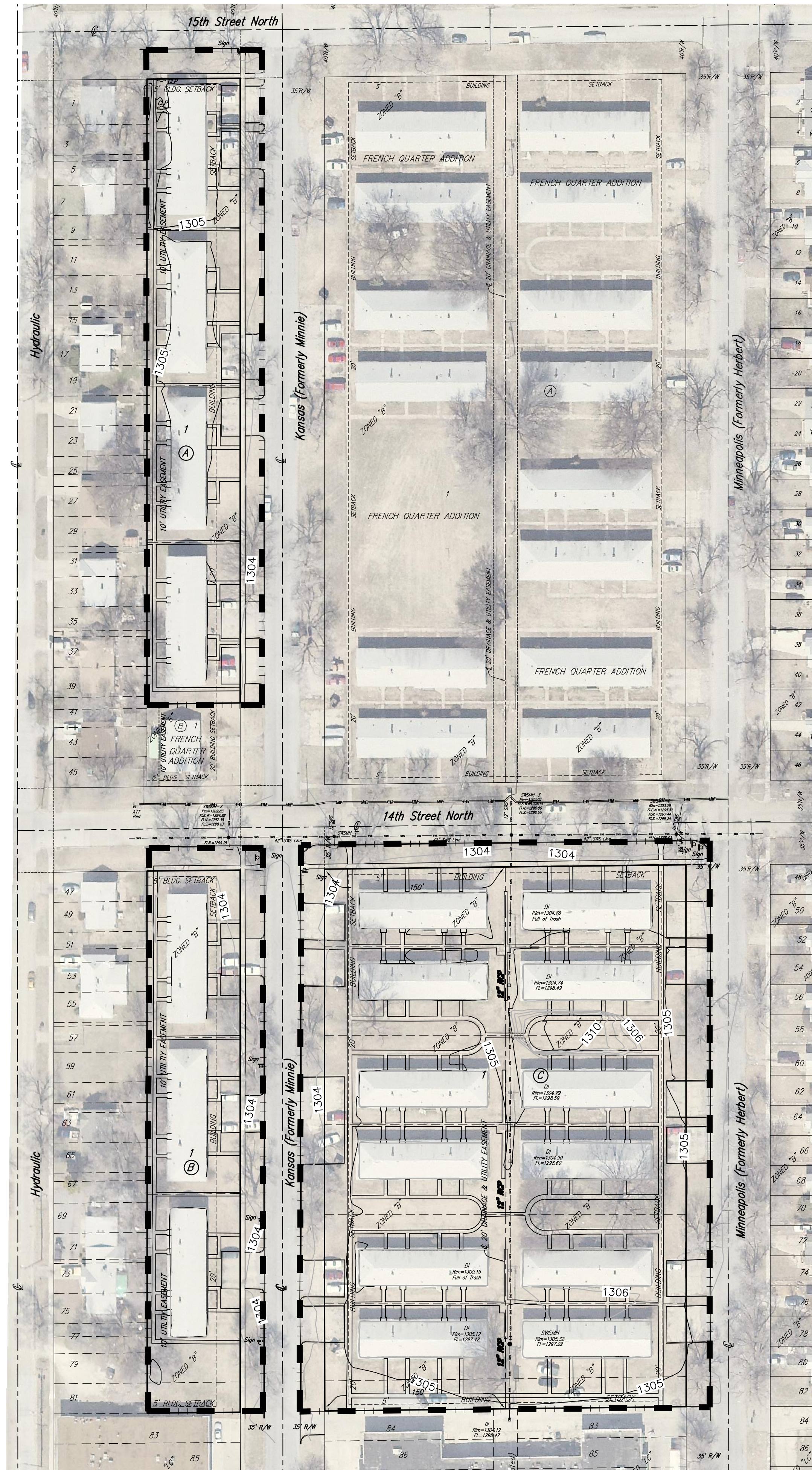
\* Redeveloped Impervious is 30% of the Impervious Calculation.

Drainage Plan  
1:60 Scale

# DRAINAGE PLAN

## FRENCH QUARTER 2ND ADDITION

### WICHITA, SEDGWICK COUNTY, KANSAS



**EXISTING**

**EXISTING SITE**  
 45% Impervious  
 Area = 5.9 acres  
 $C' = 0.73$   
 $T_c = 15$   
 $Q_2 = 17$  cfs  
 $Q_5 = 20$  cfs  
 $Q_{10} = 22$  cfs  
 $Q_{25} = 26$  cfs  
 $Q_{100} = 31$  cfs



**PROPOSED SITE**  
 44% Impervious  
 Area = 5.9 acres  
 $C' = 0.71$   
 $T_c = 15$   
 $Q_2 = 16$  cfs  
 $Q_5 = 19$  cfs  
 $Q_{10} = 22$  cfs  
 $Q_{25} = 25$  cfs  
 $Q_{100} = 31$  cfs

Land Use	Hydrologic Soil Group				Land Use	Curve Numbers			
	A	B	C	D		A	B	C	D
Undisturbed	0.02	0.03	0.04	0.05	Undisturbed	55	71	80	84
Turf or Disturbed Soils	0.15	0.2	0.22	0.25	Turf or Disturbed Soils	71	80	84	88
Impervious Cover	0.95	0.95	0.95	0.95	Impervious Cover	98	98	98	98

Weighted Volumetric Runoff Coef. (R <sub>v</sub> ) (eq. 4-24*)											
Basin #	Undist.		Dist.		Total Prop Imp Area		U	D	Redev. 1*	R <sub>v</sub>	WQ, ft*
	ft*	ft*	ft*	ft*	ft*	ft*					
1	144,320	113,500	0	0	257,875	0.000	0.123	0.125	0.000	0.2486	6.411
CN	0	47	43	0	90						

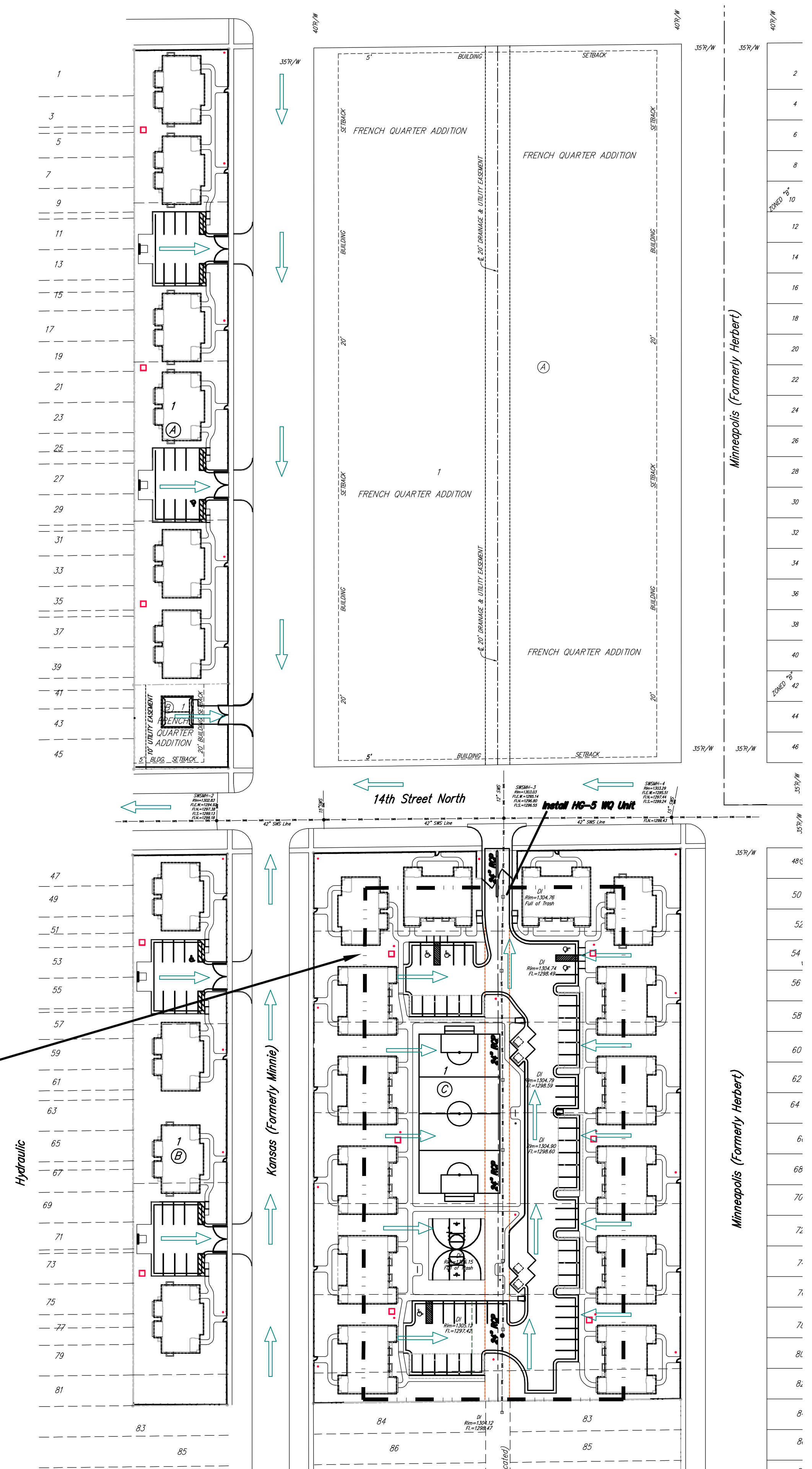
**Water Quality Peak Flow Basin # 4**  
 eq. 4-19\*  
 $Q_p = q_u \cdot A \cdot Q_{ww} \cdot F_p$   
 CN = 90 Table 4-9  
 $l_a/P = 0.19$   
 $T_c = 15$  min  
 $q_u = 675$  Figure 4-8  
 $A = 257,875$  ft<sup>2</sup>  
 5.92 acre  
 $0.00925$  mi<sup>2</sup>  
 $R_v = 0.2486$  Eq. 4-24  
 $P = 1.2$  Sedg. Std  
 $Q_{ww} = 0.2983457$  eq. 4-2b  
 $F_p = 1.00$  Table 4-10  
 $Q_p = 1.86$  cfs

The existing site drains via sheet flow to the surrounding streets. The interior drainage from the east portion drains to the north via a 12" SWS to the SWS system in 14th Street.

**Treatment Area**  
 This area is approximately 2 acres and will be treated by the HG Unit. This area is approximately 35% of the total disturbed area. The remaining 3.9 acres of area will drain to the adjacent streets untreated.

The proposed SWS system will replace (in place) the 12" SWS with a 24" RCP. The 24" RCP will connect to the existing SWS in 14th Street North.

**PROPOSED**



**DRAINAGE PLAN**  
**FRENCH QUARTER 2ND ADD**