

Lots 1&2 Cameron Creek Drainage Report

Submitted by:

Jordan M. Aigner, P.E.



AIGNER
ENGINEERING

Aigner Engineering, Inc.
944 N. Baker Road
Boonville, IN 47601

www.aignerengineering.com

RECEIVED BY THE
VANOSBURGH COUNTY
ENGINEER'S OFFICE
9/7/11 3:00 pm *AA*

Cameron Creek Drainage Plan Lots 1&2

Site Location

The site is located at, 3131 Kansas Rd. Evansville IN 47725. The project is located in part of the Northeast Quarter of Section 27, Township 5 South, Range 10 West in Center Township, Vanderburgh County, Indiana. The Latitude and Longitude are as follows: 38° 03' 49" and 87° 30' 35".

Soil Properties

According to the US Department of Agriculture Soil Survey of Vanderburgh County, Indiana, the soil types present on the site consists of the following soil types (See Appendix A – Sheet A.18), Henshaw Silt Loam (He), Wilbur Silt Loam (Wm), and Wakeland Silt Loam (Wa).

Proposed Development

The proposed development will contain a Hucks Gas Station on lot 2 and a commercial strip center/bank on Lot 1 (currently proposed).

Flood Plain Data

The entire site is located within the Flood Zone A as identified on the National Flood Insurance Program's Flood Insurance Rate Maps (FIRM) Community Panel No 18163C0109D, effective date of March 17, 2011 and No. 18163C0117D, effective date of March 17, 2011. The proposed development will be elevated to bring the finish floors out of the floodplain elevation. A permit was issued for the proposed development within the floodplain/floodway. The correspondence is included in this report. A borrow pit will be constructed in order to achieve the correct grades for the project finish floor requirements. This borrow pit will not serve any retention purposes, but it will be an incised basin with an outfall into Firlick Creek, holding constant pool.

Existing Drainage Conditions

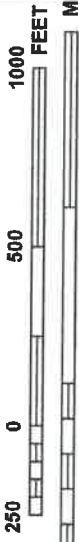
The site is currently utilized as a fallow field. There are a few mounds of dirt scattered on lot #2, but the entire site is very flat with 1-3 feet of relief over the entire area. The current drainage patterns flow very gently to Firlick Creek which is to the southwest of the proposed development. The pre-developed runoff Q_{10} for the proposed developed areas is 3.03 CFS.

Developed Drainage Conditions

The proposed developed conditions will direct all storm water from the new improvements to the proposed retention basin just south of lot #2. From this basin the discharge will be the same as pre-developed conditions under the flow of the outfall pipe, a 12" RCP 40' long. This pipe will discharge to the borrow pit. The developed runoff of each lot is estimated at Q_{25} 12.40 CFS. The difference in the runoff from the pre-developed condition and the post developed conditions will be detained in the retention basin.



MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0109D

FIRM
FLOOD INSURANCE RATE MAP
VANDERBURGH COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 109 OF 275
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY NUMBER 180266
VANDERBURGH COUNTY
PANEL SUFFIX 0109 D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number should be used on insurance applications for the subject community.

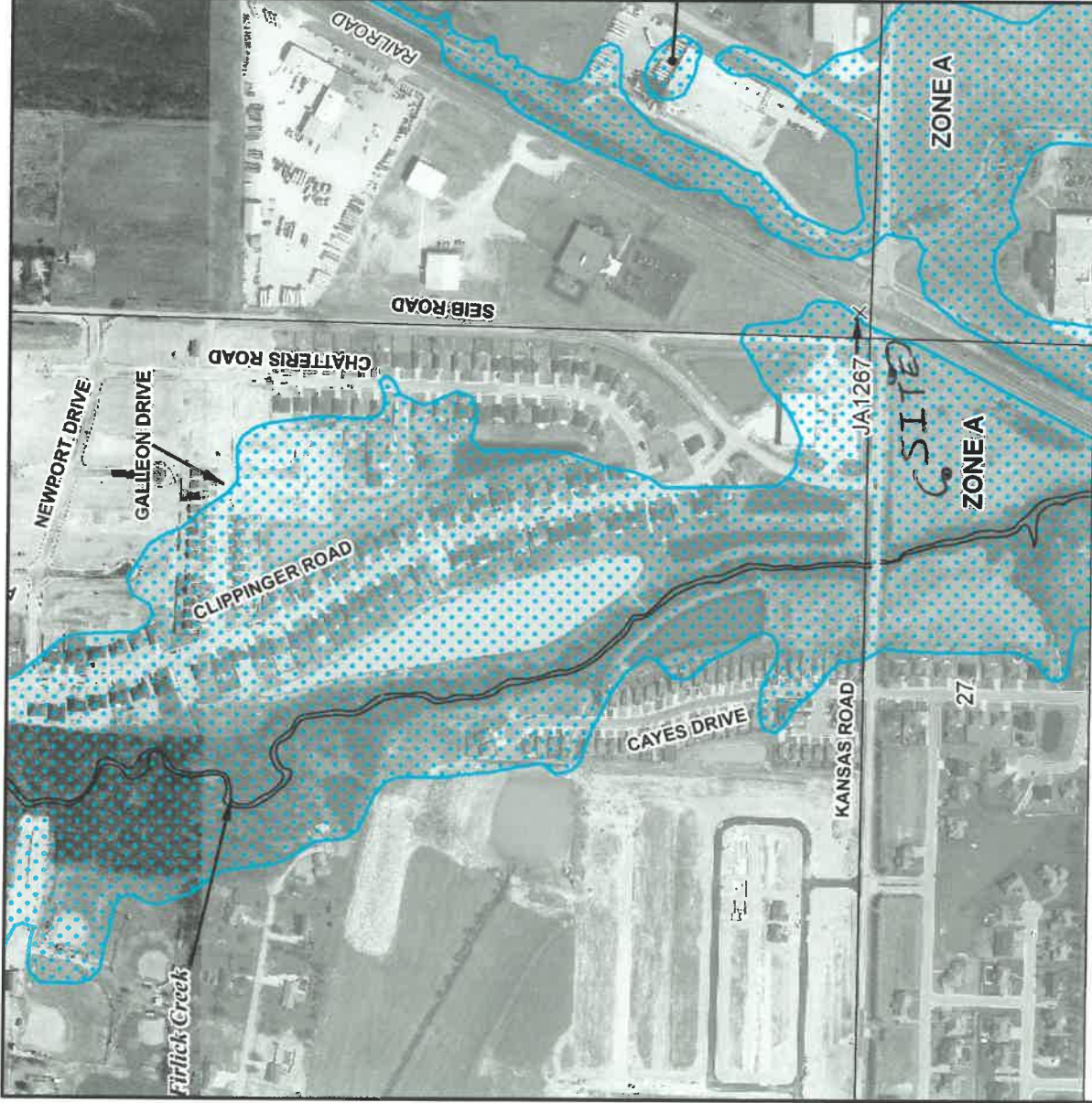


MAP NUMBER
18163C0109D

EFFECTIVE DATE
MARCH 17, 2011

Federal Emergency Management Agency

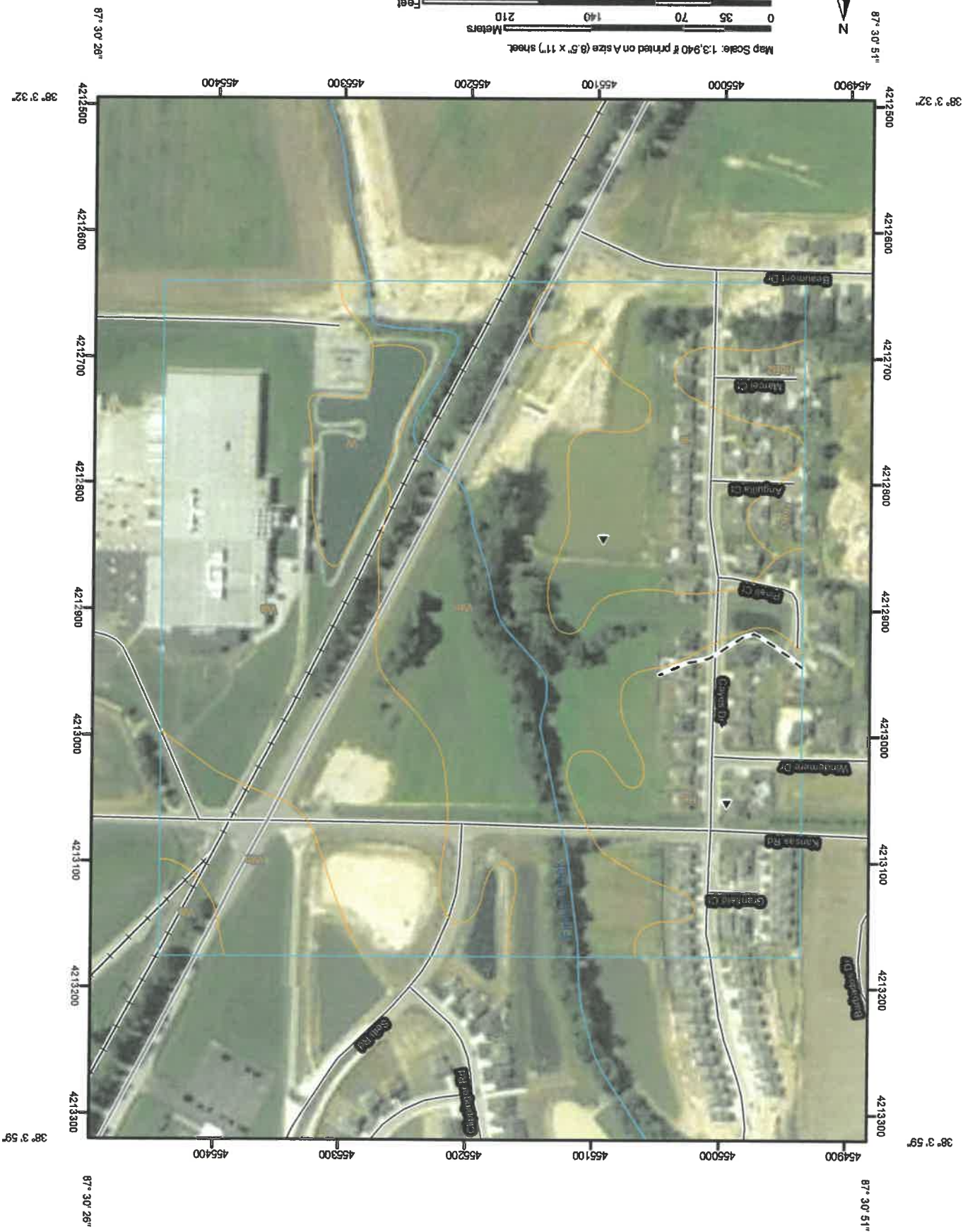
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.mec.fema.gov













































455'000m E

JOINS PANEL 0117

Soil Map—Vanderburgh County, Indiana



MAP LEGEND

	Area of Interest (AOI)		Very Stony Spot
	Area of Interest (AOI)		Wet Spot
	Soils		Other
	Soil Map Units		Gully
	Special Point Features		Short Steep Slope
	Borrow Pit		Other
	Clay Spot		Political Features
	Closed Depression		Cities
	Gravel Pit		Water Features
	Gravelly Spot		Oceans
	Landfill		Streams and Canals
	Lava Flow		Transportation
	Marsh or swamp		Rails
	Mine or Quarry		Interstate Highways
	Miscellaneous Water		US Routes
	Perennial Water		Major Roads
	Rock Outcrop		Local Roads
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		
	Spill Area		
	Stony Spot		

MAP INFORMATION

Map Scale: 1:3,940 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840. Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Vanderburgh County, Indiana
 Survey Area Data: Version 9, Aug 11, 2009

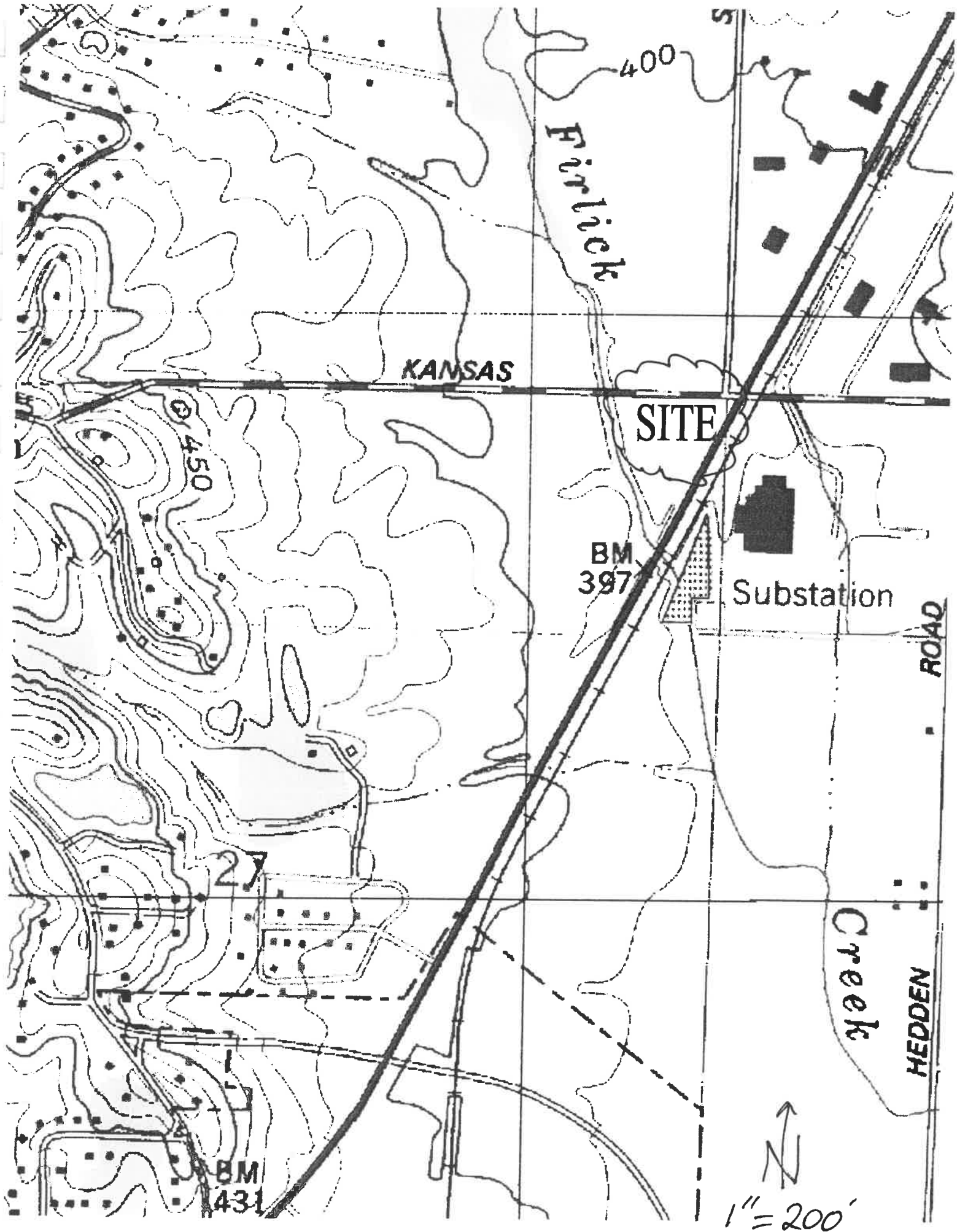
Date(s) aerial images were photographed: 7/13/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Vanderburgh County, Indiana (IN163)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
He	Henshaw silt loam	17.5	26.1%
HoB2	Hosmer silt loam, 2 to 6 percent slopes, eroded	1.9	2.8%
W	Water	2.1	3.1%
Wa	Wakeland silt loam	20.3	30.2%
Wm	Wilbur silt loam	25.3	37.7%
Totals for Area of Interest		67.1	100.0%





N 01°07'19" E 675.11' (R)

45'

187.81' E eml

Lot 1

Existing Conditions

Scale 1" = 100'



N 88°53'18" W 469.31' (R)

Frick Creek

N 00°38'04" E 181.83' W 69.41' (R)
28.75ft 50.21ft 51.00ft 2'



State Road 57

Lot 2

S 28°19'25" W 196.50' (R)

S 47°18'25" W 180.10' (R)

S 88°52'31" E 147.09' (R)

S 01°07'19" E 231.00' (R)

154.82' (R)

99.87' (R)

68.99' (R)

21E

Cameron Creek Lots 1 and 2 Pre-Developed

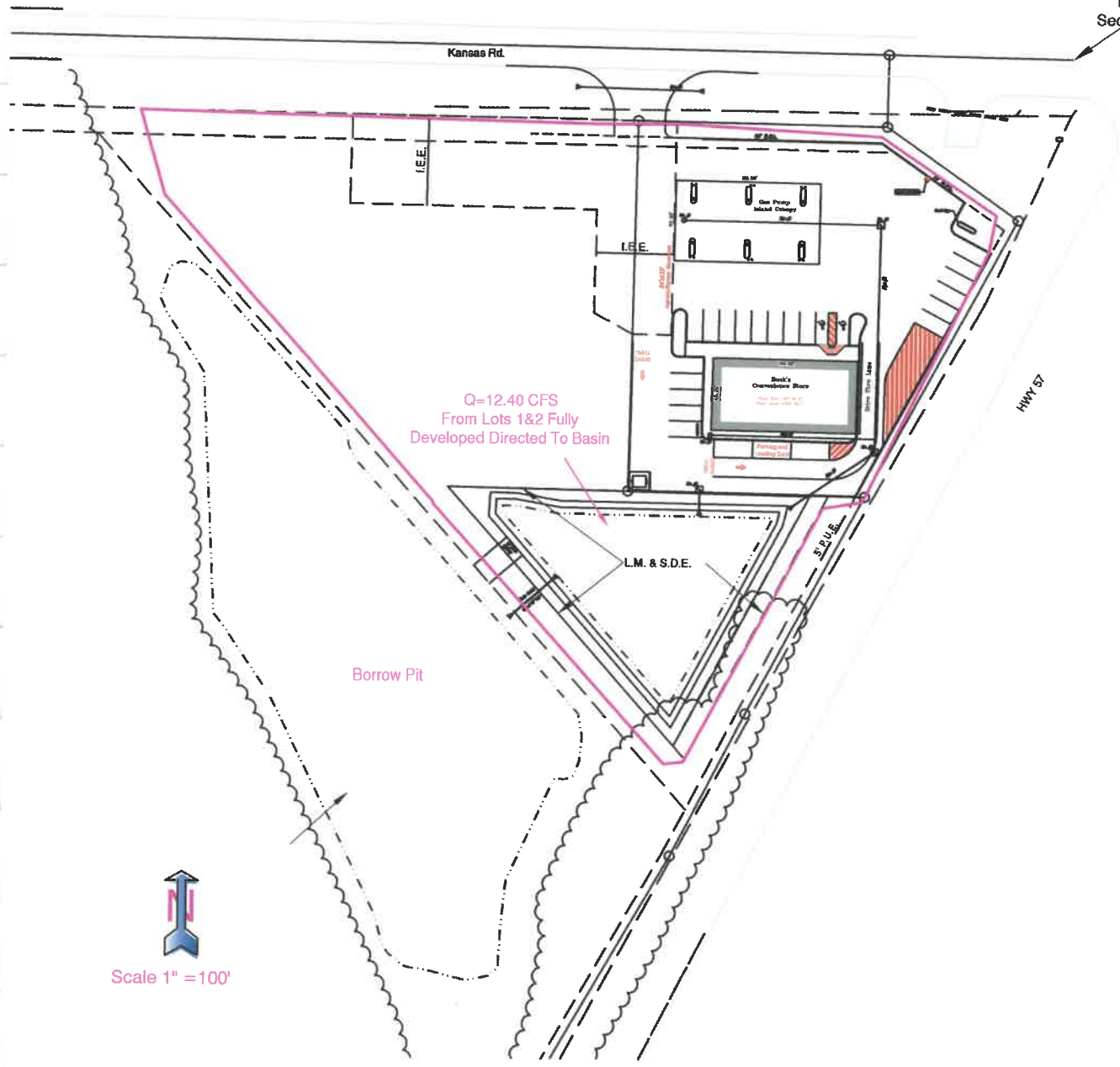
Surface	Area (S.F.)			C	N
Structures	0	=	0.00 Ac.	0.92	0.02
Pavement/Sidewalks	11,175	=	0.26 Ac.	0.92	0.02
Lawns, heavy soil (<2% Slop	113,349	=	2.60 Ac.	0.17	0.20
Woodland, 0-5% Slopes	5,113	=	0.12 Ac.	0.30	0.80
Water	0	=	0.00 Ac.	1.00	0.00
Total Area	129,637	=	2.98 Ac.	0.24	0.21


Sheet Flow

L =	300	Ft.
H =	2.0	Ft.
S =	0.007	Ft./Ft.
t1 =	18.37	Minutes
tc =	18.37	Minutes
I(10) =	4.23	In./Hr.
Q(10) =	3.02	CFS

Developed Conditions

NE Cor..NE/4,
Sec.27-T.5S-R.10W




Scale 1" = 100'

Cameron Creek Lots 1 and 2 Developed

Surface	Area (S.F.)			C	N
Gas Station	40,511	=	0.93 Ac.	0.9	0.02
Pavement/Sidewalks/Struc	44,661	=	1.03 Ac.	0.92	0.02
Lawns, heavy soil (<2% Slop	34,530	=	0.79 Ac.	0.17	0.20
Water	9,935	=	0.23 Ac.	1.00	0.00
Total Area	129,637	=	2.98 Ac.	0.72	0.07

Sheet Flow		
L =	300	Ft.
H =	2.0	Ft.
S =	0.007	Ft./Ft.
t1 =	10.78	Minutes
tc =	10.78	Minutes
I(25) =	5.79	In./Hr.
Q(25) =	12.40	CFS

Detention Calculations Using Rational Method

PROJECT: **Cameron Creek Lots 1&2** DETENTION FACILITY DESIGN RETURN PERIOD: **25** YRS
 DESIGNER: **Aigner Engineering, Inc. JMA** RELEASE RATE RETURN PERIOD: **10** YRS

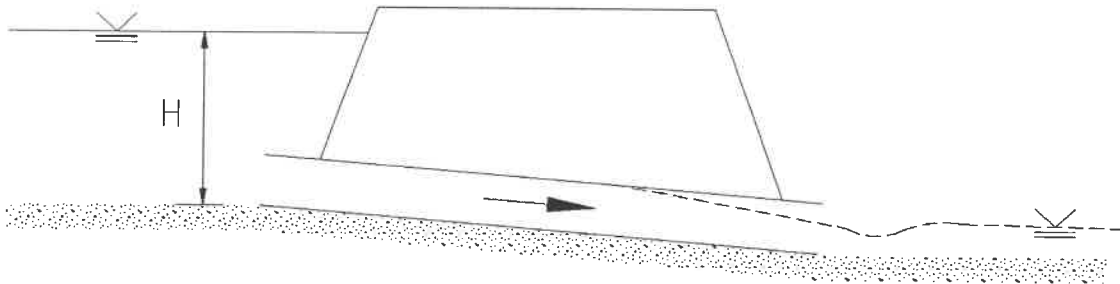
UNDEVELOPED WATERSHED AREA (Au) 2.98 ACRES
 TIME OF CONCENTRATION (UNDEVELOPED WATERSHED) 18.37 MINUTES
 RAINFALL INTENSITY (Iu): 4.230 INCHES/HR
 UNDEVELOPED RUNOFF COEFFICIENT (Cu): 0.240
 UNDEVELOPED RUNOFF RATE (Q = Cu*Iu*A): 3.03 CFS
 DEVELOPED WATERSHED AREA (Ad) 2.98 ACRES
 DEVELOPED RUNOFF COEFFICIENT (Cd): 0.720

STORM DURATION Td (HRS)	RAINFALL INTENSITY Id 25-Year (INCH/HR)	INFLOW RATE I (Td) (Cd*Id*Ad) (CFS)	OUTFLOW RATE Q (Cu*Iu*Au) (CFS)	STORAGE RATE I (Td) - Q (CFS)	REQUIRED STORAGE (I (Td) - Q) * Td / 12 (ACRE.FT)
0.08	7.21	15.47	3.03	12.44	0.09
0.17	5.93	12.71	3.03	9.69	0.13
0.25	5.03	10.80	3.03	7.77	0.16
0.33	4.34	9.31	3.03	6.29	0.17
0.50	3.65	7.82	3.03	4.80	0.20
0.67	2.86	6.14	3.03	3.12	0.17
0.83	2.47	5.30	3.03	2.27	0.16

PEAK STORAGE (ACRE.FT):	0.20
PEAK STORAGE (CUBIC FT):	8,708

Available Storage (Ac.FT) 0.55
 % Peak Storage / Available Storage 36.6%

Basin Outflow Pipe Under Pressure



Outflow Pipe For Retention Basin Cameron Creek

P799

Outflow Pipe

Flow Characteristics

Pipe Dia. (inch)	12		
Ap (Square Feet)	0.79	→	Area of Pipe
L (ft)	40.00	→	Length of pipe
H (ft)	2.31	→	Depth of water at inlet
hp (ft)	1.81	→	Head above center of pipe
g (ft/s ²)	32.20	→	Acceleration due to gravity
n	0.030	→	Manning's roughness coefficient
Ke	0.20	→	entrance loss coefficient
Ko	1	→	outlet loss coefficient

- Ke values found in Table 6.3.3 of HERPICC Manual

Find Q using equation 6.3.5 in HERPICC Manual

$$Q = A_p \sqrt{\frac{h_p}{\frac{K_e + K_o}{2g} + \frac{2.87 n^2 L}{D^{\frac{4}{3}}}}}$$

Q = 3.03 cfs

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
CERTIFICATE OF APPROVAL
CONSTRUCTION IN A FLOODWAY**

APPLICATION # : FW-25010

STREAM : Firlick Creek

APPLICANT : Soup Properties, LLC
Mike Campbell
1708 South Wendel Road
Evansville, IN 47720


MAILED FEB 25 2009

AGENT : Morley and Associates Inc
Michael J Sears, P.E.
4800 Rosebud Lane
Newburgh, IN 47630-9351

AUTHORITY : IC 14-28-1 with 312 IAC 10

DESCRIPTION : A multi-structure neighborhood commercial facility will be constructed on fill along the east (left) bank of Firlick Creek. The facility will consist of 4 commercial buildings varying in size from 40' by 80' to 65' by 105' and a 61,525ft² parking area. The fill will cover an approximate 225' by 500' area and will have 3:1 sideslopes from the finished grade down to the existing floodplain elevations. The parking area will be constructed at the fill's finished elevation. The finished floor of the buildings will be at or above 396.9' NAVD. Additional construction will consist of utility extensions to the proposed structures, interior sidewalks, paving, lighting, curbing, stormwater retention/detention pond (4:1 side slopes), parking areas, signage, and a billboard. Also a driveway culvert in the roadside ditch on the south side of Kansas Road will be constructed. In addition, an incised lake (borrow area) is proposed between Firlick Creek and the proposed commercial development to generate fill material for the proposed development as well as for use on off-site construction projects. The final pool elevation of the lake will not be regulated by a control structure. The proposed borrow area side slopes will be a maximum 2.5:1. Details of the project are contained in information received electronically at the Division of Water on September 26, 2008 and in plans and information received at the Division of Water on November 6, 2008, November 12, 2008 and February 19, 2009.

LOCATION : Beginning at the intersection of State Route 57 and Kansas Road and extending approximately 980' west and 650' south near Evansville, Center Township, Vanderburgh County
NE¼, Section 27, T 5S, R 10W, Evansville North Quadrangle
UTM Coordinates: Downstream 4212795 North, 455207 East

APPROVED BY : 
Becky S. Davis, CFM, Sr Environmental Manager
Division of Water

APPROVED ON : February 24, 2009

Attachments: Notice Of Right To Administrative Review
General Conditions
Special Conditions
Service List

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**

NOTICE OF RIGHT TO ADMINISTRATIVE REVIEW

APPLICATION #: FW- 25010

This signed document constitutes the issuance of a permit by the Department of Natural Resources, subject to the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

The permit or any of the conditions or limitations which it contains may be appealed by applying for administrative review. Such review is governed by the Administrative Orders and Procedures Act, IC 4-21.5, and the Department's rules pertaining to adjudicative proceedings, 312 IAC 3-1.

In order to obtain a review, a written petition must be filed with the Division of Hearings within 18 days of the mailing date of this notice. The petition should be addressed to:

Mr. Stephen L. Lucas, Director
Division of Hearings
Indiana Government Center North, Room N501A
100 North Senate Avenue
Indianapolis, Indiana 46204

The petition must contain specific reasons for the appeal and indicate the portion or portions of the permit to which the appeal pertains.

If an appeal is filed, the final agency determination will be made by the Natural Resources Commission following a legal proceeding conducted before an Administrative Law Judge. The Department of Natural Resources will be represented by legal counsel.

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

GENERAL CONDITIONS

APPLICATION #: FW- 25010

- (1) If any archaeological artifacts or human remains are uncovered during construction, federal law and regulations (16 USC 470, et seq.; 36 CFR 800.11, et al) and State Law (IC 14-21-1) require that work must stop and that the discovery must be reported to the Division of Historic Preservation and Archaeology within 2 business days.

Division of Historic Preservation and Archaeology
Room W274
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-1646, FAX: (317) 232-8036

- (2) This permit must be posted and maintained at the project site until the project is completed.
- (3) This permit does not relieve the permittee of the responsibility for obtaining additional permits, approvals, easements, etc. as required by other federal, state, or local regulatory agencies. These agencies include, but are not limited to:

Agency	Telephone Number
*US Army Corps of Engineers, Louisville District	(502) 315-6686
Vanderburgh County Drainage Board	(812) 435-5210
Indiana Department of Environmental Management	(317) 233-8488 or (800) 451-6027
Local city or county planning or zoning commission	

- (4) This permit must not be construed as a waiver of any local ordinance or other state or federal law.
- (5) This permit does not relieve the permittee of any liability for the effects which the project may have upon the safety of the life or property of others.
- (6) This permit may be revoked by the Department of Natural Resources for violation of any condition, limitation or applicable statute or rule.
- (7) This permit shall not be assignable or transferable without the prior written approval of the Department of Natural Resources. To initiate a transfer contact:

Mr. Michael W. Neyer, PE, Director
Division of Water
Room W264
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-4160, Toll Free: (877) 928-3755
FAX: (317) 233-4579

- (8) The Department of Natural Resources shall have the right to enter upon the site of the permitted activity for the purpose of inspecting the authorized work.
- (9) The receipt and acceptance of this permit by the applicant or authorized agent shall be considered as acceptance of the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

SPECIAL CONDITIONS

APPLICATION #: FW- 25010

PERMIT VALIDITY : This permit is valid for 24 months from the "Approved On" date shown on the first page. If work has not been initiated by February 24, 2011 the permit will become void and a new permit will be required in order to continue work on the project.

This permit becomes effective 18 days after the "MAILED" date shown on the first page. If both a petition for review and a petition for a stay of effectiveness are filed before this permit becomes effective, any part of the permit that is within the scope of the petition for stay is stayed for an additional 15 days.

CONFORMANCE : Other than those measures necessary to satisfy the "General Conditions" and "Special Conditions", the project must conform to the information received by the Department of Natural Resources on: September 26, 2008, November 6, 2008, November 12, 2008 and February 19, 2009. Any deviation from the information must receive the prior written approval of the Department.

<u>Number</u>	<u>Special Condition</u>
(1)	revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion
(2)	do not cut any trees suitable for Indiana bat roosting (greater than 3 inches dbh, living or dead, with loose hanging bark) from April 1 through September 30
(3)	appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized
(4)	except for the material used as fill, place all excavated material landward of the floodway*
(5)	do not leave felled trees, brush, or other debris in the floodway*
(6)	upon completion of the project, remove all construction debris from the floodway*
(7)	* Note: for regulatory purposes, the floodway (Provisional) at the site is defined as that delineated by the Department under FARA GN-22081 dated June 2007.

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**

SERVICE LIST

APPLICATION #: FW- 25010

Soup Properties, LLC
Mike Campbell
1708 South Wendel Road
Evansville, IN 47720

Morley and Associates Inc
Michael J Sears, P.E.
4800 Rosabud Lane
Newburgh, IN 47630-9351

*US Army Corps of Engineers, Louisville District
James M Townsend
Regulatory Office
PO Box 59
Louisville, KY 40201-0059

Soup Properties, LLC
Roger Campbell
875 S. Redbank Road
Evansville, IN 47712-4333

Vanderburgh County Drainage Board
County Surveyor
Civic Center Complex, Room 325
1 NW Martin Luther King Jr Boulevard
Evansville, IN 47708-1806

*Indiana Department of Natural Resources
Division of Law Enforcement
South Region Headquarters Dist 7
4850 South State Road 446
Bloomington, IN 47401-9165

Evansville Area Plan Commission
Civic Center Complex, Room 312
1 NW Martin Luther King, Jr. Boulevard
Evansville, IN 47708-1806

Mr. Steve Fuchs
Assistant Building Commissioner
Room 310, Civic Center Complex
One NW Martin Luther King Jr. Boulevard
Evansville, IN 47708-1806

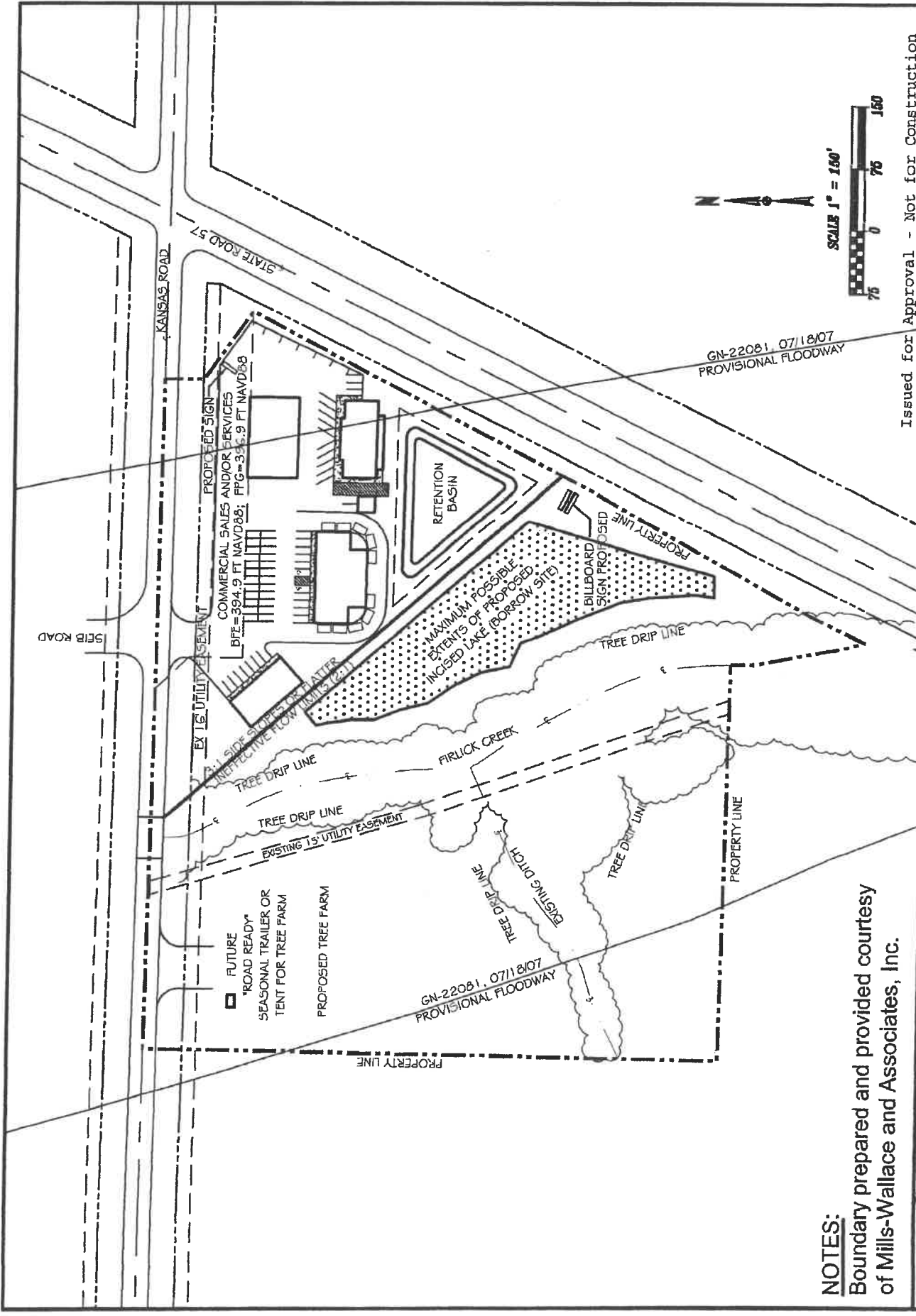
Vanderburgh County Area Plan Commission
Civic Center Complex, Room 312
1 NW Martin Luther King, Jr. Boulevard
Evansville, IN 47708-1833

Vanderburgh County Soil and Water Conservation
District
12445 Highway 41 North
Evansville, IN 47725-7021

Staff Assignment:

Administrative
Technical
Environmental
Engineering

: Joseph Young
: Joseph Young
: Christie L. Stanifer
: All A. Shalkh



SCALE 1" = 150'



GN-22081, 07/18/07
PROVISIONAL FLOODWAY

Issued for Approval - Not for Construction

Designed By:	BSH	Job Number:	5238
Drawn By:	BSH	Date:	29 SEPT 2008
Filename:	J:\5238\CIVIL\5238 Concept Layout 2.dwg		

Site Plan - Proposed
Commercial Development
Along Firlick Creek in
Vanderburgh County

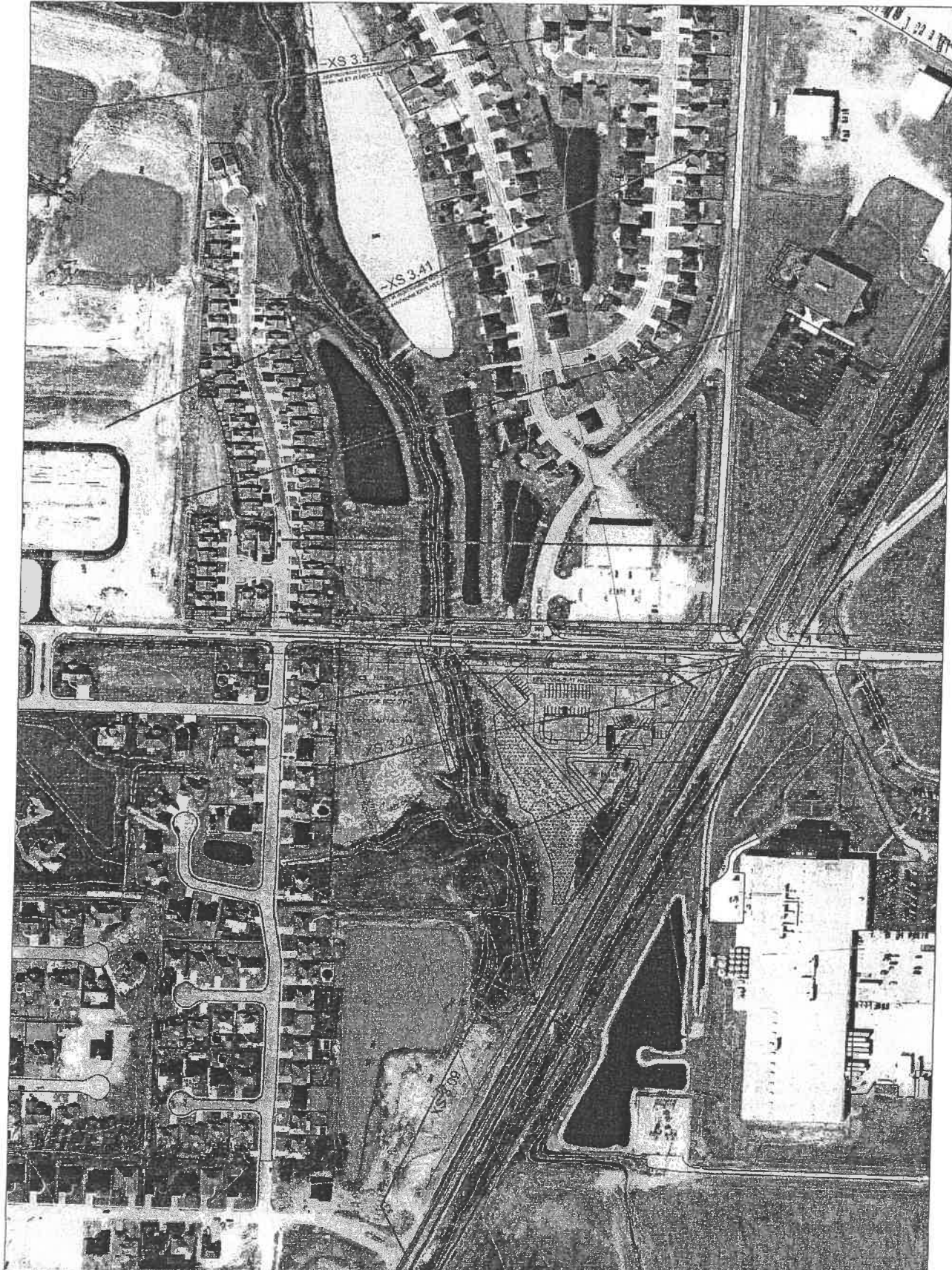
Jasper, IN
 (812) 634-9990
 Henderson, KY
 (270) 830-0300

4800 Rosebud Lane
 Newburgh, Indiana 47630-7829
 V: (812) 464-9585
 F: (812) 464-2514
 www.MorleyandAssociates.com

Engineering / Surveying
 Architecture
 Construction Management



NOTES:
 Boundary prepared and provided courtesy
 of Mills-Wallace and Associates, Inc.



01

SOUP PROPERTIES, LLC
PERMIT #FW-25010
COMMERCIAL DEVELOPMENT
HEC-RAS MODELING WORK MAP
VANDERBURGH COUNTY, IN

Contours, hydrologic features, and edges of development are from the Year 2000 Evansville Vanderburgh Co. GIS. Aerial photography is from 2005. IHB orthography. The vertical datum is NAVD 1985.

Revisions	
No.	Description

All lines, labels, annotations, and dimensions shall be in accordance with the standards set forth in the 2000 Edition of the American National Standard for Engineering Drawing Practices, ASME Y14.5-2000. The drawing shall be prepared in accordance with the standards set forth in the 2000 Edition of the American National Standard for Engineering Drawing Practices, ASME Y14.5-2000. The drawing shall be prepared in accordance with the standards set forth in the 2000 Edition of the American National Standard for Engineering Drawing Practices, ASME Y14.5-2000.



Engineering
 Surveying
 Architecture
 Environmental Management

Evansville, IN
 (317) 464-9800

www.morleyandassociates.com

AIGNER ENGINEERING, INC.

March 19, 2011

Markita Shepherdson, CFM
Department of Natural Resources
Division of Water - Technical Services - Central Basin
402 West Washington Street, Room W264

RE: Permit FW-25010 (Vanderburgh County Hwy 57 and Kansas Rd.)

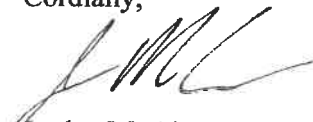
Markita,

Regarding the permit listed above, I would like to officially inform you that our work has commenced on this property as it pertains to the issued permit for construction within the floodway as of January of 2011.

My firm has been contracted to conduct subsurface investigations, topographic, and construction staking work to begin the construction of the proposed site development. Furthermore we have performed earthwork operations to progress the project regarding topsoil removal and replacement in various locations.

Our operations are expected to continue throughout the entirety of the year. We will keep you updated on our progress as weather and the general construction season allows. Please feel free to contact my office for any questions or comments.

Cordially,



Jordan M. Aigner, P.E.

File

Encl: Issued Permit



944 N. Baker Road, Boonville Indiana, 47601

Office: 812-897-5815

Fax: 812-897-2191

jordana@aignerengineering.com

www.aignerengineering.com