

DRAINAGE PLAN  
TYLER'S LANDING  
4TH ADDITION  
TO  
WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY



12 MAY 2008



# DRAINAGE PLAN TYLER'S LANDING 4TH ADDITION

## FINAL REPORT

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# PROJECT NARRATIVE

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## EXISTING CONDITIONS

The site is located approximately 1300 feet east of the southeast corner of the intersection of 37th Street North and Tyler Road. The site is adjacent to the Tyler's Landing 3<sup>rd</sup> Addition. The subject property consists of approximately 9 acres of agricultural farmland and pasture land. The site appears to drain to the south via sheet flow.

## PROPOSED CONDITIONS

The proposed Tyler's Landing 4<sup>th</sup> Addition is to be developed into a residential subdivision with approximately 30 lots. The subdivision will consist of residential lots with corresponding streets, utilities, and stormwater management systems (storm sewer, channels, etc.). The site is expected to utilize existing stormwater sewer located in the adjacent Tyler's Landing 3<sup>rd</sup> Addition to convey the developed runoff. The site's access will tie directly into Tyler's Landing 3<sup>rd</sup> addition, directly to the west.

## OFFSITE CONDITIONS

This site generally flat and drains via sheet flow to the south. There does not appear to be any significant offsite drainage encroaching upon the property. The 37<sup>th</sup> Street N. ROW appears to drain east and under the railroad via a 42" CMP. A portion of the site appears to drain there currently. However, this area has a history of flooding / standing water. Therefore, this site is expected to convey its developed runoff to the south. A small portion of sheet flow is expected from the railroad ROW to the east. Tyler's Landing 3<sup>rd</sup> Addition to the south and west, is served via SWS as shown on the plan sheet.

# 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.

### Ø STORM SERIES

- 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
- Hydraflow Hydrograph software for existing flows (Rational Method)
- Runoff Coefficient; C=0.63 (100yr, Type D Soils, Agricultural Pasture, 0 -1%)
- Time of Concentration; TR-55 method (15 min. minimum)

## SITE CHARACTERISTICS

The site is currently agricultural pasture or rangeland considered to be in fair condition. The soil type on the site is Type D and of the sandy loam variety. The NRCS Soil Survey can be viewed in Appendix A.

The site is generally flat but does sheet flow offsite to the south. The aerial photograph with topography can be seen as Exhibit 2.

## EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site was analyzed for pre-development conditions using the rational method for the 2, 5, 10, 25, and 100 year storm events. Runoff coefficients used were from the City of Wichita Drainage Criteria Manual for Agricultural Pasture Areas, Soil Type D, slope of 0% to 1%.

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# POST-DEVELOPMENT HYDROLOGIC ANALYSIS

## DRAINAGE METHODS & STANDARDS

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

- Ø STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
  - Runoff Coefficient; C=0.78 (100yr, Type D Soils, 1/8 to 1/4 acre lots)
  - Time of Concentration - 15 min. minimum
  
- Ø STORM WATER SEWER PIPES & DRAINAGE CHANNELS
  - Sized for 10-yr storm event (C=0.65)
  - Normal depth assumed at outlet/ existing SWS
  
- Ø GRADING CONSTRAINTS
  - Match grades along entire property lines
  - 1% minimum rear yard grades
  - 0.5% minimum street grades

## DISCHARGE POINTS SUMMARY

There are two main discharge points for this subdivision. Both points are proposed storm sewers that will discharge into existing storm sewers in the Tyler's Landing 3<sup>rd</sup> Addition. These systems drain to the south in a series of detention ponds in Tyler's Landing 3<sup>rd</sup> Addition. The storm sewers appear to have capacity for the 10-year storm event as modeled with the criteria state above.

## POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

There are no downstream impacts expected with this development as offsite detention will be utilized for the proposed flows. The existing SWS in Tyler's Landing 3<sup>rd</sup> will convey the developed runoff to the existing ponds. No upstream impacts are expected.

## FLOODPLAIN SUBMITTAL

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### SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X. The site is not located within a mapped FEMA SFHA. The location of the property, on FEMA FIRM Panels 330 and 335 of 700, map 20173C0330E, and 20173C0335E are attached as Exhibit 6 (for Sedgwick, effective February 2, 2007).

## FEDERAL, STATE, & LOCAL PERMITTING

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### US ARMY CORPS OF ENGINEERS

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

### KANSAS DEPT OF AGRICULTURE – DWR PERMITTING

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

### FEMA

There is no mapped floodplain located upon the proposed site. Therefore, 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 ROW

No discharge is expected in county rights of way.

## EXHIBITS

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- EXHIBIT 1: Site Location Map
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## SUPPORTING CALCULATIONS

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APPENDIX A: USGS Soils Survey

APPENDIX B: HydraFlow Hydrographs Routing

APPENDIX C: Hydraflow Stormsewer Modeling

# USGS Soils Survey

# Hydraflow HydraFlow Routing

# HYDRAFLOW STORMSEWER MODELING

# PLAN SHEETS

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DRAINAGE PLAN  
GRADING PLAN

Scale 1:60  
Scale 1:60