WHITAKER ENGINEERING

To: Travis Underhill, PE – City of Franklin – City Engineer
Board of Works - City of Franklin

From: Andrew Cochrane, PE – Whitaker Engineering, PC
Chris Breinling, PE – Whitaker Engineering, PC

RE: Youngs Creek Flood Investigation

Date: May 5, 2014

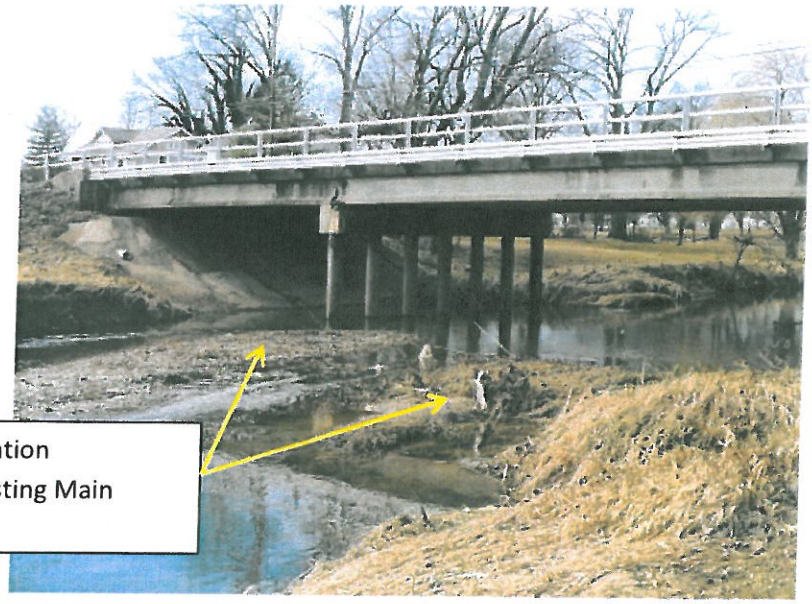
Purpose

Whitaker Engineering, PC was retained by the City of Franklin to investigate the issues associated with localized flooding in the businesses immediately southwest of downtown Franklin. In order to complete this study, Whitaker Engineering collected additional survey information, completed hydraulic models of the existing Youngs Creek reach between US-31 and the South Street bridge, and developed opinions of probable construction cost for several construction alternatives to address sediment buildup within the streambanks under the Main, Home and South Street bridges.

Existing Conditions

Youngs Creek is a state-regulated waterbody that conveys stormwater runoff from a 56.5 square mile watershed extending as far north as Main Street in Greenwood and as far south as Trafalgar in southern Johnson County. Within the study area starting at US-31 and proceeding downstream to South Street, the existing creek has several bridges that carry roads and pedestrian walkways over the waterbody upstream and downstream of Province Park. The three existing roadway bridges – Main Street, Home Street and South Street are all downstream of the affected businesses that lie within the Youngs Creek floodplain.

The existing streambanks of Youngs Creek have eroded slopes and moderate to severe undercutting has formed a soil overhang. The erosion is a potential threat to the existing pedestrian bridges, the trail, and access roads located along Youngs Creek within Province Park. The eroded sediment from the embankments builds up under the local bridge structures and elsewhere along the stream. In addition, sediment is transported from the upstream watershed during storm events and deposited in Province Park. Both factors contribute to the reduction in the flow capacity of the creek through Province Park. The contraction reaches of the Main Street and South Street bridges are unusually constricted. In addition, sand bars have been created in the expansion reach of the Main Street Bridge (see photo on following page) making Youngs Creek susceptible to collecting debris during flood events and reducing the flow capacity of the creek. Flooding in the park is expected to occur considering its location; however, there is a financial impact associated with each event.



Sediment accumulation downstream of existing Main Street Bridge

Flood Events

On December 21-22 2013, a total of 5 inches of rain fell within the Youngs Creek Watershed in central Johnson County, causing flood events which resulted in floodwaters entering the Generations Collision Services at 159 West Monroe Street.

The flood event that occurred on December 21-22, 2013 is considered to be one that is a 10-year storm event according to Technical Paper No. 40 National Weather Service (see Attachment G). This does not take into account antecedent moisture conditions (soil saturation), which affect runoff. A 10-year storm is one that statistically has a 10% chance of being exceeded in any one year. Scott Graham of Generations Collision Services attested that their office building had never flooded until December 2013 with the exception being the 2008 flood.

According to an open file report issued by the United States Geological Survey (USGS), Franklin received 7.6 inches of rain in a 24-hour period on June 6-7 in 2008. A storm of this magnitude is between a 500-year and 1,000-year storm event.

Whitaker Engineering received a copy of the Elevation Certificate for the existing structure (Attachment D) which identifies the finished floor elevation for the structure at 720.8 (NGVD, 1929). Finished floor elevations on the NAVD88 datum were taken of three buildings in the southwest quadrant. This datum is the same datum used in the flood insurance study.

Flood depths and elevation data gathered for the June 2008 and December 2013 events are provided in the table on the following page.

Property Owner	Jun. 2008 Flood	Dec. 2013 Event	Finished Floor Elev.
Generations Collision Services	72 inches of water	6 inches of water in building	719.78 (NAVD88)
Bastin Logan	80 inches of water	Parking lot flooded	720.94 (NAVD88)
Recovery One	64 inches of water**	Parking lot flooded	721.00 (NAVD88)

*The Flood Insurance Study elevations for the 100-yr and 500-yr events for these businesses are 725.5 and 727.2, respectively.
** measured from finished floor to high water mark

Local testimony provided in regards to the depth of water inside buildings combined with the surveyed finished floor elevations correlates to the 500-year flood elevation as shown in the Flood Insurance Study (FIS). The FIS does not have a 10-year flood elevation profile.

Assessment

Whitaker Engineering met with Scott Graham of Generations Collision Services, Jim Higginbotham of Recovery One and Chip Orner. In addition, Whitaker had telephone conversations with Joe Pazek of Bastin Logan and Jim Noblitt, the owner of the house in the southwest quadrant of the intersection of Youngs Creek and Main Street. See Attachment H for meeting notes.

According to Chip Orner, the parks department incurs a $5,000 loss every time there is a "typical" flood. A "typical" is one that occurs on a fairly regular basis and requires a moderate amount of cleanup and repairs. At the time of our meeting there had been six "typical" floods in 2014. The department spent $40,000-50,000 after the December 2013 flood; however, not all of the costs incurred were associated with embankment repair. In addition, Chip stated that the banks look completely different than they prior to 2008. Damage can be mitigated with streambank stabilization.

As part of this project, Whitaker Engineering acquired the Flood Insurance Study (FIS) hydraulic model of Youngs Creek through the study area. The hydraulic model was used to substantiate the claims that the South, Home, and Main Street bridges and existing Province Park western pedestrian bridge have caused excessive backwater resulting in flooding to local businesses.

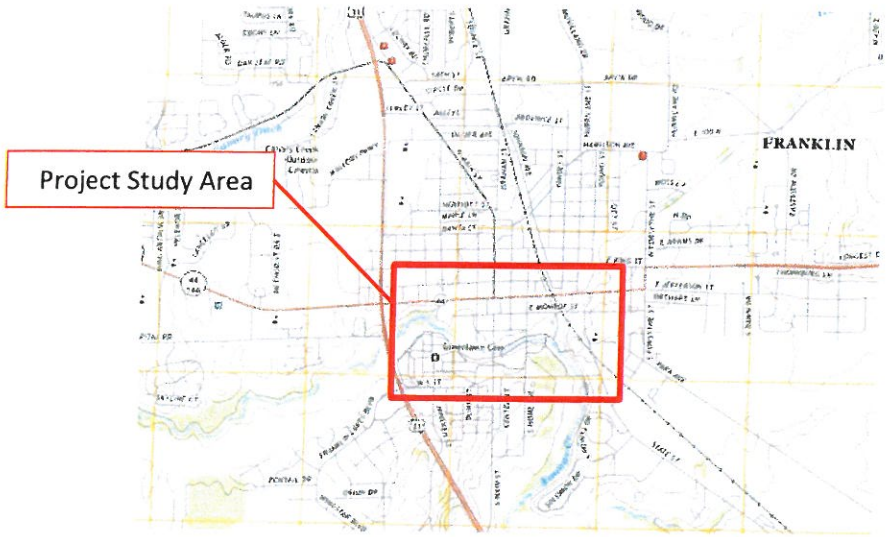
Several hydraulic models were developed to simulate the existing flow conditions of Youngs Creek between US-31 and South Street Bridges. A model was run of the existing bridges including a completely blocked opening of the western pedestrian bridge in Province Park; however, only a negligible amount of backwater was calculated for each of the 10-yr, 25-yr, 50-yr and 100-yr storm events. The model results show that the existing pedestrian bridge accounts for little, if any, backwater upstream of the Main Street Bridge, and is not immediately recognizable due to the large hydraulic "shadow" caused by the backwater of the South Street Bridge. Therefore, raising the pedestrian bridge would not reduce flooding. Raising it would only make it less likely debris would get trapped at the bridge.

The South Street Bridge, which was built in 1934, was not adequately sized to convey the current discharge from a 100-year event through the structure without causing excessive backwater. When the natural stream model (no structures or manmade obstructions) is compared with the current conditions model, there is approximately 1.8 feet of backwater present at the upstream face of the South Street Bridge. This backwater carries upstream almost to the Home Street Bridge. Additionally, the Home Avenue and Main Street bridges

have backwaters of 1.7 and 2.2 feet, respectively. The backwater depths are based upon the flood insurance study model completed prior to 2008. It is likely the backwater at each bridge is even higher now due to the 2008 flood, which likely transported and deposited significant amounts of sediment.

As part of the scope of work, costs were developed to normalize the creek cross-section, estimate dredged material, stabilize streambanks, and to propose alternatives to design and permit solutions. Numerous cross-sections were surveyed from South Street to Main Street to estimate the volume of material to be dredged and the cost associated with the dredging.

Figure 1: Youngs Creek Study Area



Proposed Improvements

Streambank Stabilization

Sediment is fresh water's largest pollutant. During flood events sediment is transported downstream and is deposited in the downstream reaches of the creeks where stream velocities are slower. Over time the sediment deposits constrict bridge openings and create sand bars that reduce a stream's capacity. Province Park is located at the confluence of Youngs Creek and Hurricane Creek, which together drain approximately 75 square miles. Sediment deposition will continue to occur in the lower reaches of the creeks in Province Park. It can be mitigated, but not eliminated.

Whitaker Engineering is proposing four different alternatives to address sedimentation, erosion and flow capacity issues with Youngs Creek. The first two alternatives are based solely on addressing the sedimentation at the Main, Home and South Street structures over Youngs Creek. These first two alternatives are smaller in scope and cost. Alternative #1 includes dredging and cleaning underneath the bridges. Alternative # 2 consists of dredging under the bridges and cutting the channel embankments approximately 150 feet upstream and downstream of each bridge.

The third and fourth alternatives presented are much larger in scope and cost and are considered more long-term solutions. They address erosion by completing linear streambank stabilization and regularizing the channel cross-section along Youngs Creek between the Main Street and South Street structures. The alternative summary table included on the following page provides a description of each proposed project's scope of work and level of construction.

Table 1: Project Alternatives Description

Proposed Project Alternatives	
Alternative #1 (blue)	• Excavate the immediate area under Main, Home and South Street Bridges only. • Apply geotextile, riprap or armoring on spill slopes immediately under the structures only.
Alternative #2 (blue/red)	• Excavate sediment from under Main, Home and South Street Bridges. • Perform 150 feet of slope stabilization and approach work upstream and 50 feet downstream of these three existing structures. • Apply geotextile and armor spill slopes under bridge and transition slopes to existing creek banks.
Alternative #3 (blue/red/yellow)	• Excavate sediment from under Main, Home and South Street Bridges. • Normalize Youngs Creek cross-section by excavating overbank, addressing erosion, dressing slopes • Apply bioengineering (plantings) to stabilize the excavated areas between Main Street bridge through Province Park to South Street Bridge.
Alternative #4 (blue/red/yellow)	• Excavate sediment from under Main, Home and South Street Bridges. • Normalize Youngs Creek cross-section by excavating overbank, addressing erosion, dressing slopes • Apply hard armoring (articulated concrete block) to stabilize the excavated areas between Main Street Bridge through Province Park to South Street Bridge. • Apply bioengineering (plantings) in the center space of the blocks and in between the blocks

Attachment F shows the construction limits of the aforementioned alternatives is provided with this memorandum showing the proposed projects with regards to the existing structures crossing Youngs Creek.

The construction work associated with Alternatives #3 & #4 would involve the use of heavy equipment working in and along Youngs Creek to cut overbanks and grade the existing creek cross-section to make it more uniform both along its slope and through its cross-section. As part of the process of dressing the slopes after machine grading, geotextile would be laid on the slope and anchored down. Bioengineered plantings (Alternative #3) or concrete block armor

mats (Alternative #4) would be installed on the geotextile. Bioengineered (Alternative #3) solutions involve placing plantings over the anchored geotextile to allow for root establishment along the streambanks. While the bioengineered alternative is much more suitable for a park setting due to the aesthetics, it does not provide the long-term stability that the concrete block armor mats do. It would much more susceptible to erosion and failure in the short-term. Alternative #4 offers the aesthetics wanted in a park setting and stability and long-term durability needed for a channel that drains such an extensive area.

Table 2: Streambank Alternatives' Opinions of Probable Cost

	Proposed Construction Cost	Planning & Design Cost	Total Estimated Cost
Alternative #1	$ 37,000	$ 22,000	$ 59,000
Alternative #2	$ 157,000	$ 58,000	$ 215,000
Alternative #3	$ 790,000	$ 139,000	$ 929,000
Alternative #4	$ 1,932,000	$ 139,000	$ 2,100,000

Check Valve

In addition to the stream dredging project alternatives, Whitaker investigated the feasibility of using a check valve to prevent surcharging of the existing 30" storm sewer that routed to Youngs Creek between the Generations and Bastin Logan. The two separate alternatives are described below:

Table 3: Check Valve Alternative Costs

Check Valve Alternatives		
Alternative #1	• Clear and grub around existing storm sewer outfall at Youngs Creek, • Excavate and replace one upstream section of corrugated metal pipe with reinforced concrete pipe, • Construct concrete headwall and mount rubber check valve at discharge in Young Creek • Backfill, grade and place riprap for restoration around outfall.	$ 42,400
Alternative #2	• Clear, grub and excavate existing 30-inch storm sewer near Generations Auto Body and set a precast vault inline with the pipe and replace a segment of corrugated metal pipe with reinforced concrete pipe storm sewer. • Set an inline 30-inch check valve into the sewer downstream of the vault. • Vault would be grated to allow surface runoff and prevent surcharging from Youngs Creek.	$ 44,000

The two check valve alternatives provide a public benefit. They could prevent the 30" storm sewer from backing up or surcharging. A check valve is only a situational solution for a backwater problem. A spatially varied event is an example where a check valve would provide a benefit. The Youngs Creek watershed outside of the local area could experience a large

rainfall event causing the water in Youngs Creek to rise within its banks. The rainfall locally could be significantly less. A check valve would allow positive drainage from the upstream storm sewer and prevent flow from backing up into the storm sewer.

Alternative #1 provides a secondary benefit. It allows for the rehabilitation of an existing storm sewer outfall. The installation of either alternatives will not require a Construction in a Floodway Permit.

As part of the operation and maintenance of the installed check valves, periodic inspections on a quarterly basis will be needed to verify that the rubber valve is sealing and to check that the unit is not jammed with debris or trash. The rubber valves are designed to handle solids passing through the unit and are stabilized against UV damage; however, direct impact from large floatables may damage the valve if it is directly hit by material carried by the river during storm events (i.e. logs).

Recommendations

Whitaker Engineering recommends that the City of Franklin undertake a minimum of Alternative #2 to address the current adverse hydraulic conditions associated with sediment accumulation at the three existing roadway structures examined in this document. This alternative will allow for full use of the existing openings on each of the roadway structures, discourage future sediment buildup and allow for the greatest hydraulic capacity at each one of these bridges.

The condition of the Youngs Creek embankments within Province Park will continue to degrade unless they are stabilized. Eventually the erosive effects will have an adverse impact of the trail or road. A long-term solution, with a much larger scope and significantly higher cost is inevitable.

With regards to the check valve project, Whitaker recommends installing the 30-inch check valve as a means to prevent situational surcharging of the existing storm sewer system. This alternative addresses outfall rehabilitation and includes surcharge protection for the upstream business owners. These two check valve alternatives will not prevent direct flooding from floodwaters overtopping the banks of Youngs Creek.

In addition to the aforementioned construction work, Whitaker recommends that the City invest in a USGS-monitored stream gauging station on Youngs Creek within the project area. The initial cost of the station would be between $13,500 to $15,000. The yearly operation and maintenance of the gauging station can range between $4,500 and $13,000 depending on the amount of data collected. USGS would maintain the gauge station for the City.

Permitting & Schedules

Most types of work that occur within the floodway of an existing stream or creek require the following permits:

- Indiana Department of Natural Resources – Construction in a Floodway Permit
- Indiana Department of Environmental Management 401 Water Quality Permit
- U.S. Army Corps of Engineers Individual 404

Alternatives #2 and #4 will require a Construction in a Floodway Permit and IDEM 401 Permit. It is likely Alternative #4 will require an individual USACE 404 Permit as well, which is a lengthy

process. Table 4 on the following page summarizes the schedules to design and permit two of the alternatives.

Table 4 – Design & Permitting Time Requirements

	Design	Permitting
Alternative #2	4 months	4-5 months
Alternative #4	8 months	14-15 months

Conclusion

Youngs Creek, like most other creeks and rivers, is constantly transporting sediment from upstream areas to downstream areas as part of its natural processes. Franklin is located at the base of a 75 square mile watershed, which is constantly transporting sediment to downstream areas as natural soil weathering processes occur. Dredging, armoring, soil stabilization and anti-erosion measures all need to be considered as temporary measures that will not eliminate soil and silt from re-entering the impacted stream area near downtown Franklin. A maintenance plan to dredge accumulated sediment, repair streambanks and remove flow obstructions should be implemented to continue to allow for maximum flow capacity within the reach of Youngs Creek immediately adjacent to the City of Franklin.

Attachments:

A. Watershed Map of Youngs Creek Basin at Main Street Bridge
B. Peak Flow Discharges for Youngs Creek
C. NOAA 48-hr Rainfall Map for Dec. 21-22 Rain Event
D. Elevation Certificate for 159 W. Monroe Street
E. FEMA FIRM Panel 18081C0231D
F. Proposed Projects Exhibit
G. Technical Paper No. 40 National Weather Service – 10-year frequency/2-year duration
H. Property Owner Meeting Notes

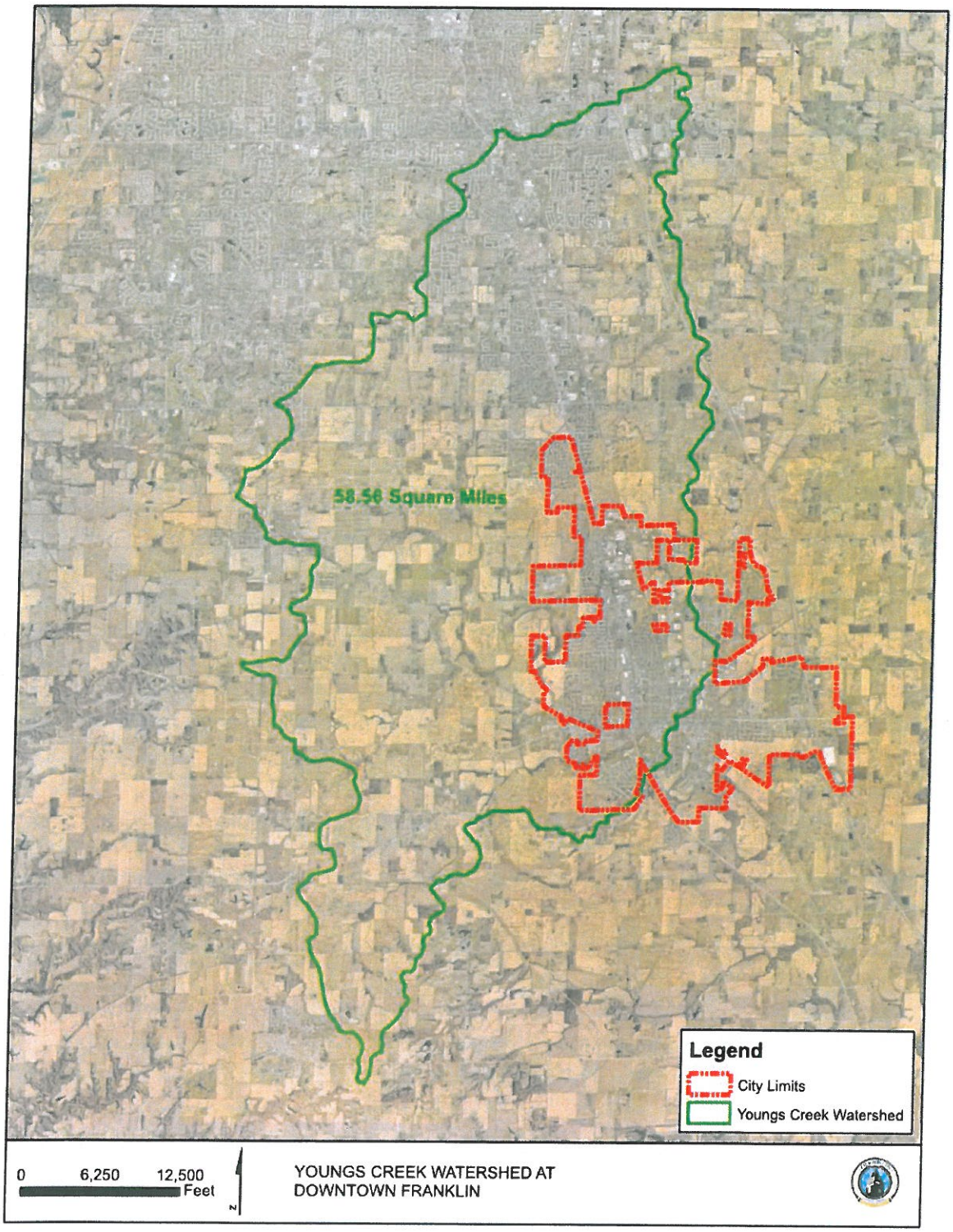
References:

1. Rainfall Frequency for Indiana. Indiana Department of Natural Resources. Division of Water, September 1994.

2. December 20-21 Heavy Rain and Flooding. www.crh.noaa.gov/ind/?n=dec222013rainflood. National Oceanic and Atmospheric Administration.

Attachment A:

Watershed Map of Youngs Creek Basin at Main Street Bridge



Attachment B:

Peak Flow Discharges for Youngs Creek

Streamflow Statistics Report

Date: Wed Mar 26 2014 08:18:38 Mountain Daylight Time
NAD27 Latitude: 39.4771 (39 28 38)
NAD27 Longitude: -86.0549 (-86 03 18)
NADB3 Latitude: 39.4772 (39 28 38)
NADB3 Longitude: -86.0549 (-86 03 18)
Total Drainage Area: 58.566 mi2

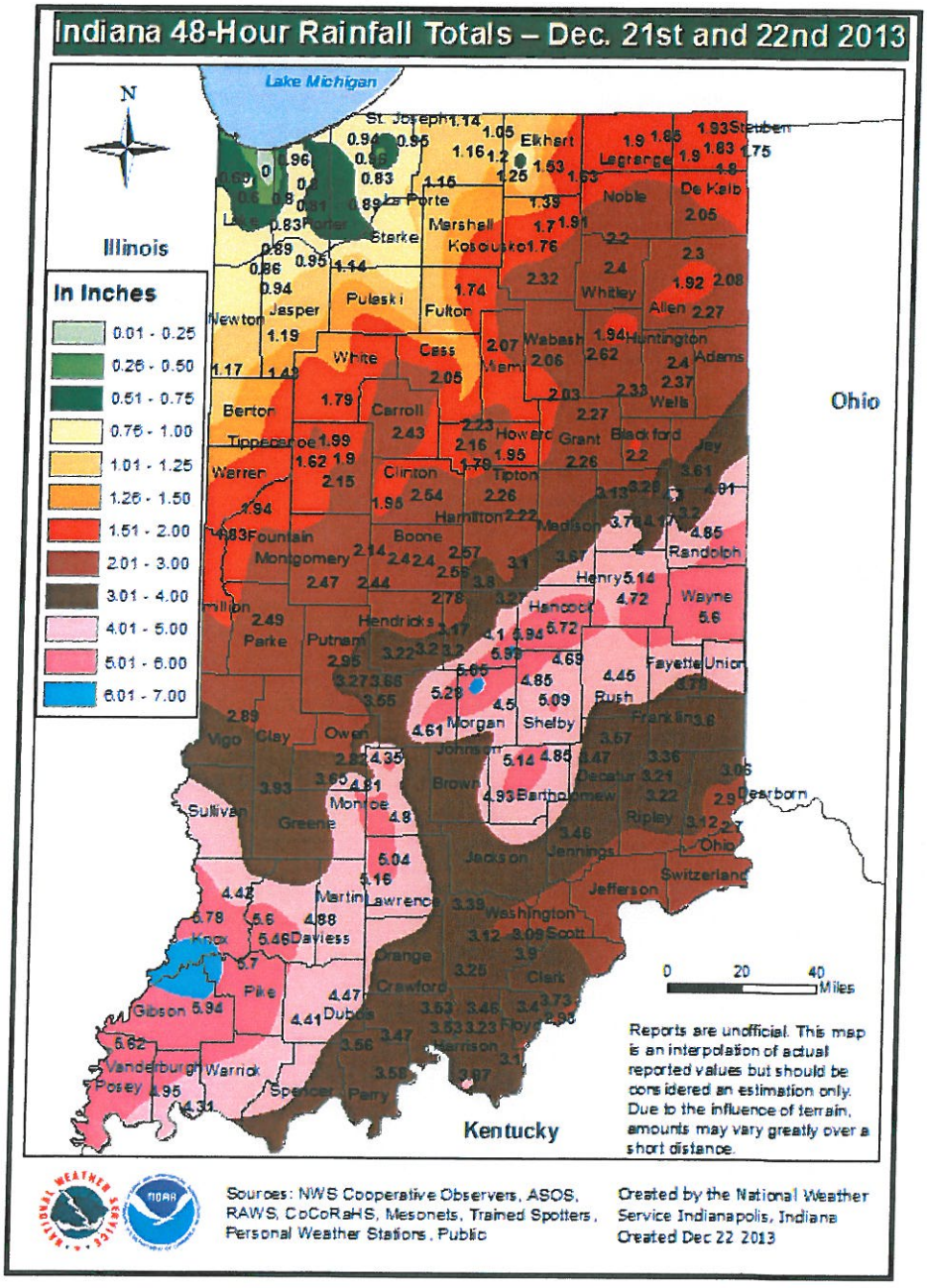
Coordinated Reach
ID: 707
Stream Name: Youngs Creek
Begin Drainage Area: 23.51
End Drainage Area: 109

Streamflow Statistics - Coordinated Reach

Statistic	Flow (ft^3/s)	a coef	b coef
Q10	6960	2067.387019	0.298201
Q25	8500	2939.101483	0.261008
Q50	10100	3767.745473	0.242441
Q100	11600	4319.827381	0.242888

Attachment C:

NOAA 48-hr Rainfall Map – December 21-22 Rain Event



Attachment D:

FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

O.M.B. No. 3067-0077
Expires July 31, 2002

Important: Read the instructions on pages 1 - 7.

SECTION A - PROPERTY OWNER INFORMATION

For Insurance Company Use.

BUILDING OWNER'S NAME
Scott Graham

Policy Number

BUILDING STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. No.) OR P.O. ROUTE AND BOX NO.
159 W. Monroe Street

Company NAIC Number

CITY	STATE	ZIP CODE
Franklin	IN	46131

PROPERTY DESCRIPTION (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)
SE1/4, SW1/4, Sec. 14 Twp 12 N- R4E Tax Map No. 08 14 034 012 002, & 012 001, & 125

BUILDING USE (e.g., Residential, Non-residential, Addition, Accessory, etc. Use Comments section if necessary.)
Commercial building on a slab

LATITUDE/LONGITUDE (OPTIONAL) (##° - ## - ## ## or ##.#####°)

HORIZONTAL DATUM: ☐ NAD 1927 ☐ NAD 1983

SOURCE: ☐ GPS (Type) ☐ USGS Quad Map ☐ Other:

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP COMMUNITY NAME & COMMUNITY NUMBER	B2. COUNTY NAME	B3. STATE
City of Franklin, Indiana	Johnson County, Indiana	Indiana

B4. MAP AND PANEL NUMBER	B5. SUFFIX	B6. FIRM INDEX DATE	B7. FIRM PANEL EFFECTIVE/REVISED DATE	B8. FLOOD ZONE(S)	B9. BASE FLOOD ELEVATION(S) (Zone AO, use depth of flooding)
180114	B	4/1/81	N/a	A	723.6

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in B9.
☐ FIS Profile ☐ FIRM ☐ Community Determined ☒ Other (Describe): DNR No. 41-991012-1

B11. Indicate the elevation datum used for the BFE in B9: ☒ NGVD 1929 ☐ NAVD 1988 ☐ Other (Describe):

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on ☐ Construction Drawings* ☐ Building Under Construction* ☒ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete

C2. Building Diagram Number 1 (Select the building diagram most similar to the building for which this certificate is being completed - see pages 6 and 7. If no diagram accurately represents the building, provide a sketch or photograph.)

C3. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO
Complete Items C3a-i below according to the building diagram specified in Item C2. State the datum used. If the datum is different from the datum used for the BFE in Section B, convert the datum to that used for the BFE. Show field measurements and datum conversion calculation. Use the space provided or the Comments area of Section D or Section G, as appropriate, to document the datum conversion.
Datum _____ Conversion/Comments SEE SECTION D
Elevation reference mark used _____ Does the elevation reference mark used appear on the FIRM? ☐ Yes ☒ No

o a) Top of bottom floor (including basement or enclosure)	720. 8	ft.(m)
o b) Top of next higher floor	N/a	ft.(m)
o c) Bottom of lowest horizontal structural member (V zones only)	N/a	ft.(m)
o d) Attached garage (top of slab)		ft.(m)
o e) Lowest elevation of machinery and/or equipment servicing the building		ft.(m)
o f) Lowest adjacent grade (LAG)		ft.(m)
o g) Highest adjacent grade (HAG)	720. 4	ft.(m)
o h) No. of permanent openings (flood vents) within 1 ft. above adjacent grade		
o i) Total area of all permanent openings (flood vents) in C3h		sq. in. (sq. cm)

License Number, Embossed Seal, Signature, and Date

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information.
I certify that the information in Sections A, B, and C on this certificate represents my best efforts to interpret the data available.
I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME Jeffrey J. Kondy, LS — LICENSE NUMBER LS20100058

TITLE Land Surveyor — COMPANY NAME CKW Land Surveying, Inc.

ADDRESS 228 S. Main Street — CITY Franklin — STATE IN — ZIP CODE 46131

SIGNATURE — DATE April 3, 2002 — TELEPHONE 317-736-0761

FEMA Form 81-31, AUG 99 — SEE REVERSE SIDE FOR CONTINUATION — REPLACES ALL PREVIOUS EDITIONS

IMPORTANT: In these spaces, copy the corresponding information from Section A.			For Insurance Company Use:
BUILDING STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. No.) OR P.O. ROUTE AND BOX NO. 159 W. Monroe Street			Policy Number
CITY Franklin	STATE IN	ZIP CODE 46131	Company NAIC Number

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

COMMENTS This is an elivation certificate on the building known as Grahams Body Shop. The BFE is per a letter from The Indiana Department of Natural Resources, Dated October 28, 1999 as REC# 41-991012-1 with a BFE stated as 723.6. This BFF was confirmed in a fax from the same state DNR as being part of a FIS for the City of Franklin. The Bench Mark used was a copper rod within a concrete base marked BM, located on the NW courthouse lawn, with an elivation of 731.92 as provided by The Johnson County Surveyors Office.

☐ Check here if attachments

SECTION E - BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zone AO and Zone A (without BFE), complete Items E1 through E4. *If the Elevation Certificate is intended for use as supporting information for a LOMA or LOMR-F, Section C must be completed.*

E1. Building Diagram Number __(Select the building diagram most similar to the building for which this certificate is being completed – see pages 6 and 7. If no diagram accurately represents the building, provide a sketch or photograph.)

E2. The top of the bottom floor (including basement or enclosure) of the building is __ ft.(m) __in.(cm) ☐ above or ☐ below (check one) the highest adjacent grade.

E3. For Building Diagrams 6-8 with openings (see page 7), the next higher floor or elevated floor (elevation b) of the building is __ ft.(m) __in.(cm) above the highest adjacent grade.

E4. For Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

SECTION F - PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here.

PROPERTY OWNER'S OR OWNER'S AUTHORIZED REPRESENTATIVE'S NAME

ADDRESS | CITY | STATE | ZIP CODE

SIGNATURE | DATE | TELEPHONE

COMMENTS

☐ Check here if attachments

SECTION G - COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below.

G1. ☐ The information in Section C was taken from other documentation that has been signed and embossed by a licensed surveyor, engineer, or architect who is authorized by state or local law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4-G9) is provided for community floodplain management purposes.

G4. PERMIT NUMBER	G5. DATE PERMIT ISSUED	G6. DATE CERTIFICATE OF COMPLIANCE/OCCUPANCY ISSUED

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building is: ____ __ ft (m) Datum:

G9. BFE or (in Zone AO) depth of flooding at the building site is: ____ __ ft.(m) Datum:

LOCAL OFFICIAL'S NAME | TITLE

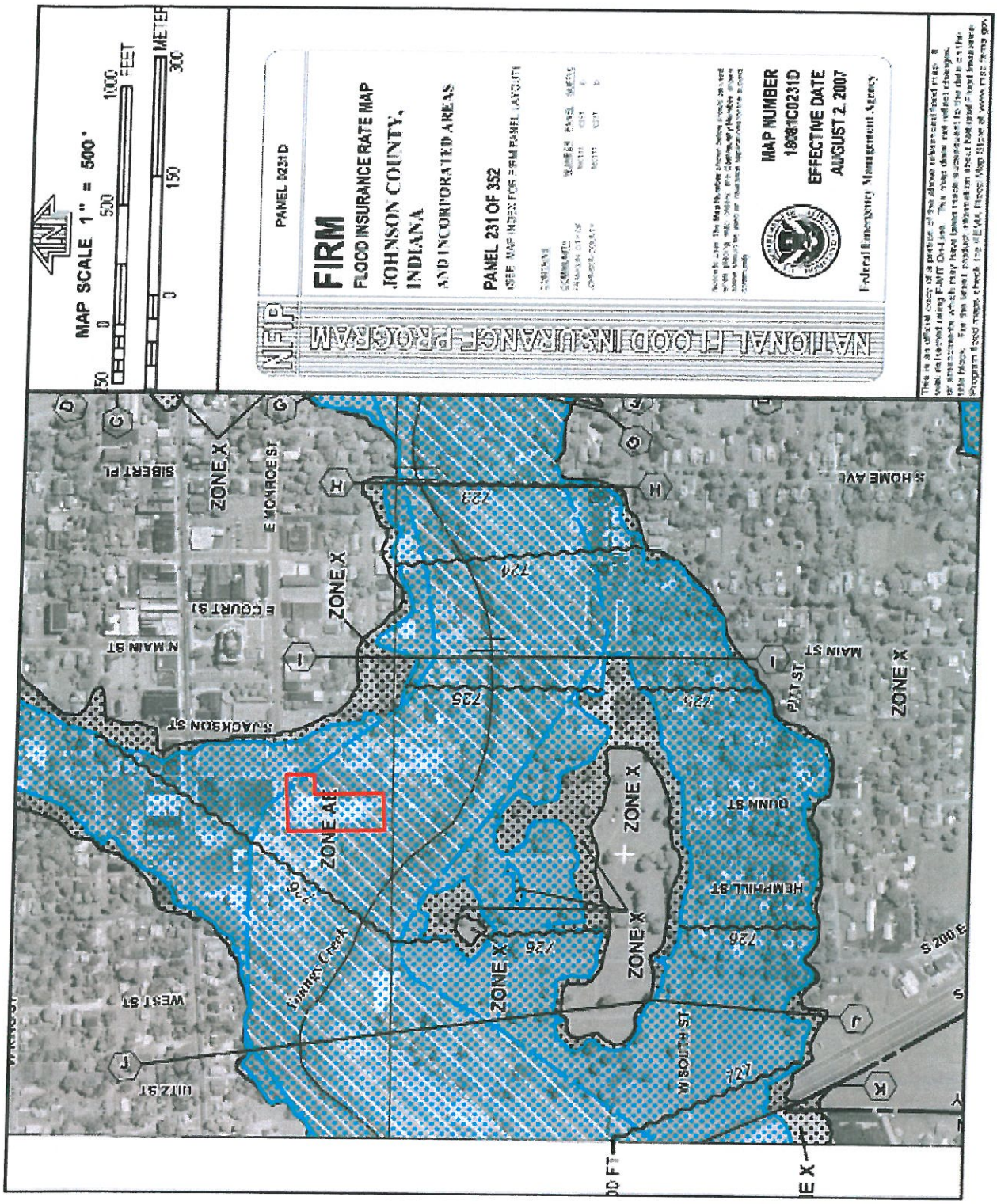
COMMUNITY NAME | TELEPHONE

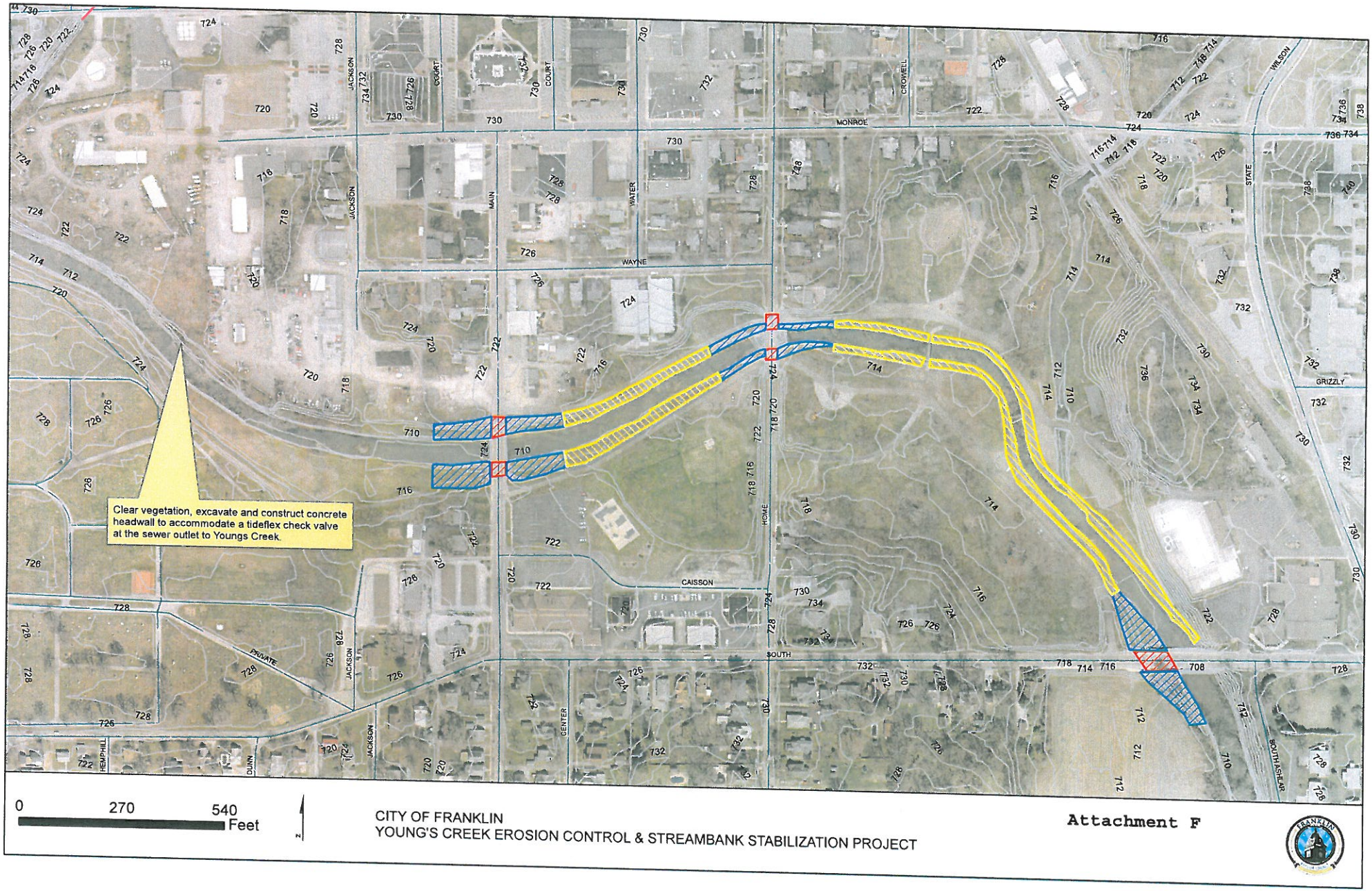
SIGNATURE | DATE

COMMENTS

FEMA Form 81-31, AUG 99 REPLACES ALL PREVIOUS EDITIONS

Attachment E:





0 270 540 Feet

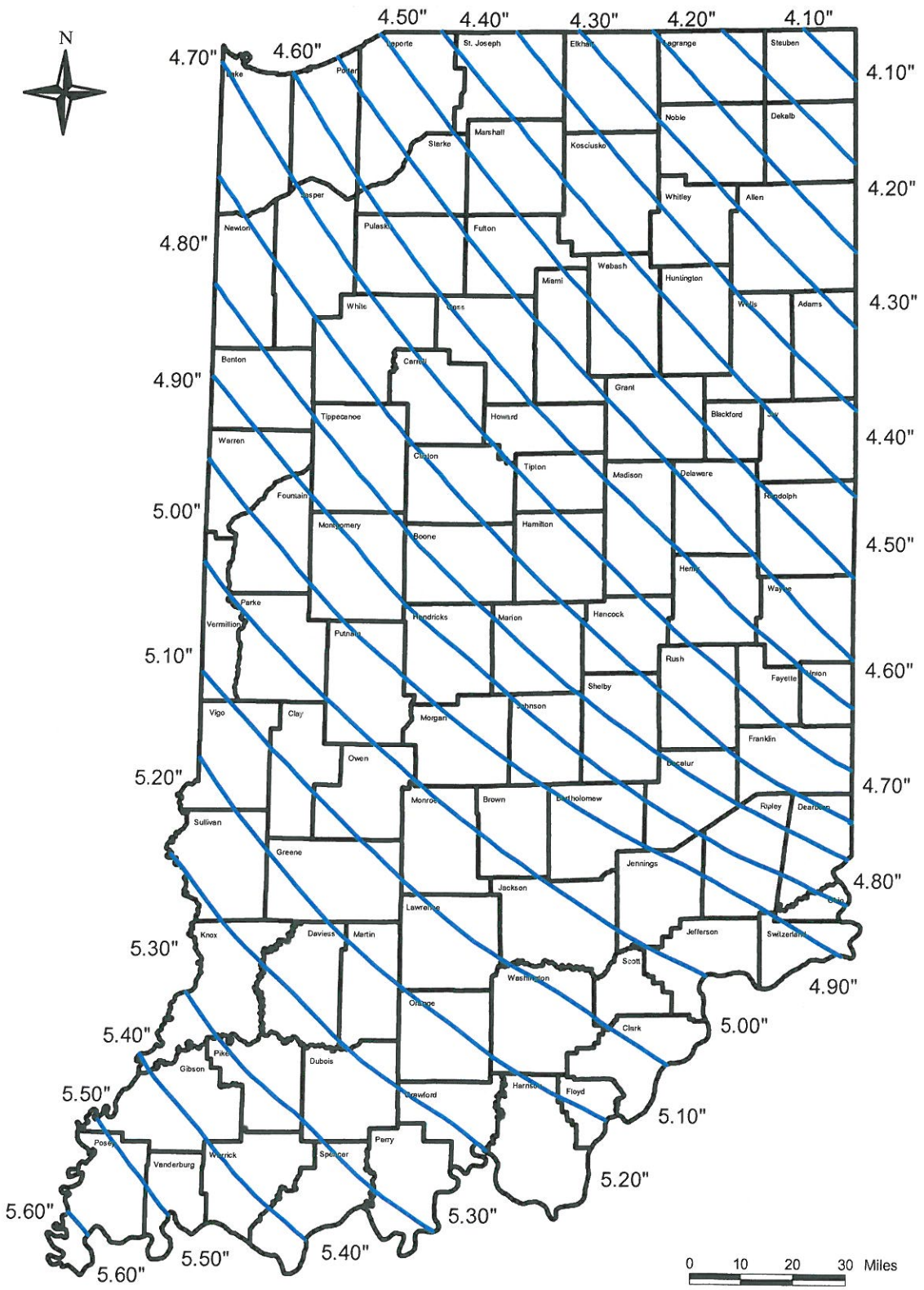
N

CITY OF FRANKLIN
YOUNG'S CREEK EROSION CONTROL & STREAMBANK STABILIZATION PROJECT

Attachment F

Attachment G

RAINFALL - 10 YEAR FREQUENCY - 2 DAY DURATION



REFERENCE
TECHNICAL PAPER NO. 49
NATIONAL WEATHER SERVICE

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER

INDIANA DEPARTMENT OF NATURAL RESOURCES

Attachment H

Andrew Cochrane

From: Andrew Cochrane
Sent: Tuesday, March 11, 2014 9:59 AM
To: Chris Breinling
Subject: Franklin Young's Creek Flood Investigation - Scott Graham Meeting Notes

Scott Graham Meeting Notes

- Scott had never had water in building until 2008 and then again on 12/22/13.
  - There were 80" of water in the building after the 2008 flood
- Rainfall was approximately 5 inches and water was 6 inches deep in the building.
  - 12/22 @11:30 p.m. there was no water in building (Scott was at building)
  - 12/23 @3:00 a.m. Andy Duckworth of Franklin called and said water was at rear door
- Water has been in the street and his lot on other occasions
- His main concerns are dredging South Street bridge and check valve
- He believes the pedestrian bridge in Province Park needs to be raised
  - He showed me several pictures of the bridge and debris accumulating creating a dam on different occasions
- He suggested I discuss cleanup costs with Chip Orner (317.442.1906). He believes the dredging of South St bridge will befit park's dept
- Jim Noblitt is Scott's uncle. He lives adjacent to Young's Creek on the south side of Young's Creek. His cell is 317.331.6268.
- He mentioned that Jim Higginbotham of Recovery 1 would be a good resource. His cell is 317.694.5556.
- Scott has a check valve installed on a drain coming on 30" storm sewer. It has helped.
- He believes the flooding problem on 12/22 is directly associated with the reduction in the South Street bridge flow capacity and the pedestrian bridge damming in Province Park.
- Before 2008 the last time Bastin Logan had water in it building was 1951 flood

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Andrew Cochrane

From: Andrew Cochrane
Sent: Thursday, March 13, 2014 2:50 PM
To: Andrew Cochrane; Chris Breinling
Subject: Meeting Notes - Jim Noblitt

I spoke with Jim Noblitt (317.331.6268) regarding the flooding issue. Below is a summary:

- Moved into the house in 1983
- Approx. two years later they had 1" of standing water in the basement and then they installed a sump pump
- Approx. five years from moving water would enter on a more regular basis. It would seep into the house due to the high groundwater levels. Back then it would typically take the water 8 hours to peak after it started raining. Now it is much quicker.
- Never had water in the garage, excluding 2008 flood, until 12/22/13
- He believes South Street and the pedestrian bridge are acting as dams in the system

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Andrew Cochrane

From: Andrew Cochrane
Sent: Thursday, March 27, 2014 3:11 PM
To: Chris Breinling
Subject: Meeting Notes - Joe Pazek of Bastin Logan

I spoke with Joe Pazek of Bastin Logan. He said he has worked there 30 years and the office building has only flooded once and it was during the 2008 flood. During the 2008 flood, they had 6 feet of water in the office building. During the December 2013 flood, the water flooded the parking lot and "came close" to the building. He did not think water came out of its banks during the December flood. He thought it had more to do with a backup.

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