

IN THE SUPREME COURT OF OHIO

| | | |
|---|---|------------------------------|
| STATE ex rel. WAYNE T. DONER, et al., | : | Case No. 2009-1292 |
| | : | |
| Relators, | : | Original Action in Mandamus |
| | : | |
| v. | : | Master Commissioner Campbell |
| | : | |
| SEAN D. LOGAN, Director, | : | |
| Ohio Department of Natural Resources, et al., | : | |
| | : | |
| Respondents. | : | |

MEMORANDUM OF RESPONDENTS IN OPPOSITION TO RELATORS' MOTION TO SHOW CAUSE WHY HYDROSPHERE ENGINEERING SHOULD NOT BE HELD IN CONTEMPT

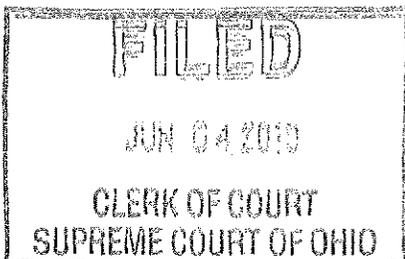
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 Counsel for Respondents



**MEMORANDUM OF RESPONDENTS IN OPPOSITION TO RELATORS'
MOTION TO SHOW CAUSE WHY HYDROSPHERE ENGINEERING
SHOULD NOT BE HELD IN CONTEMPT**

I. INTRODUCTION

Relators' instant Motion is similar to a previously filed Motion against Stantec Consulting Services, Inc. ("Stantec"), which also threatened one of Respondents' experts with contempt. Respondents' memorandum therefore, mirrors much of what was already said in response to Relators' motion against Stantec. As was the case with that previous motion, Relators incorrectly rely upon inapposite federal cases interpreting the Federal Rules of Civil Procedure, Relators ask this Court to order Hydrosphere Engineering ("Hydrosphere") to show cause why it should not be held in contempt for failing to produce documents withheld under the long-standing protection of Ohio's work-product doctrine. As further explained below, because Ohio has not adopted the 1993 amendments to the Federal Rules of Civil Procedure that form the basis for Relators' claims, Relators' motion should be denied.

II. RELEVANT BACKGROUND

Simply stated, Relators' version of the background facts in this case is not accurate. First, despite several pages of Relators complaining about documents not provided, Dr. Phillip De Groot has provided all but two documents requested by Relators. On March 1, 2010 Hydrosphere provided an Affidavit from Dr. De Groot, which included his expert report. Dr. De Groot appeared for a deposition on April 29, 2010 upon subpoena from Relators' counsel, and produced his file, absent documents either not relied upon by Dr. De Groot for his opinion or that contained privileged material withheld by Respondents. At the deposition and in subsequent correspondence, Relators'

counsel demanded additional documents that they asserted were responsive to the subpoena to Hydrosphere Engineering.

On May 18, 2010, counsel for Respondents forwarded a response to the subpoena after completing a privilege review. Although counsel for Respondents believed that much of what was requested was unduly burdensome because counsel for Relators already had most of the requested information in their possession and because Dr. De Groot provided deposition testimony about what was contained in his file and what he relied upon in formulating his opinion, Respondents' response included (1) Dr. De Groot's copy of the mandamus complaint, (2) Dr. De Groot's copies of Relators' affidavits, (3) five e-mails between ODNR and Hydrosphere, and (4) nine files in portable document format (.pdf) containing FEMA documents provided by ODNR to Hydrosphere. (Ex. A.)¹ Respondents also provided a privilege log. See Ex. 3-F to Relators' Motion for an Order for Hydrosphere Engineering to Show Cause Why It Should Not Be Held in Contempt.

On May 19, 2010, Respondents provided additional documents that had been inadvertently omitted from the May 18 response including (1) a partially redacted copy of Hydrosphere's contract, (2) a copy of Hydrosphere's invoice, and (3) an additional e-mail including Hydrosphere's review of Stantec's work. (Ex. B.) That same day, counsel for Respondents also explained that privileged communications would be withheld as indicated by the privilege log and that certain documents would not be provided, namely the Stantec draft report and CD containing Stantec's IEC-HMS and IEC-RAS models,

¹ Exhibit A does not include Dr. De Groot's copy of the mandamus complaint or the affidavits because they are already in the Court's record. Further, the maps in Exhibit A were provided to Relators full scale. For expediency, the copies of the maps attached with this memorandum were reduced to 8.5" x 11".

upon which Dr. De Groot did not rely. In fact, the models requested by Relators were in their possession prior to Dr. De Groot's deposition and could have been used to inquire of Dr. De Groot at his deposition.

Second, Rule 26(B)(5) does not provide for the disclosure of all materials given to and reviewed by an expert, including trial preparation materials, opinion work product, and privileged materials as Relators claim. To the contrary, in order to obtain these otherwise protected materials under Rule 26(B)(5)(a) there must be a showing of undue hardship or other exceptional circumstances. While Rule 26(B)(5)(b) provides an alternative means of obtaining discovery from a testifying expert, it carefully restricts any discovery of an expert's opinions and the grounds therefore to those previously given to the other party or those to be given on direct examination at trial.

Third, Dr. DeGroot's extremely limited review of Stantec's work was in the capacity of a consulting expert. Deposition of Philip DeGroot at 13:13-14:17; 17:2-19:12; 76:17-79:6; 82:5 - 82:12. (Ex. C.) Respondents have not elicited, and do not intend to elicit, testimony from Dr. De Groot about Stantec's work. Further, Relators have not attempted to show undue hardship or exceptional circumstances that would cause manifest injustice to support their requested discovery of Dr. De Groot's review of Stantec's work. Moreover, Relators ultimately acknowledged that Dr. De Groot has provided all but two documents that Relators have requested, namely Stantec's draft report and CD containing Stantec's HEC-HMS and HEC-RAS models. Relators' Motion for an Order for Hydrosphere Engineering to Show Cause Why It Should Not Be Held in Contempt at pp. 7-8. These documents are not grounds for Dr. De Groot's opinions about Dr. Campbell's report and are not discoverable.

III. ARGUMENT

In 1993, the Federal Rules of Civil Procedure regarding expert witnesses was amended. The amended rule required “far greater disclosure,” including the disclosure of “all opinions to be expressed and the basis and reasons therefor” along with “the data or other information *considered* by the witness in forming the opinions.” (Emphasis sic.) *Mfg. Admin. & Mgt. Systems, Inc. v. ICT Group, Inc.* (E.D.N.Y. 2002), 212 F.R.D. 110, 113. Indeed, as the Advisory Committee Notes to the 1993 amendments explain, the expert report is to disclose the data and other information considered by the expert. Given this obligation of disclosure, litigants in federal court should no longer be able to argue that materials furnished to their experts to be used in forming their opinions, whether or not ultimately relied upon by the expert, are privileged or otherwise protected from disclosure. *Id.* at 115, quoting Fed.R.Civ.P. 26 advisory committee’s note (1993 amendments). The drafters of the amendment specifically rejected the requirement that data or information be “relied on” in favor of broader language that requires only that the expert “considered” the information for it to be discoverable. *Id.*

Notably, however, such is not the rule in Ohio. In Ohio, work product continues to receive substantial protection. While fact work product receives lesser protection, opinion work product reflecting an attorney’s mental impressions, opinions, conclusions, judgments or legal theories receives near absolute protection. *State v. Hoop* (Ct. App. 12th Dist. 1999), 134 Ohio App. 3d 627, 642. Moreover, in those specific instances where work product is discoverable, Ohio courts have still granted absolute protection to an attorney’s theory of the case. *Moskovitz v. Mt. Sinai Med. Ctr.* (1994), 69 Ohio St. 3d

638, syllabus paragraph 3; *Miller v. First Int'l Fid. & Trust Bldg.*, 113 Ohio St. 3d 474, 2007-Ohio-2457, ¶9.

A. Ohio Civ. R. 26(B)(5)(b) authorizes limited discovery of an expert's opinions, not the broad scope Relators urge based on a federal bright line test.

Civil R. 26(B)(5)(b) requires only disclosure of testifying experts and the subject matter about which they will testify at trial. After disclosure, a party may discover from an expert "facts known or opinions held by the expert which are relevant to the stated subject matter." That discovery is limited to the "expert's opinions and the grounds therefor *** previously given to the other party or those to be given on direct examination at trial."

Despite Relators' claims otherwise, Ohio, along with other state courts, continues to protect the core work product Relators now seek. *Helton v. Kincaid* (12th Dist.), 2005-Ohio-2794, ¶ 19 (finding that letters from an attorney to an expert are protected under the work-product doctrine). In doing so, Ohio continues to place a high value on the long-standing history of the work-product doctrine and the ability of an attorney to pursue various theories of the case without requiring him to reveal his thoughts, theories and mental processes to the other side. *Id.* ¶ 12.

It is therefore not surprising that Ohio's discovery rules directly addressing expert witnesses who are expected to testify at trial track the pre-1993 federal rule. *Id.* ¶ 13. Simply stated, work product does not lose its protected status simply because it is disseminated to an expert. *Id.* ¶ 16. Rather, in accordance with Ohio's long-standing policy favoring work product privacy, by use of interrogatories, a party may require the other party to identify each person the party expects to call as a witness at trial and to

state the subject matter on which the party is expected to testify. *Id.* ¶13 citing Civ.R. 26(B)(4)(b). The party may then “discover from the expert or the other party facts known or opinions held by the expert which are relevant to the stated subject matter.” *Id.* All of this the Relators have already done without objection. Specifically, Relators sent interrogatories to Respondents in November 2009 and Respondents answered in December 2009. Further, Relators deposed Respondents’ experts in April 2010.

It is essential that a lawyer assemble information, sift what he considers to be the relevant from the irrelevant facts, prepare his legal theories and plan his strategy without undue and needless interference. *Mfg. Admin. & Mgt. Sys., Inc. v. ICT Group, Inc.* (E.D.N.Y. 2002), 212 F.R.D. 110, 112, quoting *Hickman v. Taylor* (1947), 329 U.S. 495, 511. It is for this reason that Ohio has flatly rejected the federal bright-line rule Relators single-mindedly now urge upon the Court. In this case, Hydrosphere’s contract is not limited to explaining the fee, the type of work billed for, or the purpose of litigation. Instead, the scope of work is detailed, reflecting the factual and legal strategies of the attorneys, providing insight into the attorneys’ thoughts concerning the direction of the litigation. *Id.* at 113. Likewise, the contents of e-mails that contain attorney work product, are also properly withheld and/or redacted.

Nonetheless, the Court may decide to conduct an evidentiary hearing or an in camera inspection to determine the issue of privilege. However, absent such a hearing or inspection, any blanket grant of discovery is an abuse of discretion. *Miller v. Bassett* (8th Dist.), 2006-Ohio-3590, ¶ 16; *Cargotec, Inc. v. Westchester Fire Ins. Co.*, 155 Ohio App. 3d 653, 2003-Ohio-7257.

B. Discovery under Ohio Civ. R. 26(B)(5)(a) requires a showing of undue hardship or exceptional circumstances. Relators have not attempted to make such a showing.

Civil R. 26(B)(5)(a) provides “[s]ubject to the provisions in (B)(5)(b) of this rule and Rule 35(B), a party may discover facts known or opinions held by an expert retained or specially employed by another party in anticipation of litigation or preparation for trial only upon a showing that the party seeking discover is unable without undue hardship to obtain facts and opinions on the same subject matter by other means or upon a showing of other exceptional circumstances indicating that denial of discovery would cause manifest injustice.”

Relators have not shown that they are “unable to obtain facts and opinions on the same subject by other means” or shown “other exceptional circumstances indicating that denial of discover would cause manifest injustice.” Relators have simply argued, based on the federal bright line test and Missouri, rather than Ohio, law, that they are entitled to disclosure of communications that are protected by the work product privilege.

Relators have made no showing of undue hardship or other exceptional circumstances which would warrant discovery under Civ. R. 26(B)(5)(a). Likewise, Relators’ motion is not limited to only the expert’s opinions or the grounds therefore previously provided to the Respondents or those to be given on direct examination at trial. Civ.R. 26(B)(5)(b). As such, Relators’ motion to show cause should be denied.

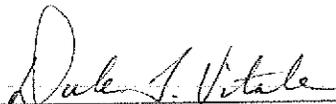
IV. CONCLUSION

Because Ohio continues to favor the protection of core work product and limits the discovery of testifying experts, Relators’ motion should be denied. Hydrosphere

complied with the subpoena in good faith, and consistent with the Ohio Rules of Civil Procedure.

Respectfully submitted:

RICHARD CORDRAY
Ohio Attorney General



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**Counsel of Record*

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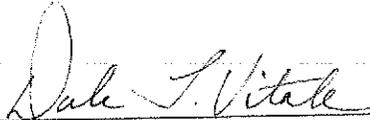
daniel.martin@ohioattorneygeneral.gov

rachel.stelzer@ohioattorneygeneral.gov

Counsel for Respondents

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing was sent by regular mail on June 4, 2010, to Bruce L. Ingram, Joseph R. Miller, Thomas H. Fusonic, Kristi Kress Wilhelmy, and Martha C. Brewer, Vorys, Sater, Seymour & Pease, P.O. Box 1008, Columbus, OH 43216.



DALE T. VITALE

William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:06 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 1
Attachments: Map to Ashland SWCD - 1763 State Route 60.pdf

----- Forwarded message -----

From: Dorsey, Jay <Jay.Dorsey@dnr.state.oh.us>
Date: Wed, Feb 10, 2010 at 2:50 PM
Subject: Thursday Morning Meeting
To: Philip De Groot <hydrosphere.engineering@gmail.com>

Phil,

We are on for tomorrow at 10:00 AM at the Ashland SWCD. PLEASE NOTE – the SWCD has moved. I've attached a map. The receptionist at the district suggested coming I-71 to US30 East to S.R. 60 the first time you come.

I may have an attorney or two with me.

See you tomorrow.

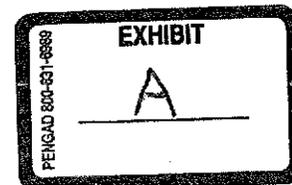
Jay

Jay Dorsey, P.E., Ph.D.

Water Resources Engineer

ODNR, Division of Soil and Water Resources

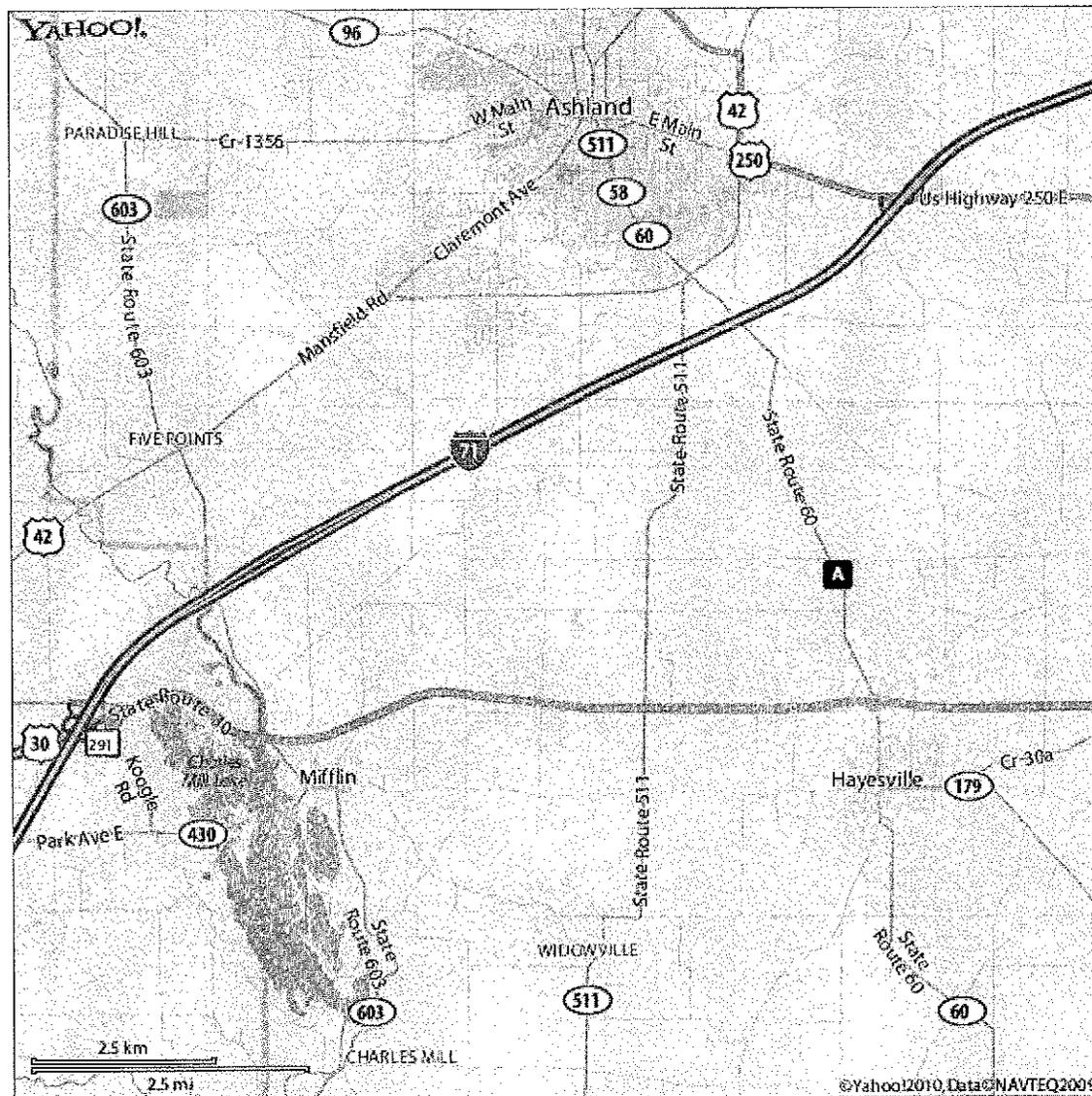
(614) 265-8647



--

Philip H. De Groot, Ph.D., P.E.
Principal Hydraulic Engineer
Hydrosphere Engineering
P.O. Box 360530
Cleveland, Ohio 44136-0009
www.hydrosphere-engineering.com
440-973-4054

Map of 1763 State Route 60, Ashland, OH 44805-9287



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:10 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 2
Attachments: Doner Complaint.pdf; Doner Memo in Support.pdf

----- Forwarded message -----

From: Rachel H. Stelzer <rachel.stelzer@ohioattorneygeneral.gov>
Date: Wed, Feb 10, 2010 at 3:27 PM
Subject: Doner Complaint and Memo in Support
To: "hydrosphere.engineering@gmail.com" <hydrosphere.engineering@gmail.com>
Cc: "William J. Cole" <william.cole@ohioattorneygeneral.gov>, "jay.dorsey@dnr.state.oh.us" <jay.dorsey@dnr.state.oh.us>, Mindy Worly <mindy.worly@ohioattorneygeneral.gov>, "Daniel J. Martin" <daniel.martin@ohioattorneygeneral.gov>, "Dale T. Vitale" <dale.vitale@ohioattorneygeneral.gov>

Phil,

Please find attached the Complaint and Memo in Support filed by the landowners/relators in the Doner case. We wanted to make sure you had these documents before your meeting with Jay tomorrow.

Thanks,
Rachel H. Stelzer
Assistant Attorney General, EES-ODNR
Ohio Attorney General Richard Cordray
PHONE 614.265.6944
FAX 614.268.8871
EMAIL rachel.stelzer@ohioattorneygeneral.gov

2045 Morse Road #D-2
Columbus, OH 43229
<http://www.ohioattorneygeneral.gov>

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--
Philip H. De Groot, Ph.D., P.E.

Principal Hydraulic Engineer
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440-973-4054

William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:12 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 3

----- Forwarded message -----

From: **Dorsey, Jay** <Jay.Dorsey@dnr.state.oh.us>
Date: Thu, Feb 11, 2010 at 5:05 PM
Subject: GLSM Files at ftp site - CONFIDENTIAL ATTORNEY-CLIENT WORK PRODUCT
To: Philip De Groot <hydrosphere.engineering@gmail.com>
Cc: "Martin, Daniel" <Daniel.Martin@ohioattorneygeneral.gov>, "Rowan, Charles" <Charles.Rowan@dnr.state.oh.us>

Phil

I posted a number of files (precip, lake level, photos, etc.) in a folder for you at our ftp site:

ftp://ftp.dnr.state.oh.us/Soil_&_Water_Conservation/Dorsey/

Photos are:

GLSM lake level staff gage (4)

GLSM west spillway (3)

Beaver Creek looking dst from embankment (2)

GLSM lake drains (not used for lake mgmt purposes – not opened since spillway modification in 1997 that I know of – 2 photos)

GLSM lake drain controls (4)

Beaver Creek at a series of downstream road crossings (I think the next 20 photos)

Wabash River upstream confluence with Beaver (I think the last 3)

If you have questions or would like to discuss something, you can leave a message on my cell and I'll call you back when I get chance. I'm in a workshop tomorrow and conference on Saturday, but should be able to get back

6/4/2010

to you at a break. You could also call me on my cell on Sunday or Monday. Cell – (513) 520-6361

I will not be checking e-mail until Tuesday AM.

Your voice message has me curious.

Have fun.

Jay

Jay Dorsey, P.E., Ph.D.

Water Resources Engineer

ODNR, Division of Soil and Water Resources

(614) 265-6647

--

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William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:13 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 4

----- Forwarded message -----

From: **Dorsey, Jay** <Jay.Dorsey@dnr.state.oh.us>
Date: Tue, Feb 16, 2010 at 3:09 PM
Subject: Check in about Wednesday Grand Lake visit
To: Philip De Groot <hydrosphere.engineering@gmail.com>, mike@hydrosphere-engineering.com

Phil or Mike

Please give me a call this afternoon about trip to Grand Lake. Thanks - Jay

Jay Dorsey, P.E., Ph.D.

Water Resources Engineer

ODNR, Division of Soil and Water Resources

(614) 265-6647

--

Philip H. De Groot, Ph.D., P.E.
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William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:14 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 5

----- Forwarded message -----

From: Dorsey, Jay <Jay.Dorsey@dnr.state.oh.us>
Date: Tue, Feb 16, 2010 at 6:32 PM
Subject: Grand Lake Downloads from ftp
To: mike@hydrosphere-engineering.com
Cc: Philip De Groot <hydrosphere.engineering@gmail.com>

ftp://ftp.dnr.state.oh.us/Soil_&_Water_Conservation/Dorsey/

Mike – please let me know after you've downloaded, or if you have any problems downloading. Thanks - Jay

Jay Dorsey, P.E., Ph.D.

Water Resources Engineer

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--

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William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:18 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 8

----- Forwarded message -----

From: Dorsey, Jay <Jay.Dorsey@dnr.state.oh.us>
Date: Fri, Feb 19, 2010 at 5:25 PM
Subject: FW: FEMA data.
To: Philip De Groot <hydrosphere.engineering@gmail.com>, mike@hydrosphere-engineering.com

More info on the floodplain maps for Mercer County (the ones I sent you). It looks like other maps may be available from FEMA's map server.

-----Original Message-----

From: Beck, Tim
Sent: Friday, February 19, 2010 2:08 PM
To: Dorsey, Jay
Cc: Thoms, Christopher; Barnett, Tanisha
Subject: FEMA data.

Jay,

The firms I put in your folder PublicDorsey\FEMA_PDFs are the current effective maps for Mercer not historic and they correspond to the 1989 and 1986 dates.

The Historic that are on FEMA MSC for 1977 FHBM vintage we don't have pdfs of but FEMA does on their site.

If they want us to comb through the bldg I documents instead of the website below then

let Tanisha know.

Link to MSC: <http://msc.fema.gov>

Website Navigation Route to Historic Maps:

MSC --> Catalog --> FIRMS --> Historic Flood Maps --> State --> County --> Corporation.

Direct Link to Historic Documents for Mercer:

http://msc.fema.gov/webapp/wcs/stores/servlet/CategoryDisplay?storeId=10001&catalogId=10001&langId=-1&categoryId=12010&parent_category_m=12010&type=CAT_HISTMAPS&stateId=13042&countyId=15081&communityId=352765&stateName=OHIO&countyName=MERCER+COUNTY&cc

Let me know if you need anything else.

Tanisha,

The file request would be for Mercer County 1977 FHBM files from Bldg I.

*Thanks,
 Tim*

Timothy D. Beck, CFM
 GIMS Specialist
 Floodplain Management Program
 ODNR, Division of Soil & Water Resources

Phone: (614) 265-6722
 Fax: (614) 265-6767
 <mailto:tim.beck@dnr.state.oh.us>

ODNR Floodplain Mgt. Website
<http://www.ohiodnr.com/floodpln/default/tabid/3511/Default.aspx>

6/4/2010

"in life there are lots of things to think about, but nothing to worry about."

Chuck Norris Fact: *According to Einstein's theory of relativity, Chuck Norris can actually roundhouse kick you yesterday.*

Fact is from <http://www.chucknorrisfacts.com/>.

—
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William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:19 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 9

----- Forwarded message -----

From: **Dorsey, Jay** <Jay.Dorsey@dnr.state.oh.us>
Date: Tue, Feb 23, 2010 at 9:28 AM
Subject:
To: Philip De Groot <hydrosphere.engineering@gmail.com>
Cc: mike@hydrosphere-engineering.com, "Henson, Tadd" <Tadd.Henson@stantec.com>

Phil

I think you should re-read the section of NOAA Atlas 14 (Vol 2 A.1-2) we were discussing yesterday, especially the second paragraph under "Interpreting the Results". The 10% curves are simply about whether the distribution is concentrated close to the beginning of the time period, concentrated close to the end of the time period, or somewhere in-between. The 10% line has the same probability of occurring (and thus recurrence interval) as the 30% line or the 40% line or the 50% (median) line. What is left of the 10% line has the same probability of occurring (and thus the recurrence interval) as the area to the right of the 90% line, or in-between the 30% and 40% lines.

If you are still convinced you are using it correctly, please discuss with Jim Angel (Floyd was Huff's first name) at Illinois State Water Survey:

Jim Angel

(217) 333-0729

jimangel@uiuc.edu

Jay

Jay Dorsey, P.E., Ph.D.

Water Resources Engineer

ODNR, Division of Soil and Water Resources

(614) 265-6647

6/4/2010

--

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Principal Hydraulic Engineer
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William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:21 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 11

----- Forwarded message -----

From: **Michael C. Menoes** <mikemenocs@zoominternet.net>
Date: Mon, Mar 1, 2010 at 11:40 AM
Subject: Re: Comments on Grand Lake reports
To: "Dorsey, Jay" <Jay.Dorsey@dnr.state.oh.us>
Cc: Phil De Groot <phil@hydrosphere-engineering.com>

Jay,

One more time...

Mike

----- Original Message -----

From: Dorsey, Jay
To: Michael C. Menoes
Sent: Monday, March 01, 2010 10:37 AM
Subject: RE: Comments on Grand Lake reports

There is still one St Mary's on the front page.

-----Original Message-----

From: Michael C. Menoes [mailto:mikemenoes@zoominternet.net]
Sent: Monday, March 01, 2010 10:29 AM

To: Dorsey, Jay
Cc: Phil De Groot
Subject: Re: Comments on Grand Lake reports

6/4/2010

Jay,

I believe that I found all of the apostrophes and removed them.

Mike

----- Original Message -----

From: Dorsey, Jay

To: Henson, Tadd ; Philip De Groot ; mike@hydrosphere-engineering.com

Sent: Friday, February 26, 2010 5:17 PM

Subject: Comments on Grand Lake reports

If you have any questions about my comments, I will have my GLSM file with me and can be reached any time this weekend (during daylight hours) at my cell number (513) 520-6361.

Thank you for your work.

Jay

Jay Dorsey, P.E., Ph.D.

Water Resources Engineer

ODNR, Division of Soil and Water Resources

(614) 265-6647

--
Philip H. De Groot, Ph.D., P.E.
Principal Hydraulic Engineer
Hydrosphere Engineering
P.O. Box 360530
Cleveland, Ohio 44136-0009
www.hydrosphere-engineering.com
440-973-4054

William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 11:25 AM
To: William J. Cole
Subject: De Groot copy of exchanged email 14

----- Forwarded message -----

From: Dorsey, Jay <Jay.Dorsey@dnr.state.oh.us>
Date: Fri, Apr 23, 2010 at 10:05 AM
Subject: Photos of Old Spillway
To: Jennifer Croskey <Jennifer.Croskey@ohioattorneygeneral.gov>, "Henson, Tadd" <Tadd.Henson@stantec.com>, "William J. Cole" <william.cole@ohioattorneygeneral.gov>, "Martin, Daniel" <Daniel.Martin@ohioattorneygeneral.gov>, "Stelzer, Rachel" <Rachel.Stelzer@ohioattorneygeneral.gov>, Mindy Worly <mindy.worly@ohioattorneygeneral.gov>, "Dale T. Vitale" <dale.vitale@ohioattorneygeneral.gov>, "Rowan, Charles" <Charles.Rowan@dnr.state.oh.us>
Cc: Philip De Groot <hydrosphere.engineering@gmail.com>, "Mohr, Dave" <Dave.Mohr@dnr.state.oh.us>

Confidential Attorney Client Communication and Attorney Work Product

Attached are a couple photos of the old spillway and exit channel.

For comparison, I've also attached a photo of the new spillway, the current exit channel, and the lake drain outlets.

Jay

Jay Dorsey, P.E., Ph.D.

Water Resources Engineer

ODNR, Division of Soil and Water Resources

(614) 265-6647

6/4/2010

--
Philip H. De Groot, Ph.D., P.E.
Principal Hydraulic Engineer
Hydrosphere Engineering
P.O. Box 360530
Cleveland, Ohio 44136-0009
www.hydrosphere-engineering.com
440-973-4054

William J. Cole

From: Philip De Groot [hydrosphere.engineering@gmail.com]
Sent: Saturday, May 08, 2010 3:13 PM
To: William J. Cole
Subject: De Groot copy of FEMA documents provided by ODNR 1
Attachments: 04-05-1639P-390392.pdf, 04-05-1639P-390393.pdf, 39011CV000.pdf

I attached pdf file

Philip H. De Groot, Ph.D., P.E.
Principal Hydraulic Engineer
Hydrosphere Engineering
P.O. Box 360530
Cleveland, Ohio 44136-0009
www.hydrosphere-engineering.com
440-973-4054



Federal Emergency Management Agency

Washington, D.C. 20472

SEP 30 2004

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Thomas Gagel
Chairman, Board of County Commissioners
Mercer County
Central Services Building
220 West Livingston Street, Room A201
Celina, OH 45822

IN REPLY REFER TO:

Case Number: 04-05-1639P
Community Name: Mercer County, Ohio
(Unincorporated Areas)
Community Number: 390392
Effective Date of
this Revision:

NOV 01 2004

Dear Mr. Gagel:

The Flood Insurance Rate Map (FIRM) for your community has been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed that provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer (CCO) for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Federal Emergency Management Agency (FEMA) in Chicago, Illinois, at (312) 408-5548, or the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

Sincerely,

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

For: Doug Bellomo, P.E., CFM, Acting Chief
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map
List of Current Flood Insurance Study Data

cc: [REDACTED] County Floodplain Inspector, Mercer County
[REDACTED] Safety Service Director, City of Celina
Community Map Repository



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT**

| COMMUNITY AND REVISION INFORMATION | | PROJECT DESCRIPTION | BASIS OF REQUEST |
|------------------------------------|---|--|--------------------------------|
| COMMUNITY | MERCER COUNTY, OHIO (UNINCORPORATED AREAS) | NO PROJECT | BASE MAP CHANGES CORRECTION |
| | COMMUNITY NO.: 390392 | | |
| IDENTIFIER | FEMA INITIATED MAP CORRECTION | APPROXIMATE LATITUDE & LONGITUDE: 40.549, -84.570 SOURCE: USGS QUADRANGLE DATUM: NAD 83 | |
| FLOODING SOURCE & REVISED REACH | BEAVER CREEK – from the confluence with Grand Lake Reservoir to approximately 2,250 feet upstream of the confluence with Grand Lake Reservoir GRAND LAKE RESERVOIR – along the western bank adjacent to Beaver Creek | | |

SUMMARY OF REVISIONS

There is no revised flooding associated with this Letter of Map Revision. The purpose of the revision is to correct the corporate boundaries between the City of Celina and Mercer County.

| ANNOTATED MAPPING ENCLOSURES | ANNOTATED STUDY ENCLOSURES |
|---|--|
| TYPE: FIRM* NO: 390392 0100 B Date: September 6, 1989 | NO REVISION TO THE FLOOD INSURANCE STUDY |

* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

DETERMINATION

This document provides the determination from the Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**

OTHER COMMUNITIES AFFECTED BY THIS REVISION

CID Number: 390393 Name: CITY OF CELINA, MERCER COUNTY, OHIO

AFFECTED MAP PANELS

TYPE: FIRM NO: 390393 0005 C Date: March 18, 1986

AFFECTED PORTIONS of the FLOOD INSURANCE STUDY

NO REVISION TO THE FLOOD INSURANCE STUDY

CID Number: Name:

AFFECTED MAP PANELS

AFFECTED PORTIONS of the FLOOD INSURANCE STUDY

CID Number: Name:

AFFECTED MAP PANELS

AFFECTED PORTIONS of the FLOOD INSURANCE STUDY

CID Number: Name:

AFFECTED MAP PANELS

AFFECTED PORTIONS of the FLOOD INSURANCE STUDY

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.


Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State law have been obtained. State or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

We have enclosed a document, titled *List of Current Flood Insurance Study Data*, which includes this letter, to help your community maintain all information for floodplain management and flood insurance. If any of the items in that document are not filed in your community's map repository, please contact the FEMA Map Assistance Center at the number listed below for information on how to obtain those items.

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Ken Hinterlong
Regional Engineer
Federal Emergency Management Agency, Region V
536 South Clark Street, Sixth Floor
Chicago, Illinois 60605
(312) 408-5529

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

A handwritten signature in black ink, appearing to read "Michael B. Godesky".

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**

PUBLIC NOTIFICATION OF REVISION

This revision will become effective 30 days from the date of this letter. Any requests to review or alter this determination should be made within 30 days and must be based on scientific or technical data.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional Information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

A handwritten signature in black ink, appearing to read "Michael B. Godesky".

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

LIST OF CURRENT FLOOD INSURANCE STUDY DATA

This list is provided to document all information currently effective for your community for insurance and floodplain management.

Date: **SEP 30 2004**

Community: Mercer County, Ohio (Unincorporated Areas)

Community Number: 390392

Page Number: 1 of 3

CURRENT EFFECTIVE FLOOD INSURANCE STUDY DATE: June 6, 2001

FLOOD INSURANCE RATE MAP

| <u>Map Index</u> | <u>Effective Date</u> |
|---|-----------------------|
| 390392 IND0 | June 6, 2001 |
| <u>Panel Number</u> | <u>Effective Date</u> |
| 0025 B, 0050 B, 0075 B, 0100 B, and 0150 B | September 6, 1989 |
| 0103 C and 0125 C | June 6, 2001 |

LETTERS OF MAP REVISION

| <u>Panel Number</u> | <u>Effective Date</u> |
|---------------------|-----------------------|
| 0100 B | NOV 01 2004 |

LETTERS OF MAP AMENDMENT AND MAP REVISION BASED ON FILL

| <u>Panel Number</u> | <u>Effective Date</u> |
|---------------------|--|
| 0025 B | September 10, 2003 |
| 0075 B | May 21, 2003 |
| 0100 B | October 15, 1993 November 12, 1993 December 30, 1993 May 20, 1998 June 19, 1998 June 19, 1998 July 2, 1998 July 8, 1998 July 15, 1998 July 17, 1998 August 28, 1998 September 2, 1998 October 16, 1998 |

LETTERS OF MAP AMENDMENT AND MAP REVISION BASED ON FILL (continued)

Panel Number
0100 B (continued)

Effective Date
November 4, 1998
November 6, 1998
November 25, 1998
December 4, 1998
January 22, 1999
February 10, 1999
March 19, 1999
April 21, 1999
June 18, 1999
July 16, 1999
September 8, 1999
September 10, 1999
September 24, 1999
October 20, 1999
October 22, 1999
November 10, 1999
December 8, 1999
December 10, 1999
December 29, 1999
January 28, 2000
April 5, 2000
April 13, 2000
May 9, 2000
June 6, 2000
June 20, 2000
June 27, 2000
June 28, 2000
July 10, 2000
July 11, 2000
July 19, 2000
August 4, 2000
August 10, 2000
September 14, 2000
September 26, 2000
September 29, 2000
November 9, 2000
December 7, 2000
December 12, 2000
December 19, 2000
January 24, 2001
February 21, 2001
February 23, 2001
March 16, 2001
March 23, 2001
July 11, 2001
August 7, 2001
September 5, 2001
September 21, 2001
December 16, 2001

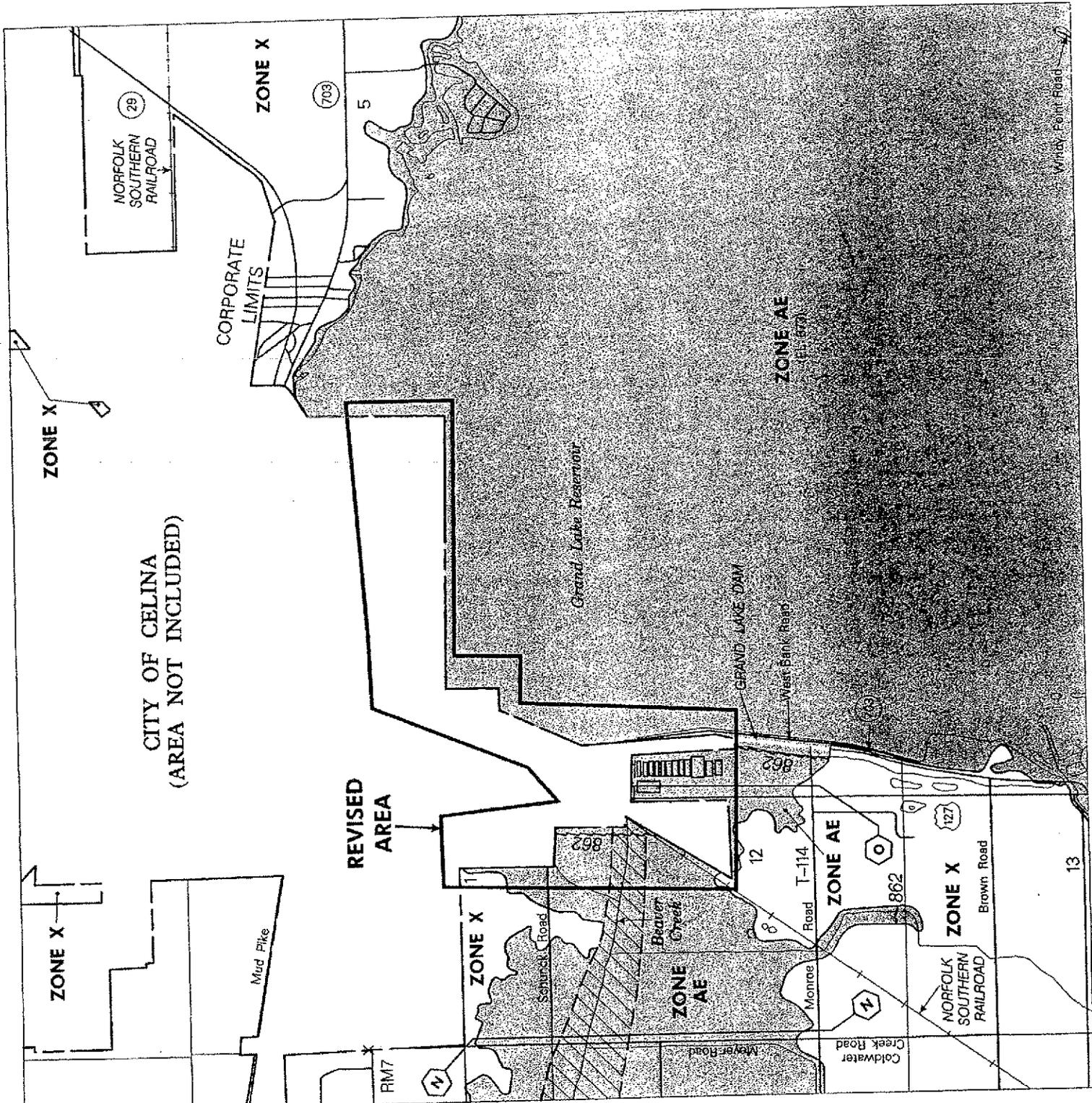
LETTERS OF MAP AMENDMENT AND MAP REVISION BASED ON FILL (continued)

Panel Number
0100 B (continued)

Effective Date
December 21, 2001
January 21, 2001
April 5, 2002
April 17, 2002
May 17, 2002
May 24, 2002
May 31, 2002
June 12, 2002
June 14, 2002
July 3, 2002
July 10, 2002
September 11, 2002
November 1, 2002
December 13, 2002
December 20, 2002
January 17, 2003
March 19, 2003
April 2, 2003
April 9, 2003
May 14, 2003
May 16, 2003
May 28, 2003
August 27, 2003
September 24, 2003
October 1, 2003
October 15, 2003
October 17, 2003
October 31, 2003
November 12, 2003
November 19, 2003
November 26, 2003
December 5, 2003
February 18, 2004
February 25, 2004
March 17, 2004
April 28, 2004
May 7, 2004
May 12, 2004
May 19, 2004
June 14, 2004
July 14, 2004
July 21, 2004
July 30, 2004
August 18, 2004
September 1, 2004

BEST AVAILABLE DATA LETTERS

None



CITY OF CELINA
(AREA NOT INCLUDED)

REVISED
AREA



APPROXIMATE SCALE IN FEET
0 2000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
MERCER COUNTY,
OHIO
(UNINCORPORATED AREAS)

PANEL 100 OF 150

REVISED TO
REFLECT LOMR
DATED NOV 01 2004

COMMUNITY-PANEL NUMBER
390332 0100 B
EFFECTIVE DATE:
SEPTEMBER 6, 1989



Federal Emergency Management Agency



Federal Emergency Management Agency

Washington, D.C. 20472

SEP 30 2004

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Sharon LaRue
Mayor, City of Celina
Celina Utilities Building
426 West Market Street
Celina, OH 45822

IN REPLY REFER TO:

Case Number: 04-05-1639P
Community Name: City of Celina, Mercer County, Ohio
Community Number: 390393
Effective Date of
this Revision:

NOV 01 2004

Dear Mayor LaRue:

The Flood Insurance Rate Map (FIRM) for your community has been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed that provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer (CCO) for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Federal Emergency Management Agency (FEMA) in Chicago, Illinois, at (312) 408-5548, or the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

Sincerely,

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

For: Doug Bellomo, P.E., CFM, Acting Chief
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map
List of Current Flood Insurance Study Data

cc: [REDACTED] Safety Service Director, City of Celina
[REDACTED] County Floodplain Inspector, Mercer County
Community Map Repository



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

| COMMUNITY AND REVISION INFORMATION | | PROJECT DESCRIPTION | BASIS OF REQUEST |
|---------------------------------------|---|--|--------------------------------|
| COMMUNITY | CITY OF CELINA, MERCER COUNTY, OHIO | NO PROJECT | BASE MAP CHANGES CORRECTION |
| | COMMUNITY NO.: 390393 | | |
| IDENTIFIER | FEMA INITIATED MAP CORRECTION | APPROXIMATE LATITUDE & LONGITUDE: 40.549, -84.570 SOURCE: USGS QUADRANGLE DATUM: NAD 83 | |
| FLOODING SOURCES & REVISED REACHES | BEAVER CREEK -- from the confluence with Grand Lake Reservoir to approximately 2,250 feet upstream of the confluence with Grand Lake Reservoir GRAND LAKE RESERVOIR -- along the western bank adjacent to Beaver Creek | | |

SUMMARY OF REVISIONS

Effective Flooding: X (unshaded)
 Revised Flooding: Zone A
 Increases: YES
 Decreases: NONE

* BFEs - Base Flood Elevations

ANNOTATED MAPPING ENCLOSURES

TYPE: NO: 390393 0005 B Date: March 18, 1986

ANNOTATED STUDY ENCLOSURES

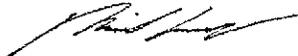
NO REVISION TO THE FLOOD INSURANCE STUDY

* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

DETERMINATION

This document provides the determination from the Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional Information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.


 Michael B. Godesky, CFM, Project Engineer
 Hazard Identification Section
 Mitigation Division
 Emergency Preparedness
 and Response Directorate

Version 1.0 382404.05 0087



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**

OTHER COMMUNITIES AFFECTED BY THIS REVISION

CID Number: 390392 Name: MERCER COUNTY, OHIO (UNINCORPORATED AREAS)

| AFFECTED MAP PANELS | AFFECTED PORTIONS of the FLOOD INSURANCE STUDY |
|---|--|
| TYPE: FIRM NO: 390392 0010 B Date: March 18, 1986 | NO REVISION TO THE FLOOD INSURANCE STUDY |

CID Number: Name:

| AFFECTED MAP PANELS | AFFECTED PORTIONS of the FLOOD INSURANCE STUDY |
|---------------------|--|
| | |

CID Number: Name:

| AFFECTED MAP PANELS | AFFECTED PORTIONS of the FLOOD INSURANCE STUDY |
|---------------------|--|
| | |

CID Number: Name:

| AFFECTED MAP PANELS | AFFECTED PORTIONS of the FLOOD INSURANCE STUDY |
|---------------------|--|
| | |

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional Information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.


 Michael B. Godesky, CFM, Project Engineer
 Hazard Identification Section
 Mitigation Division
 Emergency Preparedness
 and Response Directorate



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State law have been obtained. State or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

We have enclosed a document, titled *List of Current Flood Insurance Study Data*, which includes this letter, to help your community maintain all information for floodplain management and flood insurance. If any of the items in that document are not filed in your community's map repository, please contact the FEMA Map Assistance Center at the number listed below for information on how to obtain those items.

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Ken Hinterlong
Regional Engineer
Federal Emergency Management Agency, Region V
536 South Clark Street, Sixth Floor
Chicago, Illinois 60605
(312) 408-5529

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Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

A handwritten signature in black ink, appearing to read "Michael B. Godesky".

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

This revision will become effective 30 days from the date of this letter. Any requests to review or alter this determination should be made within 30 days and must be based on scientific or technical data.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

A handwritten signature in black ink, appearing to read "Michael B. Godesky".

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

LIST OF CURRENT FLOOD INSURANCE STUDY DATA

This list is provided to document all information currently effective for your community for insurance and floodplain management.

Date: **SEP 30 2004**

Community: City of Celina, Mercer County, Ohio

Community Number: 390393

Page Number: 1 of 1

CURRENT EFFECTIVE FLOOD INSURANCE STUDY DATE: June 6, 2001

FLOOD INSURANCE RATE MAP

Map Index
390392 INDO

Effective Date
March 18, 1986

Panel Number
0005 C

Effective Date
March 18, 1986

LETTERS OF MAP REVISION

Panel Number
0005 C

Effective Date

LETTERS OF MAP AMENDMENT AND MAP REVISION BASED ON FILL

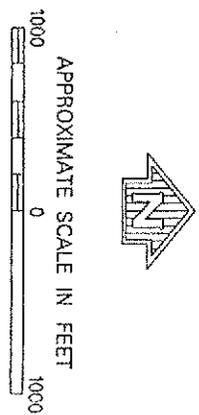
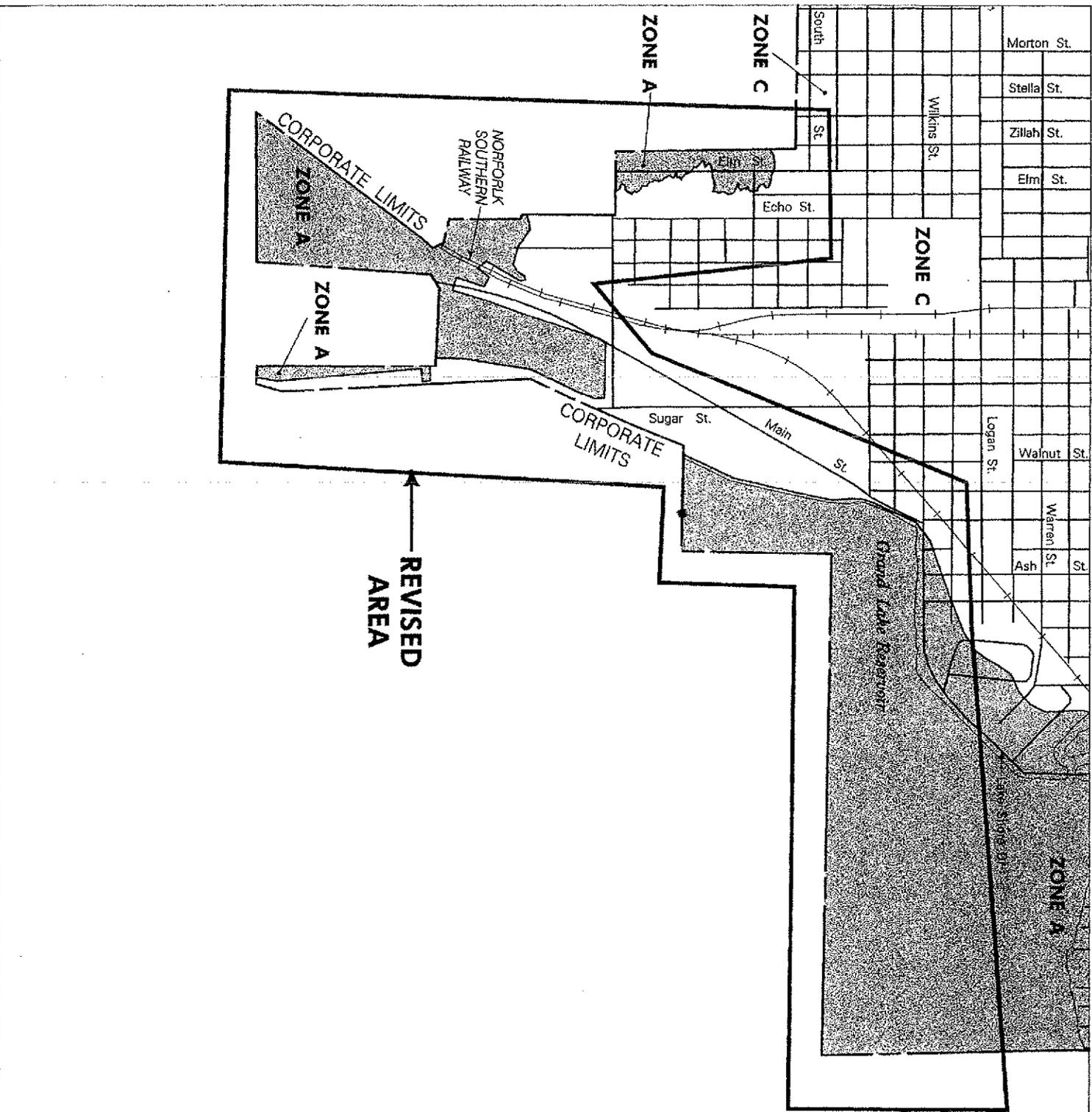
Panel Number
0005 C

Effective Date
October 18, 1994
May 10, 2000
December 6, 2002
January 22, 2003

BEST AVAILABLE DATA LETTERS

NOV 01 2004

None



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
 CELINA,
 OHIO
 MERCER COUNTY

(ONLY PANEL PRINTED)

NOV 01 2004
 COMMUNITY PANEL NUMBER
 390393 0005 C

EFFECTIVE DATE:
 MARCH 18, 1986

Federal Emergency Management Agency

FLOOD INSURANCE STUDY



AUGLAIZE COUNTY, OHIO AND INCORPORATED AREAS



| COMMUNITY NAME | COMMUNITY NUMBER |
|---------------------------|---------------------|
| BUCKLAND, VILLAGE OF | 390816 |
| NEW KNOXVILLE, VILLAGE OF | 390848 |
| ST. MARY'S, CITY OF | 390022 |
| WAPAKONETA, CITY OF | 390023 |
| UNINCORPORATED AREAS | 390761 |

SEPTEMBER 6, 1989



Federal Emergency Management Agency

**NOTICE TO
FLOOD INSURANCE STUDY USERS**

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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Auglaize River
Quaker Run

Panels 01P-05P
Panel 06P

Flood Insurance Rate Map Index
Flood Insurance Rate Map

Elevation Reference Marks

FLOOD INSURANCE STUDY

AUGLAIZE COUNTY, OHIO, AND INCORPORATED AREA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the geographic area of Auglaize County, Ohio, including the Village of Buckland, the Village of New Knoxville, the City of St. Marys, the City of Wapakoneta, and the Unincorporated Areas of Auglaize County (hereinafter referred to collectively as Auglaize County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The approximate hydrologic and hydraulic analyses for the St. Marys River were performed by the U.S. Geological Survey (USGS), Water Resources Division, (a Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823, in September 1986.

The hydrologic and hydraulic analyses for the remaining study streams were performed by the U.S. Army Corps of Engineers (COE), Buffalo District, (a Study Contractor) for FEMA, under Inter-Agency Agreement No. EMW-86-E-2226. This study was completed in February 1987.

1.3 Coordination

A community meeting was held on January 14, 1985, to explain the nature and purpose of this Flood Insurance Study. The meeting was attended by representatives of the community, FEMA, and the Study Contractors. Another meeting was held October 30, 1985, for the same purpose. A notice was placed in newspapers to announce the intent to perform a Flood Insurance Study and to request pertinent information.

On September 27, 1988, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractors, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the geographic area of Auglaize County, Ohio. The area of study is shown on the Vicinity Map (Figure 1).

Flooding caused by overflow of the Auglaize River, Quaker Run, and Grand Lake St. Marys was studied in detail.

Approximate analysis was used to study flood hazards on the St. Marys River in the vicinity of the City of St. Marys. The basis of the analysis is the assumption that the 1959 flood on the St. Marys River closely approximates a 100-year recurrence interval flood event.

Areas having low development potential or minimal flood hazards were previously studied using approximate analyses. The results were shown on the Flood Hazard Boundary Maps for Auglaize County, Ohio, the City of St. Marys, Ohio, and the Village of New Knoxville, Ohio (References 1-3) and are incorporated into this Flood Insurance Study.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through February 1992. The scope and methods of study were proposed to and agreed upon by FEMA and Auglaize County.

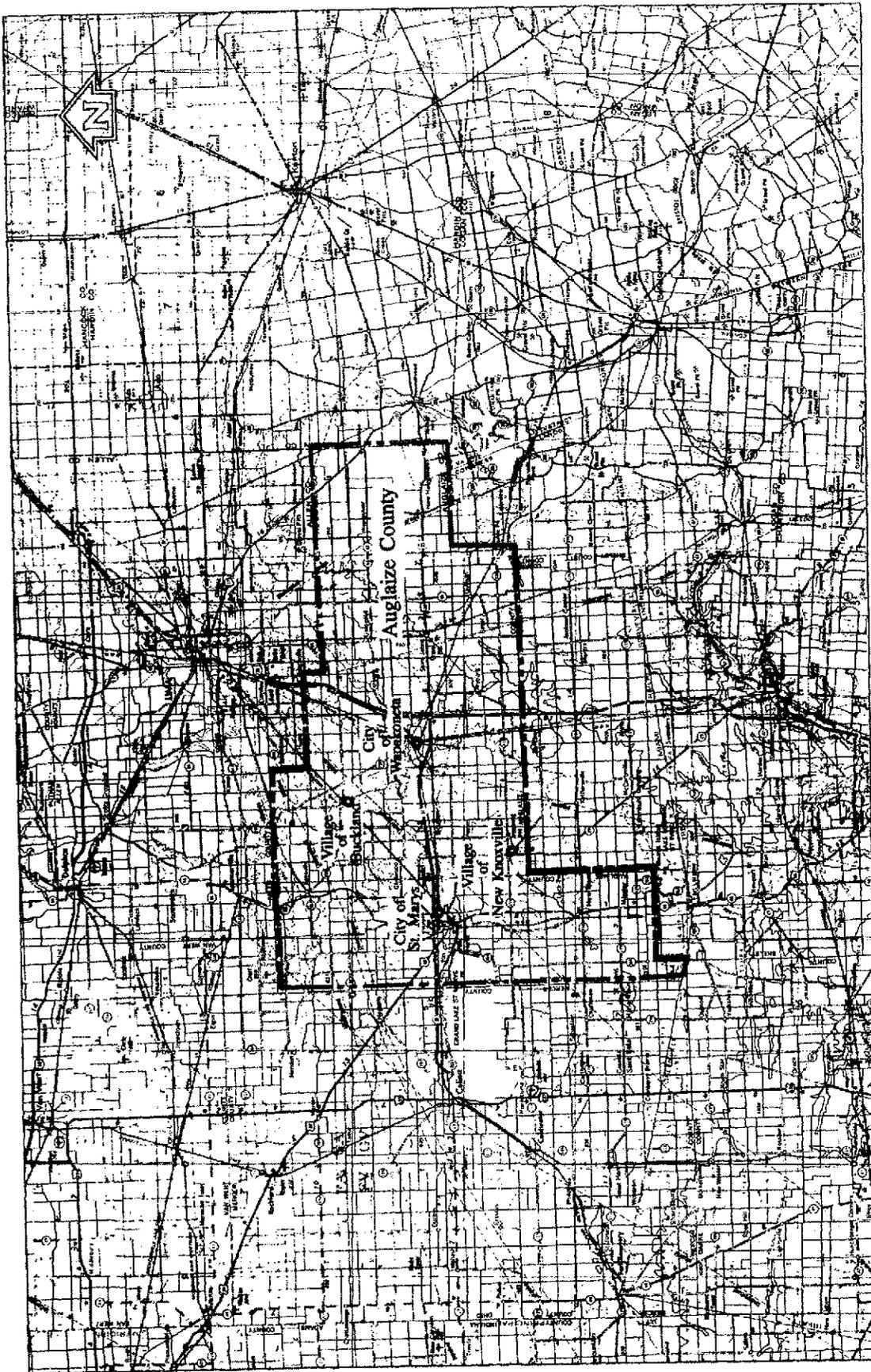
2.2 Community Description

Auglaize County is in west-central Ohio and has a total land area of 394 square miles. The county is bordered by Mercer County on the west, Van Wert and Allen Counties on the north, Hardin and Logan Counties on the east, and Logan and Shelby Counties on the south. The 1980 population of Auglaize County, which is primarily rural, was reported to be 42,554 (Reference 4).

The climate of Auglaize County is characterized by wide variations of temperature and precipitation. The maximum temperature recorded at the nearest climatological data station is 101 degrees Fahrenheit (°F), recorded in August 1951, and the minimum is -19 °F, recorded in January 1963. The maximum 24-hour rainfall, recorded on September 17, 1969, is 3.65 inches, and the maximum 24-hour snowfall, recorded on January 14, 1964, is 19.0 inches (Reference 5).

2.3 Principal Flood Problems

Flooding occurred throughout much of Ohio during the March 1913 flood of the Auglaize River, which was produced by one of the most intensive rainstorms of record in northwestern Ohio. Rainfall averaged between 6



APPROXIMATE SCALE



VICINITY MAP

FEDERAL EMERGENCY MANAGEMENT AGENCY

**AUGLAIZE COUNTY, OH
AND INCORPORATED AREAS**

FIGURE 1

and 7 inches throughout the Auglaize River watershed. High-water marks along the river indicate that this flood was higher than any other that has occurred since that time. Damage to homes and river property was extensive in the City of Wapakoneta (Reference 6).

The flood of January 1959 was the second highest flood of record on the Auglaize River in the Wapakoneta area. A storm center, passing south of the Maumee River basin, produced the heaviest rain in the southern part of the basin. Frozen ground increased the rate of runoff and the Auglaize River overflowed its banks north of Wapakoneta, flooding hundreds of acres of farmland.

In June 1980, extensive flooding occurred on the Auglaize River in and around Wapakoneta and floodwaters overtopped County Route 25A just north of Wapakoneta.

The most extensive flooding from the St. Marys River occurred in March 1913 and January 1959; the 1913 flood had the greater magnitude. The City of St. Marys experienced severe damage from the January 1959 flood. The sewage treatment plant was flooded, with damage estimated at \$100,000 (Reference 7). Buildings in the downtown section of St. Marys immediately adjacent to the river experienced flooding. The high school, located just upstream of the downtown area, also experienced flooding. Low-lying areas upstream of the present Greenville Road were inundated due to the low terrain at the confluence of Armstrong Creek and Koop Creek. Residents reported to the City of St. Marys Engineering Department that Armstrong Creek was flowing in the opposite direction from its normal flow as a result of a backwater effect from the St. Marys River. The Engineering Department stated that this phenomenon has occurred in other recent high-water events in St. Marys when the flow of the St. Marys River was significant.

Another problem affecting flooding in the St. Marys area during the 1913 and 1959 floods resulted from regulation of the level of Grand Lake St. Marys. This upland reservoir was formed in the early 1800's by levees across the Wabash River in the west and the St. Marys River in the east, for the purpose of supplying water to the Ohio and Erie Canal. During the 1913 and 1959 floods, there appeared to be danger from overtopping the western levee, so water was released into the St. Marys branch of the Ohio and Erie Canal. The additional water overtopped the canal within the St. Marys city limits, adding to flooding from the upstream reaches of the St. Marys River.

2.4 Flood Protection Measures

Nonstructural measures of flood protection used in Auglaize County to aid in the prevention of flood damage include land use regulations, adopted from the Code of Federal Regulations, that control building within areas that have a high risk of flooding.

A levee and floodwall are constructed around the new sewage disposal plant at Wapakoneta that protects the plant from the base flood. Also in

Wapakoneta, a concrete wall along the south bank of the Auglaize River between the Blackhoff Street bridge and the Harrison Street bridge offers some protection but does not protect the area from the 100-year event.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

The discharges for the Auglaize River and Quaker Run were established using Ohio Department of Natural Resources (ODNR) Bulletin No. 45 (Reference 8). Basin characteristics, such as drainage area and channel slope, were determined using topographic maps (Reference 9).

The profile of the January 1959 flood (Reference 10) was obtained from the ODNR, Division of Water, and used for the St. Marys River. No direct or indirect determination of the discharge of the January 1959 flood was made for the St. Marys River. The lack of a discharge measurement makes it difficult to definitively assess the recurrence interval of the 1959 event. Use of the current ODNR regional multiple regression equations (Reference 10) to estimate the 100-year discharge was not possible due to the 50-square-mile maximum drainage area limitation.

A comparison was made of basins, including the Auglaize River basin, which is near the St. Marys River, by calculating the ratio of the January 1959 flood discharge to the USGS stream gage log-Pearson Type III (Reference 11) estimate for the 100-year discharge. The comparison yielded ratio values close to 1, indicating that the January 1959 event has an approximate recurrence interval of 100 years at the stream-gage sites.

Accordingly, the January 1959 flood profile for the St. Marys River can be used for regulatory purposes as the 100-year flood event.

Peak discharge-drainage area relationships for the 100-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

| <u>FLOODING SOURCE AND LOCATION</u> | <u>DRAINAGE AREA (SQ. MILES)</u> | <u>PEAK DISCHARGE (CFS) 100-YEAR</u> |
|--|--------------------------------------|--|
| AUGLAIZE RIVER at the northern county boundary | 202 | 8,350 |
| just upstream of Sims Run | 190 | 8,000 |
| just upstream of Two Mile Creek | 158 | 7,000 |
| just upstream of State Route 197 | 148 | 6,850 |
| just upstream of Pusheta Creek | 113 | 5,600 |
| just upstream of Quaker Run | 104 | 5,250 |
| QUAKER RUN at mouth | 5.7 | 810 |

Elevations for floods of the selected recurrence intervals of Grand Lake St. Marys are shown in Table 2.

TABLE 2 - SUMMARY OF ELEVATIONS

| <u>FLOODING SOURCE AND LOCATION</u> | <u>PEAK ELEVATION (FEET NGVD) 100-YEAR</u> |
|--|--|
| GRAND LAKE ST. MARYS within community | 873.0 |

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Some cross-section data for the streams and overbank areas were obtained by field survey and from topographic maps (Reference 9). Bridges were surveyed to obtain elevation data and structural geometry. Other cross-section data were obtained from a hydraulic model that was developed by the COE for backwater computations on the Auglaize River.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

Water-surface profiles were developed for the Auglaize River and Quaker Run using the HEC-2 step-backwater computer program (Reference 12). The starting water-surface elevations for the Auglaize River and Quaker Run were obtained using normal depth calculations. The 100-year elevation of Grand Lake St. Marys was based on the "Survey Report for Flood Control-Grand Lake St. Marys" (Reference 13).

Roughness coefficients (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observation of the streams and floodplain areas. For the Auglaize River, the Manning's "n" values range from 0.03 to 0.055 for the channel sections and from 0.05 to 0.15 for the overbank areas. For Quaker Run, the "n" values range from 0.05 to 0.07 for the channel sections and from 0.05 to 0.09 for the overbank areas. For both streams, the contraction and expansion loss coefficients were 0.2 and 0.4, respectively.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the map and described in the exhibit labeled Elevation Reference Marks.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year

floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24000 with a contour interval of 5 feet (Reference 9).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map. On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, AH, AO, A99, V, and VE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary was delineated using the Flood Hazard Boundary Maps for Auglaize County, the City of St. Marys, and the Village of New Knoxville (References 1-3).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The floodways presented in this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 3, Floodway Data. The computed floodways are shown on the Flood Insurance Rate Map. In cases where the floodway and the 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION | | | |
|-----------------|-----------------------|--------------|-------------------------|---------------------------|------------------------------------|------------------------------|---------------------------|-----------------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NGVD) | WITHOUT FLOODWAY (FEET NGVD) | WITH FLOODWAY (FEET NGVD) | INCREASE (FEET) |
| AUGLAIZE RIVER | 77,915 | 415 | 2401 | 2.3 | 872.4 | 872.4 | 872.8 | 0.4 |
| | 81,520 | 169 | 1458 | 3.8 | 876.6 | 876.6 | 877.4 | 0.8 |
| | 84,840 | 158 | 1575 | 3.6 | 878.8 | 878.8 | 879.3 | 0.5 |
| | 86,530 | 186 | 2147 | 2.6 | 879.4 | 879.4 | 879.9 | 0.5 |
| | 87,955 | 305 | 1777 | 3.2 | 879.9 | 879.9 | 880.4 | 0.5 |
| | 90,500 | 95 | 854 | 6.2 | 882.5 | 882.5 | 883.0 | 0.5 |
| | 95,030 | 266 | 2212 | 2.4 | 886.1 | 886.1 | 886.8 | 0.7 |
| QUAKER RUN | | | | | | | | |
| | 2,180 ² | 42 | 217 | 3.7 | 885.9 | 885.9 | 886.3 | 0.4 |
| | 4,630 ² | 151 | 490 | 1.7 | 890.8 | 890.8 | 891.7 | 0.9 |

¹FEET ABOVE COUNTY BOUNDARY
²FEET ABOVE MOUTH

FEDERAL EMERGENCY MANAGEMENT AGENCY

**AUGLAIZE COUNTY, OH
AND INCORPORATED AREAS**

FLOODWAY DATA

AUGLAIZE RIVER--QUAKER RUN

TABLE 3

point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

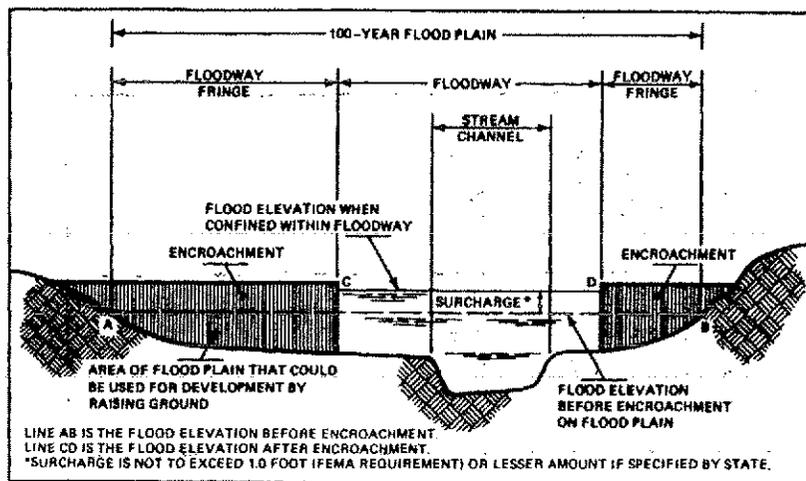


FIGURE 2 - Floodway Schematic

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current Flood Insurance Rate Map presents flooding information for the geographic area of Auglaize County. Previously, separate Flood Hazard Boundary Maps and/or Flood Insurance Rate Maps were prepared for each flood-prone incorporated community and the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 4, Community Map History.

7.0 OTHER STUDIES

The Flood Insurance Studies published for Shelby County and Logan County, Ohio (References 14 and 15) are in agreement with this study.

The Flood Insurance Studies in progress for Mercer County and Allen County, Ohio (References 16 and 17) are in agreement with this study.

This Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Maps for Auglaize County, the Cities of St. Marys and Wapakoneta, and the Villages of New Knoxville and Buckland, Ohio (References 1, 2, 18, 3, and 19).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 175 West Jackson Boulevard, 4th Floor, Chicago, Illinois 60604-2698.

9.0 REFERENCES AND BIBLIOGRAPHY

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2. ———, Federal Insurance Administration, Flood Hazard Boundary Map, City of St. Marys, Auglaize County, Ohio, June 1979.
3. ———, Federal Insurance Administration, Flood Hazard Boundary Map, Village of New Knoxville, Auglaize County, Ohio, October 1979.

| COMMUNITY NAME | INITIAL IDENTIFICATION | FLOOD HAZARD BOUNDARY MAP REVISIONS DATE | FIRM EFFECTIVE DATE | FIRM REVISIONS DATE |
|--------------------------|------------------------|--|---------------------|---------------------|
| BUCKLAND, VILLAGE OF | FEBRUARY 2, 1979 | | SEPTEMBER 6, 1989 | |
| NEW KNOXVILLE VILLAGE OF | OCTOBER 6, 1978 | | SEPTEMBER 6, 1989 | |
| ST. MARYS, CITY OF | MAY 7, 1974 | JULY 30, 1976 | SEPTEMBER 6, 1989 | |
| WAPAKONETA, CITY OF | FEBRUARY 15, 1974 | MAY 28, 1976 MAY 18, 1979 | SEPTEMBER 6, 1989 | |
| UNINCORPORATED AREAS | MAY 12, 1978 | | SEPTEMBER 6, 1989 | |

FEDERAL EMERGENCY MANAGEMENT AGENCY

**AUGLAIZE COUNTY, OH
AND INCORPORATED AREAS**

COMMUNITY MAP HISTORY

TABLE 4

4. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Ohio, Washington, D.C., February 1982.
5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Climates of the States, 1974.
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8. ———, Division of Water, Bulletin No. 45, Floods in Ohio, Magnitude and Frequency, E.E. Webber and W.P. Bartlett, May 1977.
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12. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Computer Program 723-X6-L202A, Davis, California, April 1984.
13. ———, Louisville District, Survey Report for Flood Control - Grand Lake St. Marys, August 1981.
14. Federal Emergency Management Agency, Flood Insurance Study, Shelby County, Unincorporated Areas, Ohio, September 1982.
15. ———, Flood Insurance Study, Logan County, Unincorporated Areas, Ohio, May 1985.
16. ———, Flood Insurance Study, Mercer County, Unincorporated Areas, Ohio, in progress.
17. ———, Flood Insurance Study, Allen County, Unincorporated Areas, Ohio, in progress.

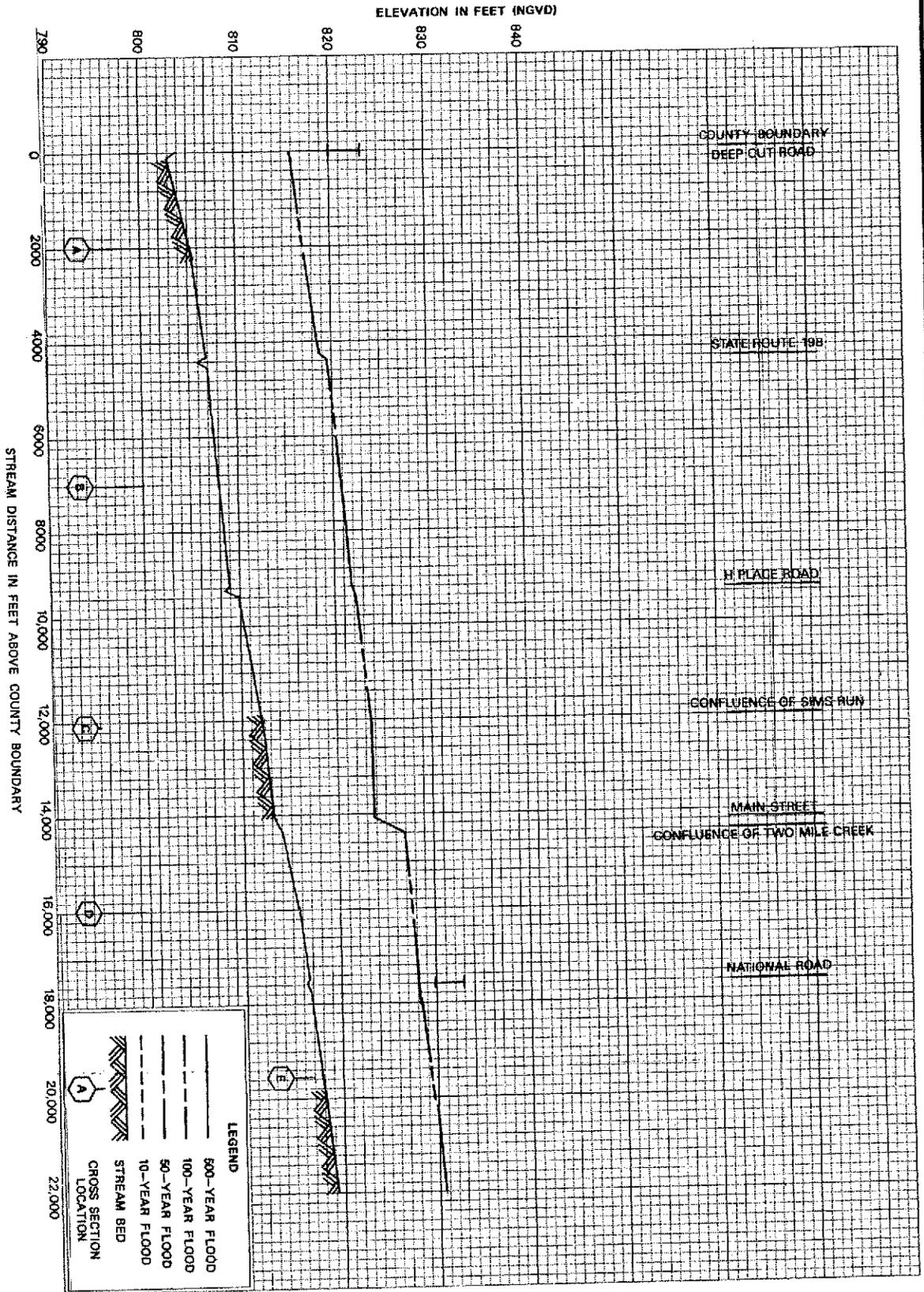
18. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Wapakoneta, Auglaize County, Ohio, May 1979.
19. _____, Federal Insurance Administration, Flood Hazard Boundary Map, Village of Buckland, Auglaize County, Ohio, February 1979.

ELEVATION REFERENCE MARKS

| <u>REFERENCE MARK</u> | <u>FLOOD INSURANCE RATE MAP PANEL</u> | <u>ELEVATION (FEET NGVD)</u> | <u>DESCRIPTION OF LOCATION</u> |
|---------------------------|---|----------------------------------|---|
| 1 | 0010 | 822.93 | top of northwest abutment of Deep Cut Road bridge over the Auglaize River |
| 2 | 0020 | 833.84 | northwest corner of northwest wingwall of National Road bridge over the Auglaize River |
| 3 | 0020 | 834.12 | top of southeast wingwall of Monroe Road bridge over the Auglaize River |
| 4 | 0020 | 843.52 | metal plate on southwest wingwall of County Route 190 bridge over the Auglaize River |
| 5 | 0020 | 855.15 | standard tablet stamped "84 MAT 1959 855" set in southeast corner of concrete base located in front of Buckland Coop, about 48 feet west of intersection of Main Street Road and Norfolk Southern Railway |
| 6 | 0080 | 896.60 | standard tablet stamped "90 MAT 1959 897" set in concrete headwall of culvert located 34 feet northeast of intersection of State Route 703 and Beach Line Road |
| 7 | 0080 | 886.96 | standard tablet stamped "88 MAT 1959 887" near south end of headwall of culvert located 32 feet southwest of intersection of State Route 703 and State Route 364 |
| 8 | 0085 | 865.06 | boat spike in power pole located on north side of Glynwood Road about 500 feet west of centerline of Glynwood Road bridge over the Auglaize River |
| 9 | 0105 | 886.06 | chiseled mark at corner of northwest abutment of Hamilton Street bridge over the Auglaize River |
| 10 | 0105 | 884.20 | chiseled square in northeast abutment of Blackhoof Street bridge over the Auglaize River |

ELEVATION REFERENCE MARKS

| <u>REFERENCE MARK</u> | <u>FLOOD INSURANCE RATE MAP PANEL</u> | <u>ELEVATION (FEET NGVD)</u> | <u>DESCRIPTION OF LOCATION</u> |
|-----------------------|---------------------------------------|------------------------------|---|
| 11 | 0105 | 883.77 | brass plate set in southeast abutment of Harrison Street bridge over the Auglaize River |
| 12 | 0105 | 894.51 | survey disk stamped "T 166 1954" set in top of concrete post located in southwest corner of intersection of Willipie Street and Mechanic Street, 22 feet south of south curb of Mechanic Street, 26.5 feet west of west curb of Willipie Street |
| 13 | 0105 | 892.86 | survey disk stamped "W 166 1954" set in top east end of north concrete abutment of CSX railroad bridge over the Auglaize River, 8.5 feet east of east rail |
| 14 | 0105 | 890.44 | chiseled square on top of northwest abutment of culvert for Quaker Run under Middle Street |



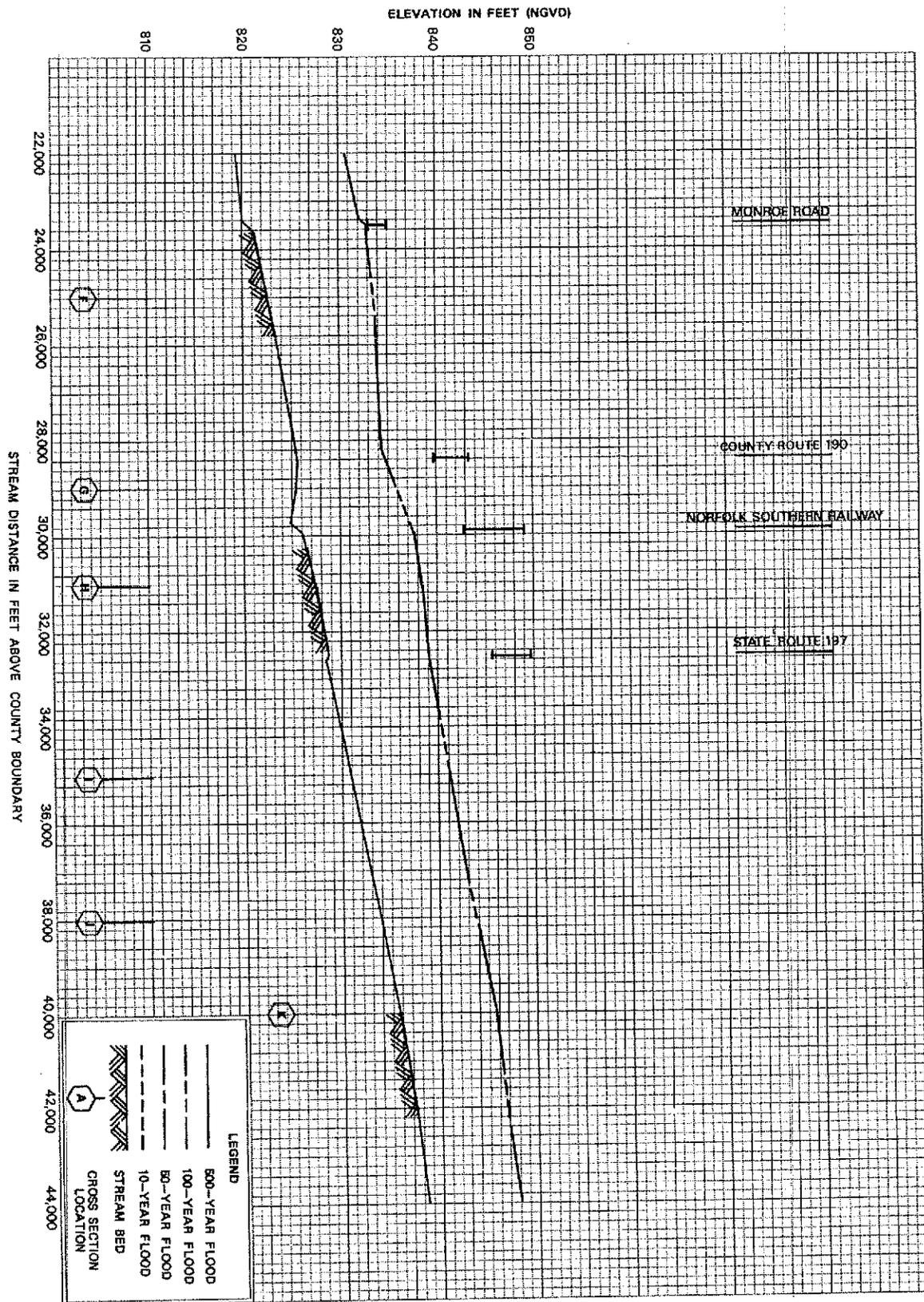
FEDERAL EMERGENCY MANAGEMENT AGENCY

**AUGLAIZE COUNTY, OH
AND INCORPORATED AREAS**

FLOOD PROFILES

AUGLAIZE RIVER

01P



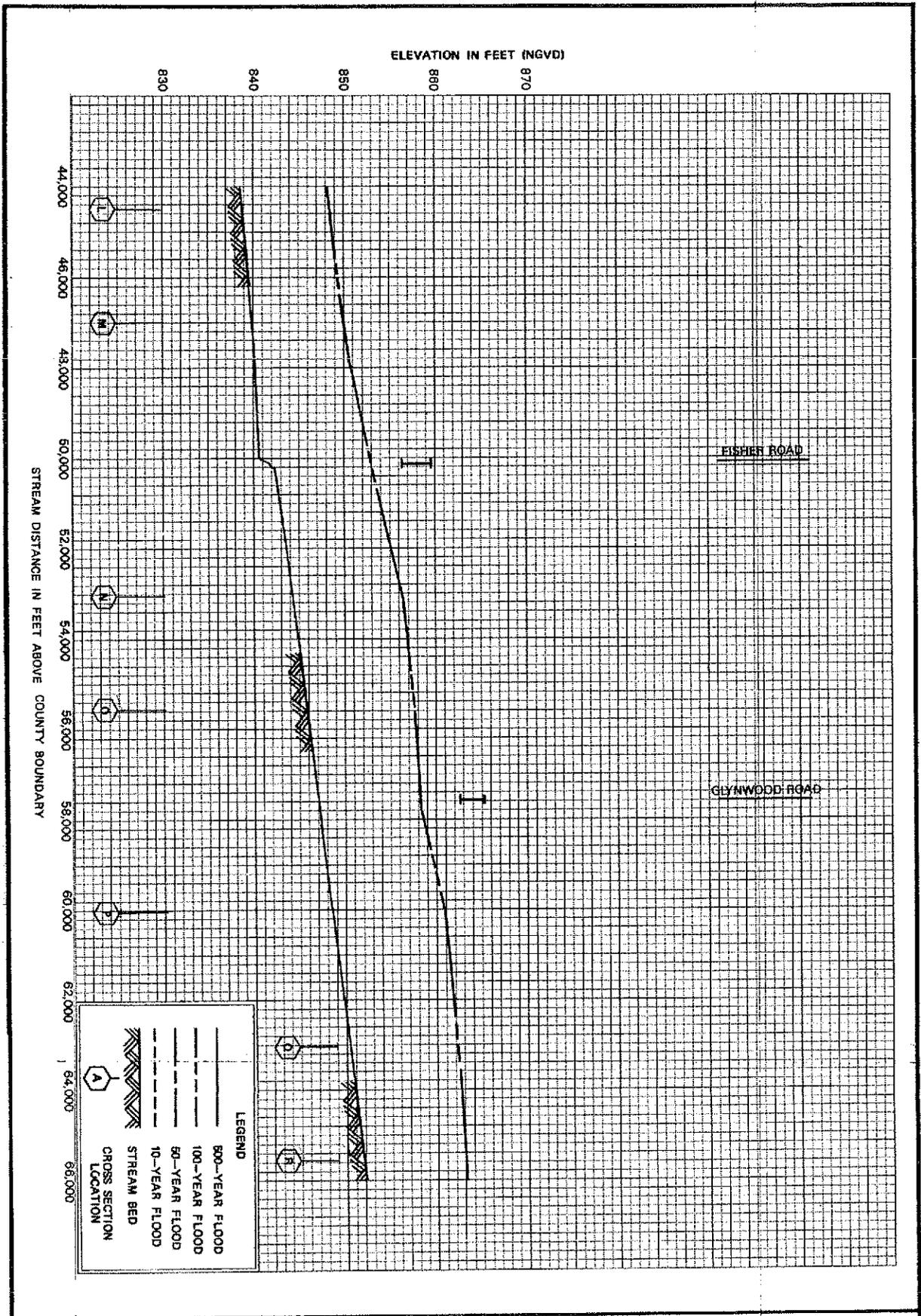
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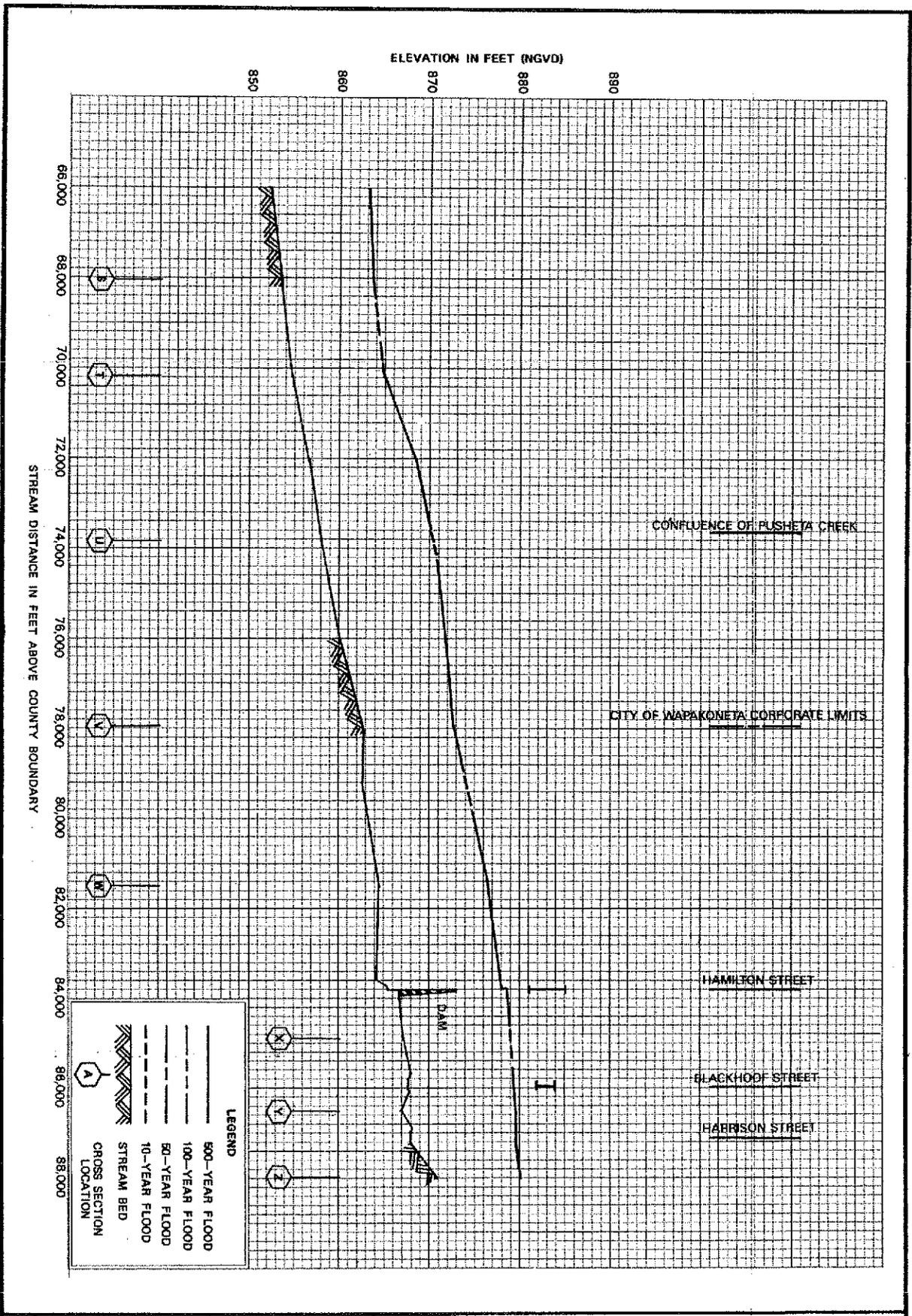
**AUGLAIZE COUNTY, OH
AND INCORPORATED AREAS**

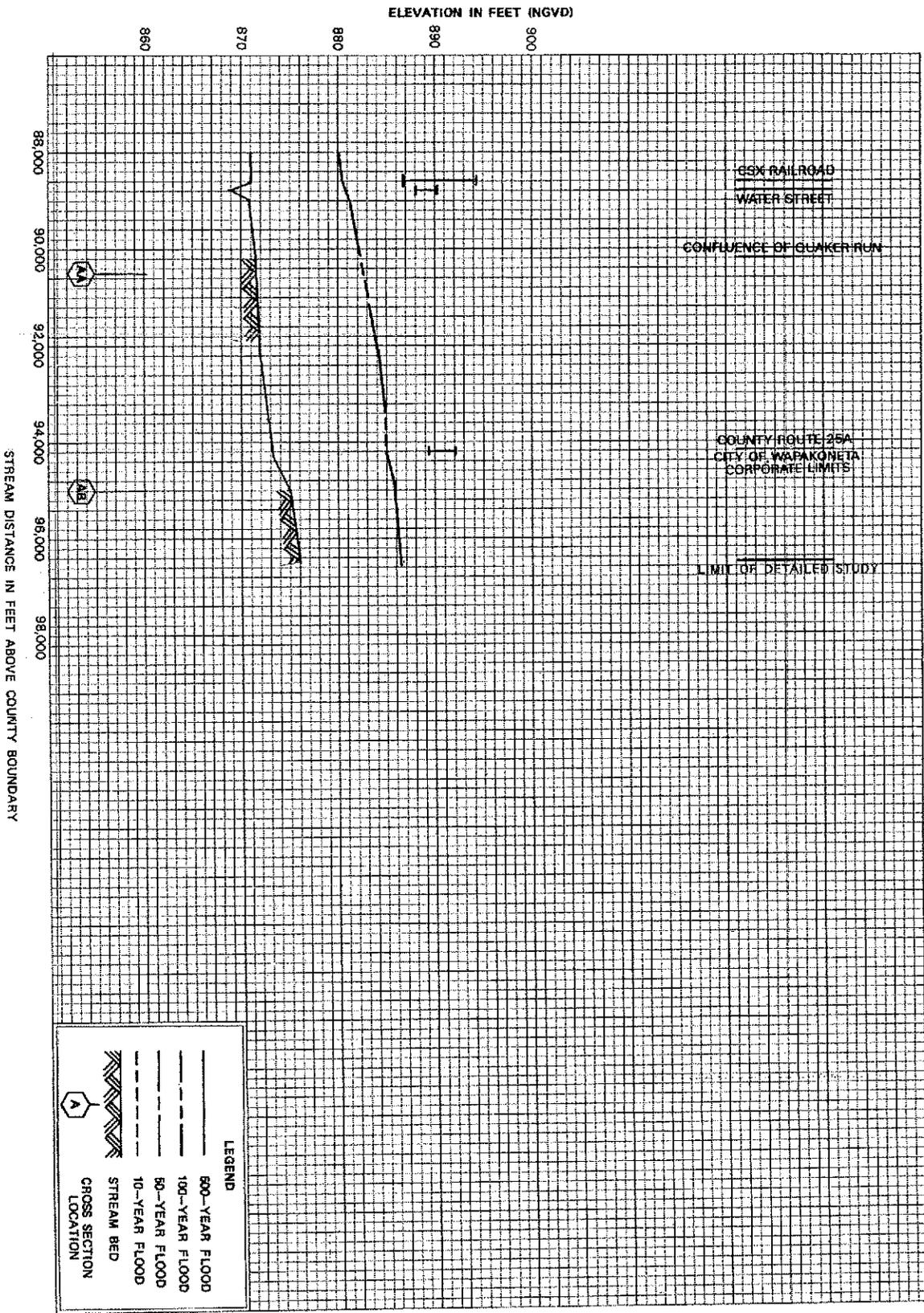
02P

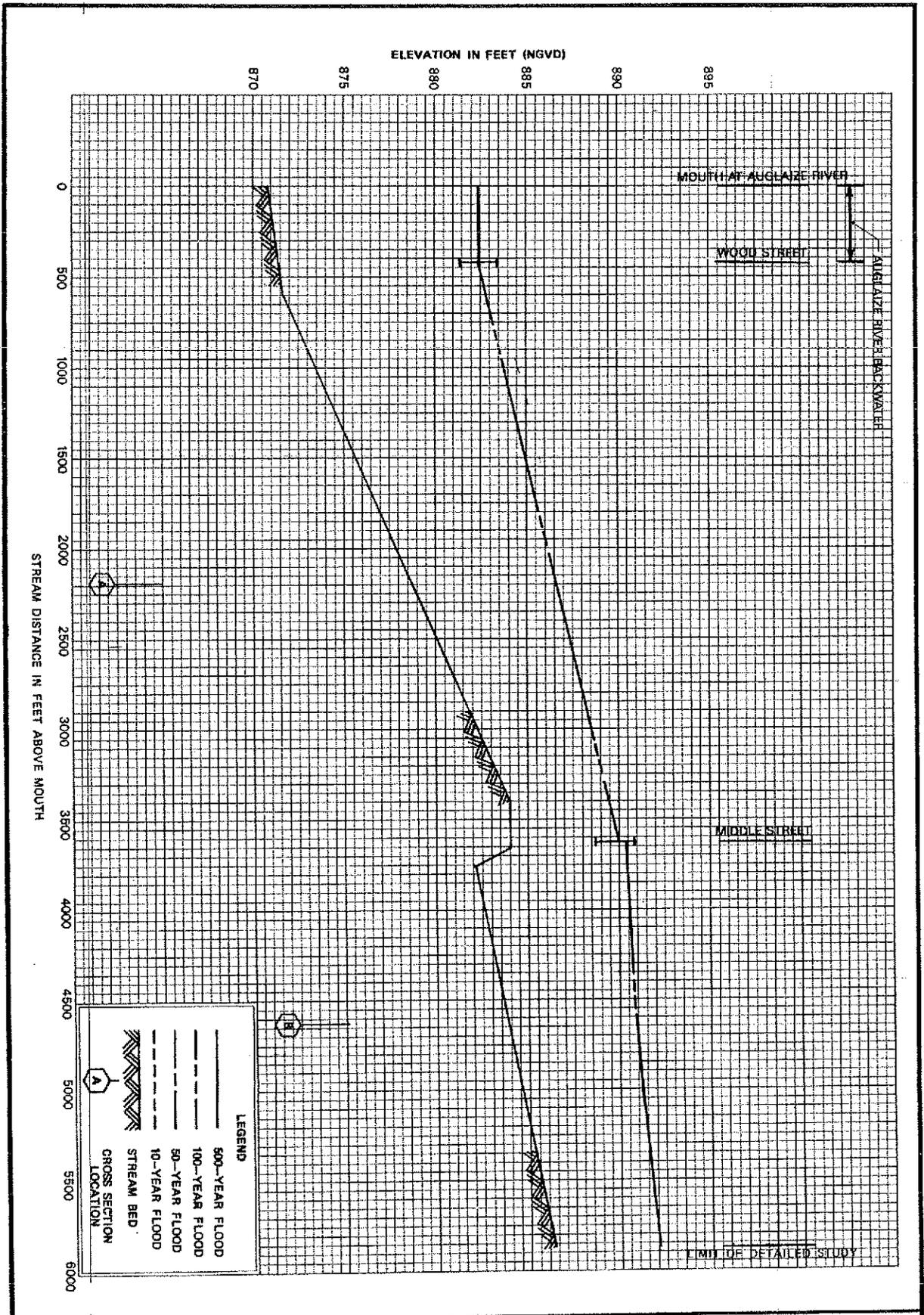
FLOOD PROFILES

AUGLAIZE RIVER









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Sent: Saturday, May 08, 2010 3:14 PM
To: William J. Cole
Subject: De Groot copy of FEMA documents provided by ODNR 2
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FLOOD INSURANCE STUDY



**MERCER COUNTY,
OHIO
UNINCORPORATED
AREAS**



Mercer County

REVISED:
JUNE 6, 2001



Federal Emergency Management Agency

COMMUNITY NUMBER - 390392

**NOTICE TO
FLOOD INSURANCE STUDY USERS**

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

FIS Effective Date: September 6, 1989

Revised FIS Dates: June 6, 2001

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| Flood Insurance Rate Map | |

FLOOD INSURANCE STUDY
MERCER COUNTY, UNINCORPORATED AREAS, OHIO

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates a previous FIS/Flood Insurance Rate Map (FIRM) for the Unincorporated Areas of Mercer County, Ohio. This information will be used by Mercer County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP). The information will also be used by local and regional planners to further promote sound land use and floodplain development.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

For the original September 6, 1989, FIS, the hydrologic and hydraulic analyses were prepared by the U.S. Army Corps of Engineers (USACE), Louisville District for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-86-E-2226, project No. 15. That work was completed in May 1987.

For this revision, the hydrologic and hydraulic analyses for Buck Creek were prepared by Woodward-Clyde Federal Services for FEMA, under Contract No. EMW-95-C-4678, Task Order 112. This work was completed in March 23, 1998.

Planimetric base map files were provided in digital format by the Mercer County Auditor's Office, 101 North Main Street, Room 105, Celina, Ohio 45822. These files were compiled from county parcel maps. Additional information may have been added in and around the floodplains from the previously compiled FIS for the Unincorporated Areas of Mercer County, Ohio (FEMA, September 6, 1989).

The digital FIRMs were produced using Universal Transverse Mercator coordinates referenced to the North American Datum of 1927 and the Clarke 1866 spheroid.

1.3 Coordination

The purpose of an initial Consultation Coordination Officer's (CCO) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study.

For the September 6, 1989, FIS, an initial CCO meeting was held in December of 1985, and a final CCO meeting was held on September 27, 1988. Both of these meetings were attended by representatives of the USACE, the county, and FEMA.

For this revision, the county was notified by FEMA in a letter dated July 22, 1998, that its FIS would be revised using the analyses prepared by Woodward-Clyde Federal Services.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the unincorporated areas of Mercer County, Ohio. The area of study is shown on the Vicinity Map (Figure 1).

For the September 6, 1989, FIS, the Wabash River and Beaver Creek were studied by detailed methods.

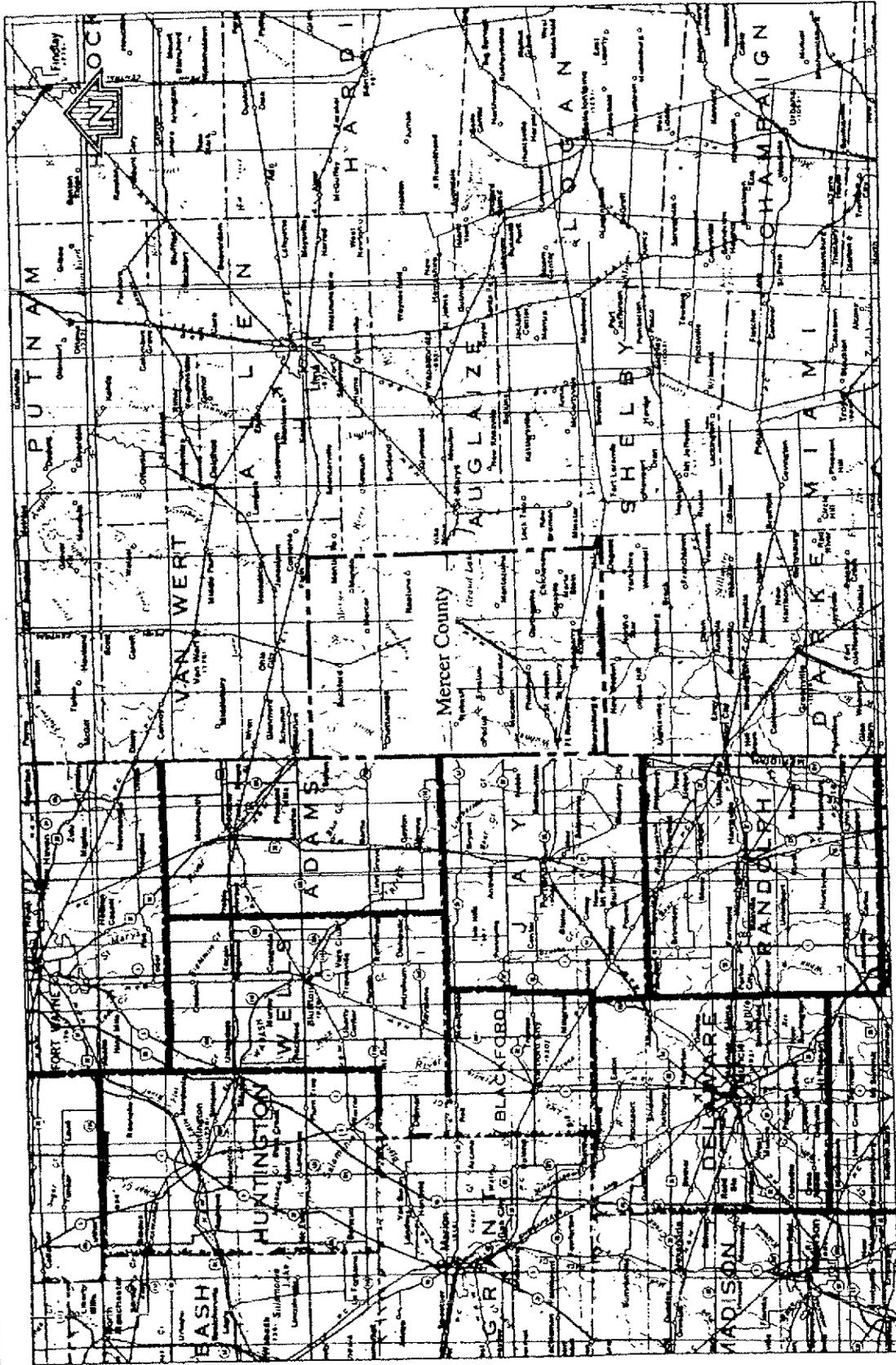
For this revision, Buck Creek was studied by detailed methods.

Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2). The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

All or portions of the following streams were studied by approximate methods: St. Mary's River, Dennison ditch, Twelvemile Creek, Eightmile Creek, Big Black Creek, Little Black Creek, Duck Creek, Wabash River, Little Beaver Creek, Little Bear Creek, Coldwater Creek, Burntwood Creek, Montezuma Creek, Monroe Creek, Chickasaw Creek, Little Chickasaw Creek, Stony Creek, Fort Creek, and Threemile Creek. Approximate analyses were used to study those areas having low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the county.

2.2 Community Description

Mercer County occupies about 444 square miles in west-central Ohio and is bordered by Darke County, on the south; Auglaize County on the east; Van Wert County on the north and Jay and Adams Counties, Indiana on the west. The City



APPROXIMATE SCALE



FEDERAL EMERGENCY MANAGEMENT AGENCY

MERCER COUNTY, OH
(UNINCORPORATED AREAS)

VICINITY MAP

FIGURE 1

of Celina, the county seat, is in the east-central part of the county. Mercer County is served by U.S. Routes 127 and 23, State Routes 119, 219, and 707, CONRAIL, and the Norfolk Southern Railway. The 1998 population of Mercer County was reported to be 41,198 (U.S. Census Bureau 1998).

Of the total annual precipitation, about 20 inches usually falls in April through September, the growing season for most crops. In 2 years out of 10, the rainfall from April through September is less than 17 inches. The heaviest on-day rainfall during the period of record was 4.43 inches at Celina on September 17, 1969. Thunderstorms occur on about 41 days each year, 20 of which are in the summer. Average seasonal snowfall is 36 inches. The greatest snow depth at any one time during the period of record was 14 inches. On the average, 22 days have at least an inch of snow on the ground, but the number varies greatly from year to year.

Mercer County is part of two continental watersheds. The Ohio-Erie Divide crosses the county in a general east-west direction and is partly oriented to the Wabash moraine through its central extension in the county. North of the divide, the county is mostly drained into Lake Erie by the St. Mary's River and its tributaries. A few acres in northeastern Mercer County are drained by the Little Auglaize River, which flows eventually to Lake Erie. South of the Ohio-Erie Divide, the major part of the county is drained by the Wabash River and its tributaries, which flow to the Ohio River. A few acres in southeastern Mercer County are drained by Mile Creek, which flows eastward out of the county to the Ohio River.

2.3 Principal Flood Problems

Flood problems in Mercer County are due primarily to the overflow of Beaver Creek and Grand Lake St. Marys (USACE August 1981). Significant problem areas are on the south shore of Grand Lake St. Marys and along Beaver Creek, the western outlet channel of the lake. Flooding on the Grand Lake St. Marys shore is caused by the ability of the 10.6 mile long westerly outlet channel to discharge sufficient flows to keep pace with inflow to the lake during peak periods. The effects of wind setup and wave runoff on low-lying, developed areas also contribute to the problem.

Flood problems from Beaver Creek are caused by a combination of a limited flood control capability of Grand Lake St. Marys, poor surface drainage, low stream gradient, constrictions to flow, and high stream stages for a long period of time that cause inadequate outlet conditions for numerous artificial agricultural drains.

2.4 Flood Protection Measures

Grand Lake St. Marys is a manmade lake, two-thirds of which is in Mercer County. The lake was created by dams constructed at each end to provide water for the Ohio-Erie Canal system. It drains to Lake Erie from the east and to the Ohio River from the west. No measurable protection from major floods such as the 100-year event is provided by this facility.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency and peak elevation-frequency relationships for each flooding source studied in detail affecting the community.

For the September 6, 1989, FIS, natural frequency-discharge values for Beaver Creek, without Grand Lake St. Marys outflows, were based on analyses of data from the U.S. Geological Survey (USGS) gage station of Greenville Creek near the City of Bradford. Analyses of additional gage stations with similar basin characteristics were compared to ensure the accuracy of regionalized values. Frequency-discharge values were then adjusted to include Grand Lake St. Marys frequency outflows based on historical lake records and present lake regulation to obtain the final values. Frequency-discharge values for the Wabash River were derived from an analysis based on the USGS gage station on the Wabash River near the City of New Corydon.

A frequency-discharge versus drainage area relationship was developed using data from those gages and guidelines contained in Bulletin No. 17B (U.S. Department of the Interior, March 1982). Determination of the final discharge versus drainage area relationship considered omission of low and high outliers, weighting with the generalized skew, and historical adjustment where possible.

For this revision, Buck Creek was studied in detail using the Natural Resources Conservation Service or NRCS, (formerly the Soil Conservation Service, or SCS) TR-55 methodology and the USACE HEC-1 computer model were used to develop peak discharges for the Buck Creek watershed (USACE, April 1984). The discharges were determined for the 10-, 50-, 100-, and 500-year 24-hour storms. The rainfall amounts for the 10-, 50-, 100-year storms were taken from

the NRCS Technical Paper No. 40 (TP-40). The 500-year rainfall was extrapolated from a plot of the other three events. The rainfall distribution was Type II and an antecedent moisture condition II (AMC II) were used. The drainage area for Buck Creek was estimated to be 1.1 square miles.

Aerial photographs and additional topographic mapping were obtained from Kucera International Inc., a photogrammetry firm located in Willoughby, Ohio. For purposes of this study and consistency with previously used aerial mapping, Woodward-Clyde Federal Services contracted with Kucera to obtain a digital 2-foot contour topographic strip map for the length of Buck Creek at a scale of 1 inch equals 100 feet (Kucera International Inc. April 1995).

The runoff curve numbers were determined using the land use and soil information and were either 83 or 84. The NRCS Technical Release No. 55 (TR-55) Urban Hydrology for Small Watersheds (NRCS, 1986) was used to calculate the times of concentration for each of the sub-areas. The flow paths used to calculate the times of concentration are shown on the drainage map.

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

| <u>FLOODING SOURCE AND LOCATION</u> | <u>DRAINAGE AREA (sq. miles)</u> | <u>PEAK DISCHARGES (cfs)</u> | | | |
|---|--------------------------------------|------------------------------|----------------|-----------------|-----------------|
| | | <u>10-YEAR</u> | <u>50-YEAR</u> | <u>100-YEAR</u> | <u>500-YEAR</u> |
| WABASH RIVER At 235 East Road | 262.0 | * | * | 1,000 | * |
| BEAVER CREEK At mouth | 125.0 | * | * | 5,850 | * |
| BUCK CREEK At mouth | 1.1 | 250 | 336 | 449 | 702 |

*Data not available

The stillwater elevation has been determined for the 100-year flood Grand Lake St. Marys which was studied by detailed methods. A summary of the stillwater Elevations is presented in Table 2, "Summary of Stillwater Elevations."

TABLE 2 - SUMMARY OF STILLWATER ELEVATIONS

| <u>FLOODING SOURCE AND LOCATION</u> | <u>PEAK DISCHARGES (cfs)</u> | | | |
|--|------------------------------|----------------|-----------------|-----------------|
| | <u>10- YEAR</u> | <u>50-YEAR</u> | <u>100-YEAR</u> | <u>500 YEAR</u> |
| GRAND LAKE SAINT MARYS Entire shoreline | * | * | 872.9 | * |

*Data not available

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Cross sections for the flooding sources studied by detailed methods were obtained from field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

Buck Creek cross sections for the below bank portion of the channel were field surveyed and the over bank portion was obtained from the Kucera mapping.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, April 1984).

Roughness coefficients (Manning's "n") were determined by field inspection and considered such factors as type and amount of vegetation, channel configuration, and water depth. High-water marks from the 1959 flood on Beaver Creek were reproduced in order to verify the roughness values for that stream. Roughness coefficients averaged 0.04 for the channel and 0.06 for the overbank areas.

Roughness factors (Manning's "n") used in the hydraulic computations for Buck Creek were based on field inspection, a review of field photographs taken in 1996 and the 1995 aerial photographs from Kucera. The values ranged from 0.06 for the channel to 0.1 for the overbank area in the upstream rural areas and from 0.030 for the channel to 0.045 for the overbank area within the developed areas of the village

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD29). Elevation reference marks (ERMs) used in this study, and their descriptions, are shown on the FIRM. ERMs shown on the FIRM represent those used during the preparation of this and previous FISs. The elevations associated with each ERM were obtained and/or developed during FIS production to establish vertical control for determination of flood elevations and floodplain boundaries shown on the FIRM. Users should be aware that these ERM elevations may have changed since the publication of this FIS. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NGVD29. Structure and ground elevations in the community must, therefore, be referenced to NGVD29. It is important to note that adjacent communities may be referenced to NAVD88. This may result in differences in base flood elevations across the corporate limits between the communities.

For more information on NAVD of 1988, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address <http://www.ngs.noaa.gov>).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 100-year floodplain data, which may include a combination of the following: 10-, 50-, 100-, and 500-year flood elevations; delineations of the 100-year and 500-year floodplains; and 100-year floodway. This information is presented on the FIRM and in many components of the

FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the flooding sources studied in detail, the 100- and 500-year floodplains have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated.

In the September 6, 1989, FIS, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1:24000 with a contour interval of 5 feet (USGS, 1960)

For this revision, the boundaries were interpolated between cross sections, using digital topographic maps at a scale of 1:100 feet with a contour interval of 2 feet (Kucera International Inc., April 1995).

For the streams studied by approximate methods, the 100-year floodplain boundaries were taken from the previously printed FIS/FIRM for Mercer County Ohio (FEMA, September 6, 1989). For the streams studied by approximate methods, only the 100-year floodplain boundary is shown on the FIRM (Exhibit 2).

The 100- and 500-year floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For streams studied by approximate methods, only the 100-year floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a

floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 3). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Portions of the floodway for Buck Creek extend beyond the corporate limits.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 3, "Floodway Data." To reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2, "Floodway Schematic".

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD) | | | |
|---|--------------------|--------------------|----------------------------|---------------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Wabash River A B C D | 0.00 ¹ | 1,811 | 6,803 | 1.4 | 850.8 | 850.8 | 851.8 | 1.0 |
| | 1.03 ¹ | 1,700 | 5,242 | 1.8 | 852.5 | 852.5 | 853.3 | 0.8 |
| | 2.05 ¹ | 1,360 | 5,898 | 1.6 | 854.1 | 854.1 | 854.8 | 0.7 |
| | 2.69 ¹ | 1,553 | 8,347 | 1.1 | 854.8 | 854.8 | 855.5 | 0.7 |
| Beaver Creek E F G H I J K L M N O | 3.07 ¹ | 256 | 1,831 | 3.2 | 855.2 | 855.2 | 855.8 | 0.6 |
| | 4.21 ¹ | 727 | 4,994 | 1.1 | 857.8 | 857.8 | 858.7 | 0.9 |
| | 5.40 ¹ | 725 | 5,859 | 0.8 | 858.5 | 858.5 | 859.4 | 0.9 |
| | 6.50 ¹ | 1,106 | 6,935 | 0.6 | 859.0 | 859.0 | 859.9 | 0.9 |
| | 7.48 ¹ | 654 | 3,942 | 0.7 | 859.5 | 859.5 | 860.4 | 0.9 |
| | 8.63 ¹ | 666 | 4,493 | 0.6 | 860.1 | 860.1 | 861.0 | 0.9 |
| | 9.20 ¹ | 921 | 5,913 | 0.4 | 860.3 | 860.3 | 861.2 | 0.9 |
| | 10.24 ¹ | 578 | 5,914 | 0.6 | 860.8 | 860.8 | 861.7 | 0.9 |
| | 11.32 ¹ | 842 | 5,989 | 0.4 | 861.4 | 861.4 | 862.3 | 0.9 |
| | 12.44 ¹ | 1,059 ³ | 6,739 | 0.1 | 861.5 | 861.5 | 862.4 | 0.9 |
| | 13.16 ¹ | 93 ³ | 853 | 2.0 | 861.6 | 861.6 | 862.6 | 1.0 |
| Buck Creek A B C | 4.955 ² | 12 | 49 | 4.9 | 938.0 | 938.0 | 938.2 | 0.2 |
| | 6.576 ² | 27 | 94 | 1.4 | 950.7 | 950.7 | 950.7 | 0.0 |
| | 6.717 ² | 39 | 39 | 3.5 | 950.7 | 950.7 | 950.7 | 0.0 |

¹Miles above county boundary

²Feet above confluence with Wabash River

³This width extends within area not included

FEDERAL EMERGENCY MANAGEMENT AGENCY

MERCER COUNTY, OH
(UNINCORPORATED AREAS)

FLOODWAY DATA

WABASH RIVER - BEAVER CREEK - BUCK CREEK

TABLE 3

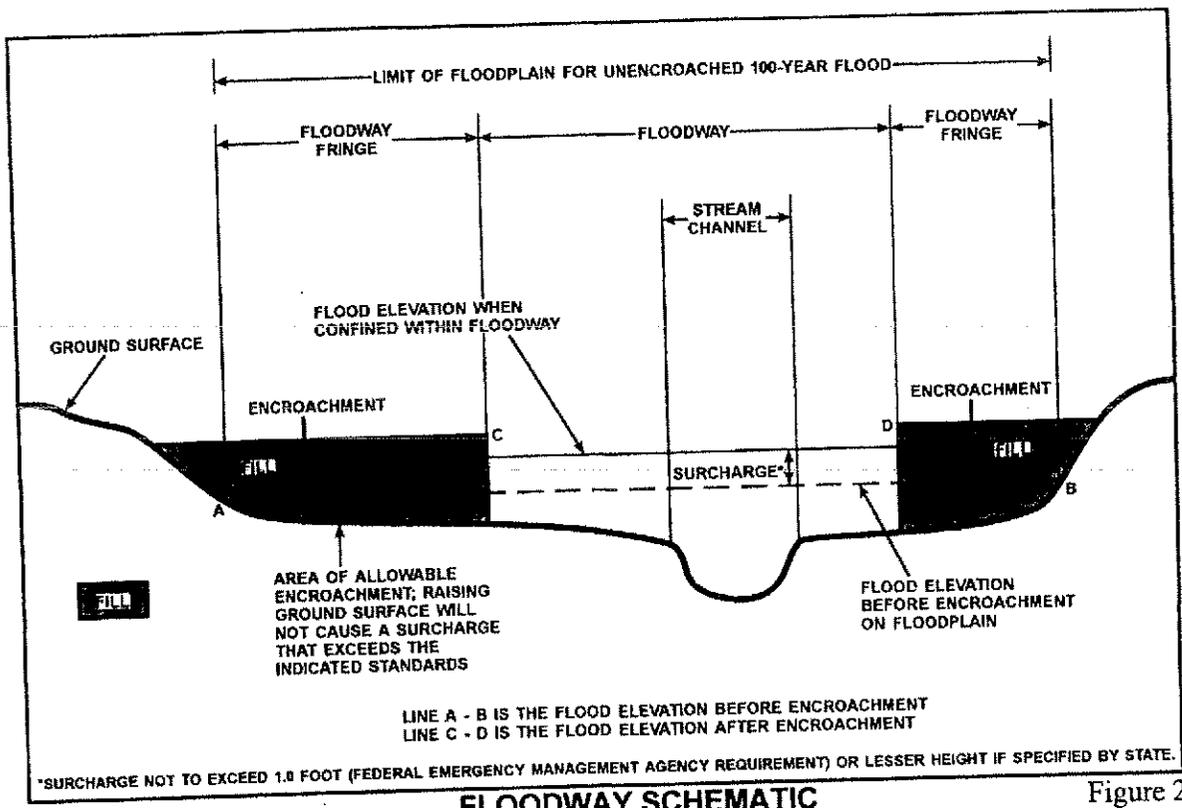


Figure 2

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, and areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year floodplains. On selected FIRM panels, floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

7.0 OTHER STUDIES

Because it is based on more up-to-date analyses, this FIS supersedes the previously printed FIS for the Unincorporated Areas of Mercer County, Ohio (FEMA, September 6, 1989).

FISs have been prepared for the following communities: Auglaize County, Ohio; Darke County, Ohio; and Adams County, Indiana. FIRMs only have been prepared for the following communities: the City of Celina, the Villages of Fort Recovery and Rockford and the Unincorporated Areas of Van Wert County, Ohio.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

9.0 BIBLIOGRAPHY AND REFERENCES

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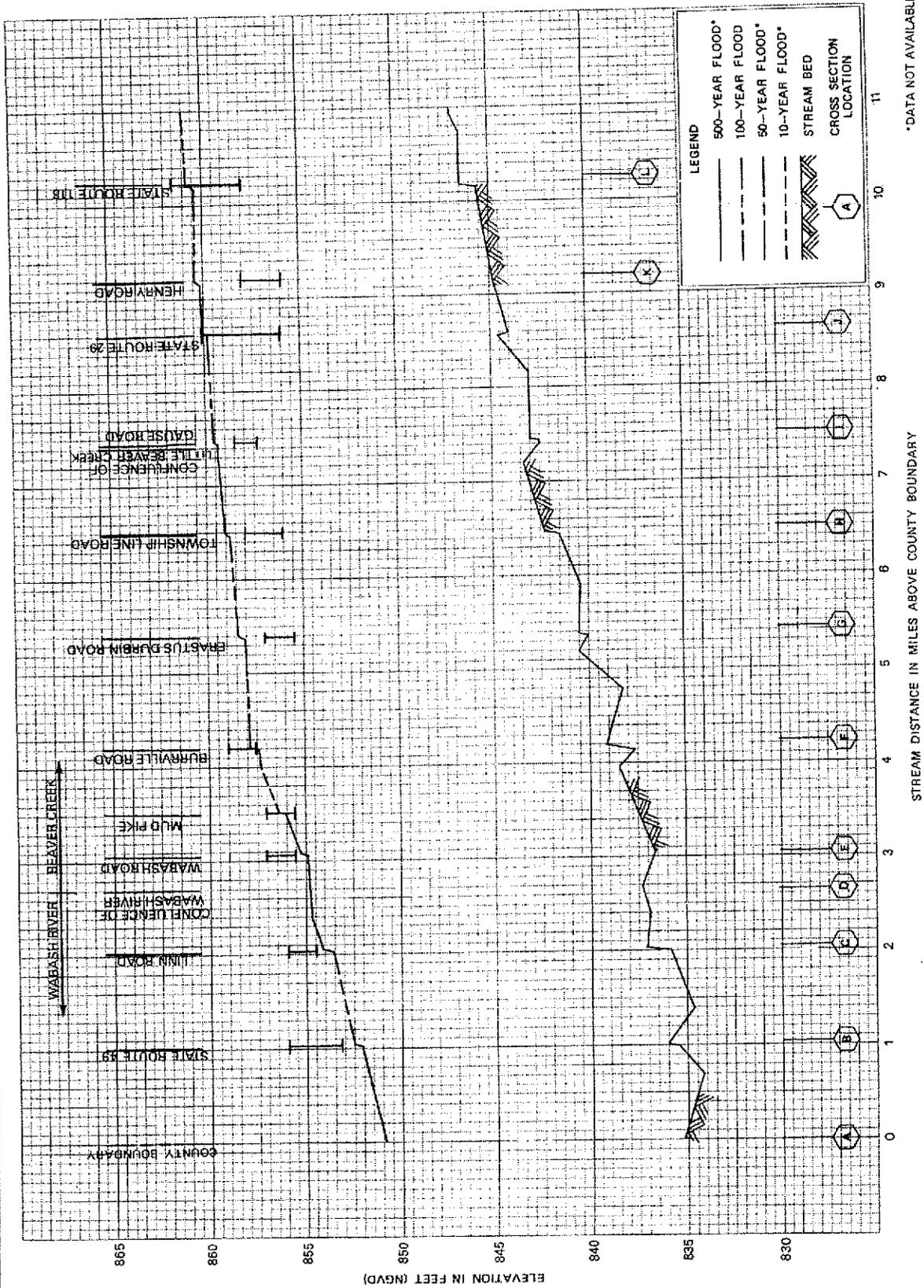
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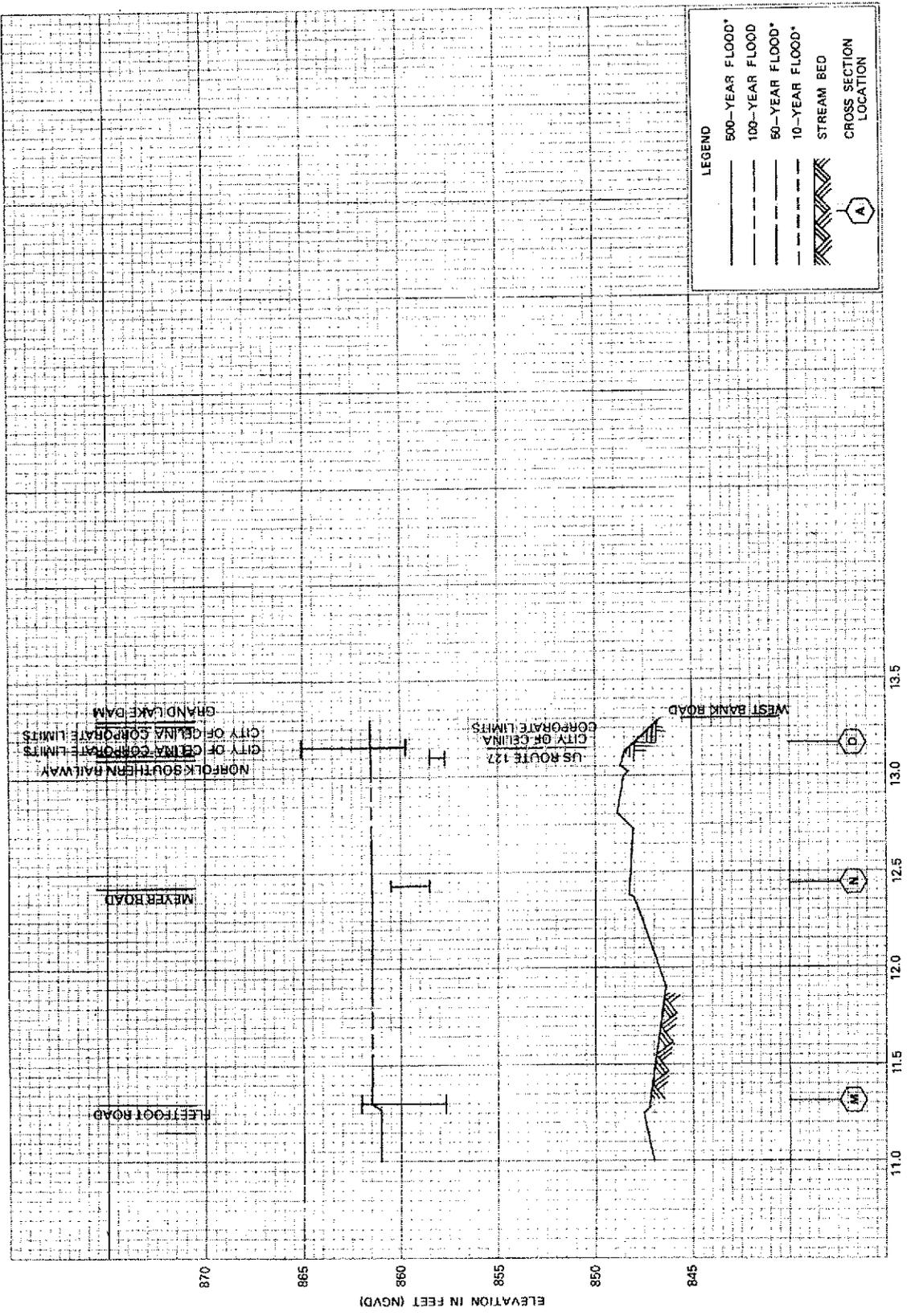
U.S. Geological Survey. (Celina, Ohio. 1960; Erastus, Ohio. 1960; New Corydon, Indiana-Ohio. 1994: Scale 1:2400. Contour Interval 10 feet. Fort Recovery, Ohio-Indiana. 1994) 7.5 - Minute Series Topographic Maps. Scale 1:24000. Contour Interval 5 feet.



FLOOD PROFILES
BEAVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
MERCER COUNTY, OH
(UNINCORPORATED AREAS)

02P



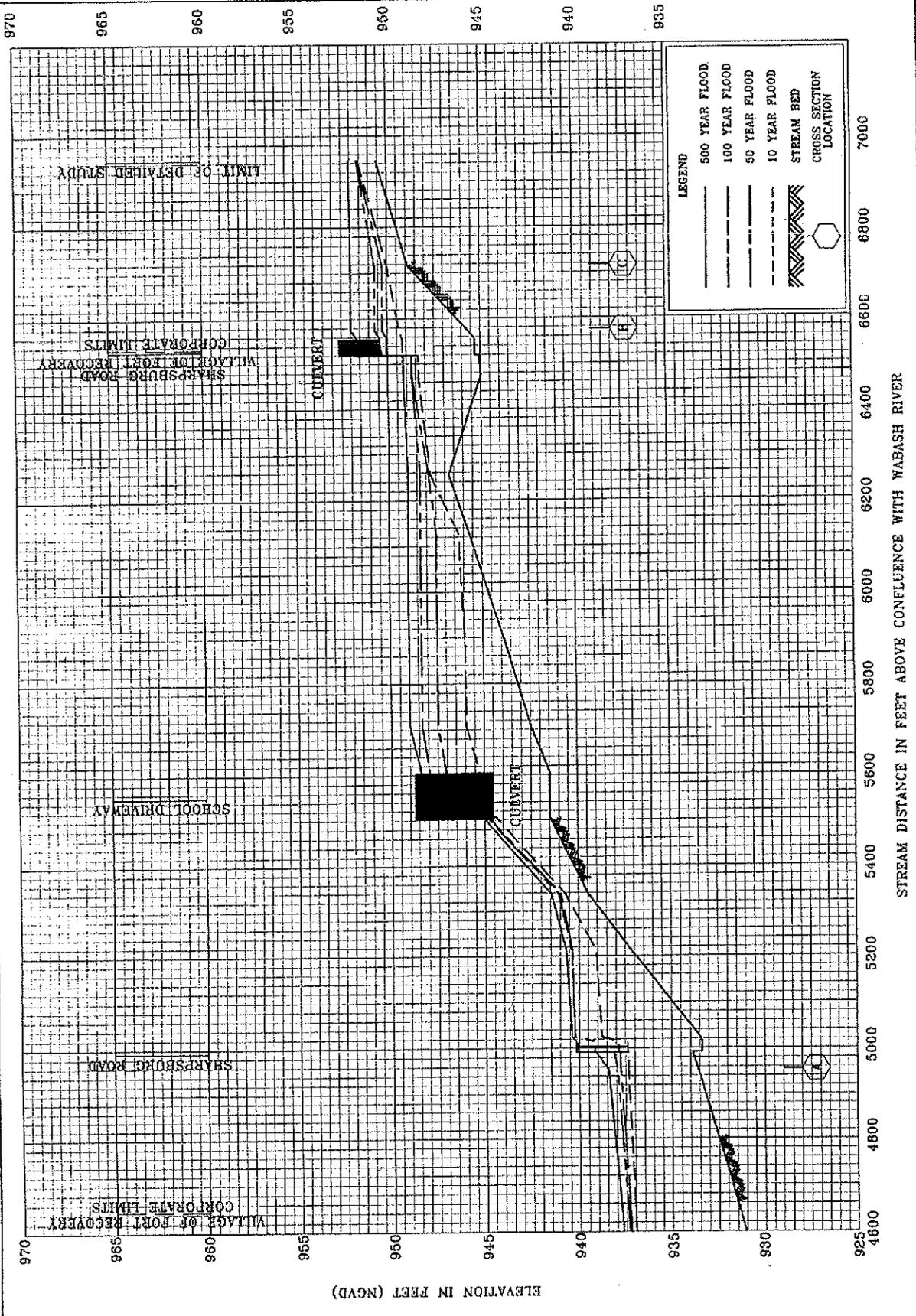
*DATA NOT AVAILABLE

STREAM DISTANCE IN MILES ABOVE COUNTY BOUNDARY

FLOOD PROFILES
BUCK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
MERCER COUNTY, OH
(UNINCORPORATED AREAS)

03P



LEGEND

- 500 YEAR FLOOD
- - - 100 YEAR FLOOD
- · - · 50 YEAR FLOOD
- · · · 10 YEAR FLOOD
- ▨ STREAM BED
- CROSS SECTION LOCATION

ELEVATION IN FEET (NGVD)

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WABASH RIVER

970
965
960
955
950
945
940
935

4600 4800 5000 5200 5400 5600 5800 6000 6200 6400 6600 7000

VILLAGE OF FORT RECOVERY
CORPORATE LIMITS

SHARPSBURG ROAD

SCHOOL DRIVEWAY

SHARPSBURG ROAD
CORPORATE LIMITS

LIMIT OF DETAILED STUDY

CUIVERT

CUIVERT

A
B

FLOOD INSURANCE STUDY



VILLAGE OF
FORT RECOVERY,
OHIO
MERCER COUNTY



JUNE 6, 2001



Federal Emergency Management Agency

COMMUNITY NUMBER - 390395

**NOTICE TO
FLOOD INSURANCE STUDY USERS**

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

FIS Effective Date: May 1, 1987 (Flood Insurance Rate Map only)

Revised FIS Dates: June 6, 2001

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Buck Creek

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FLOOD INSURANCE STUDY
VILLAGE OF FORT RECOVERY, MERCER COUNTY, OHIO

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates a previous Flood Insurance Rate Map (FIRM) for the Village of Fort Recovery, Mercer County, Ohio. This information will be used by the Village of Fort Recovery to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP). The information will also be used by local and regional planners to further promote sound land use and floodplain development.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

For this revision, the hydrologic and hydraulic analyses for Buck Creek were prepared by Woodward-Clyde Federal Services for FEMA, under Contract No. EMW-95-C-4678, Task Order 112. This work was completed in March 1998.

Planimetric base map files were provided in digital format by the Mercer County Auditor's Office, 101 North Main Street, Room 105, Celina, Ohio 45822. These files were compiled from county parcel maps. Additional information may have been derived from other sources.

The coordinate system used for the production of the digital FIRM is Universal Transverse Mercator referenced to the North American Datum of 1927 and the Clarke 1866 spheroid.

1.3 Coordination

The purpose of an initial Consultation Coordination Officer's (CCO) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study.

For this revision, the community was notified by FEMA in a letter dated July 22, 1998, that its FIS would be revised using the analyses prepared by Woodward-Clyde Federal Services. A final CCO meeting was held on December 6, 1999, and was attended by representatives of the Village of Fort Recovery, the State of Ohio, and FEMA.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the incorporated area of the Village of Fort Recovery, Mercer County, Ohio.

For this revision, Buck Creek was studied by detailed methods, from its confluence with the Wabash River to a point approximately 2,300 feet upstream of Center Road.

Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2). The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

All or portions of the Wabash River and Buck Creek were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the Village of Fort Recovery.

2.2 Community Description

The Village of Fort Recovery is a small rural community located in the southwestern corner of Mercer County, Ohio, with Darke County, Ohio, located 5 miles to the south, the Ohio – Indiana (Jay County) state line located within a mile to the west, the Village of St. Henry 7 miles to the east, and Lima, Ohio, approximately 40 miles to the northeast. Fort Recovery covers approximately 1.5 square miles and has a population of 1,421 as reported in 1998 (U.S. Census Bureau, 1998). The surrounding area is mainly agricultural usage.

Fort Recovery is a part of the Wabash River watershed area. One of the Wabash River tributaries, Buck Creek, meanders directly through town from the southeast corner to the Wabash River on the northwest corner of the Village. The headwaters of the Wabash River begin approximately 5 miles south of the Village. The river winds for 13 miles of riverbed prior to getting to the east edge of the Village. From Fort Recovery, the Wabash River flows through Indiana and on to the Ohio River.

2.3 Principal Flood Problems

Several flood events along Buck Creek have caused damages to property within the Village in recent years. Funds from two Federal Disaster Declarations (1989 and 1995) and a separate State Declaration (1993) have been spent for the Village.

Due to the frequency of these damages, the Region V Mitigation Division requested that data be developed for Buck Creek to implement a Hazard Mitigation Plan.

The need for a mitigation plan is demonstrated by the damages caused by moderate to heavy rainfall events. The storm of April 26, 1989, involved four inches of rain which fell in 30 minutes and caused content and structural damage to 77 homes, several trailers, several apartment buildings, a furniture store, the Village fire station, and a number of fuel storage tanks. A regional flood impacted both Buck Creek and the Wabash River watersheds after six inches fell over the Fort Recovery area on August 7 and 8, 1995 (peaking on August 8, 1995). The 1995 event caused structural damage to 23 homes, 6 businesses, and the Village fire station while also causing major contents damages to 35 basements and minor content damages to 60 basements.

2.4 Flood Protection Measures

There are no flood protection measures existing at this time that affect flooding along the Wabash River and Buck Creek in the Village of Fort Recovery.

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding source studied in detail affecting the community.

The Natural Resources Conservation Service or NRCS, (formerly the Soil Conservation Service or SCS) TR-55 methodology (U.S. Department of Agriculture [USDA], 1986) and the U.S. Army Corps of Engineers (USACE) HEC-1 computer model (USACE, May 1991, HEC-1) were used to develop peak discharges for the Buck Creek watershed. The discharges were determined for the 10-, 50-, 100-, and 500-year 24-hour storms. The rainfall amounts for the 10-, 50-, and 100-year storms were taken from the NRCS Technical Paper No. 40

(TP-40) (USDA, 1963). The 500-year rainfall was extrapolated from a plot of the other three events. The rainfall distribution was Type II and an antecedent moisture condition II (AMC II) were used. The drainage area for Buck Creek was estimated to be 1.1 square miles.

Aerial photographs and additional topographic mapping were obtained from Kucera International Inc., a photogrammetry firm located in Willoughby, Ohio. Woodward-Clyde Federal Services contracted with Kucera International Inc., to obtain a digital 2-foot contour topographic strip map for the length of Buck Creek at a scale of 1 inch equals 100 feet (Kucera International Inc., 1995).

The Buck Creek watershed was divided into three sub-areas based on the U.S. Geological Survey (USGS) topographic quadrangle map (U.S. Department of the Interior, 1960, et cetera) with 10-foot contour intervals. The land use of each sub-area was determined from field observations, the USGS quadrangle (U.S. Department of the Interior, 1960, et cetera) and aerial photographs (Kucera International Inc., 1995). The dominant soil types were obtained from the Mercer County soil survey (USDA, 1979). Land use types included commercial, crops, farmstead, impervious, industrial, institutional, open, residential (3 to 4 lots per acre), and woods.

The runoff curve numbers for each sub-area were determined using the land use and soil information and were either 83 or 84. The NRCS Technical Release No. 55 (TR-55) (USDA, 1986) was used to calculate the times of concentration for each of the sub-areas. The times of concentration were 1.33, 1.96, and 1.59 hours for sub-areas 1, 2, and 3, respectively.

A summary of the drainage area-peak discharge relationships for the stream studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

| <u>FLOODING SOURCE AND LOCATION</u> | <u>DRAINAGE AREA (sq. miles)</u> | <u>PEAK DISCHARGES (cfs)</u> | | | |
|--|--------------------------------------|------------------------------|----------------|-----------------|-----------------|
| | | <u>10-YEAR</u> | <u>50-YEAR</u> | <u>100-YEAR</u> | <u>500-YEAR</u> |
| BUCK CREEK | | | | | |
| At the confluence with the Wabash River | 1.1 | 250 | 336 | 449 | 702 |
| Just downstream of Wayne Street | 0.1 | 216 | 300 | 405 | 611 |

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on

the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Cross sections for Buck Creek were obtained from field surveys and 1995 aerial photographs (Kucera International Inc., 1995). All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, May 1991, HEC-2).

Roughness factors (Manning's "n") used in the hydraulic computations for Buck Creek were based on field inspection, a review of field photographs taken in 1996 as well as the 1995 aerial photographs (Kucera International Inc., 1995). The channel "n" values ranged from 0.030 to 0.060 and the overbank "n" values ranged from 0.045 to 0.100.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD29). Elevation reference marks (ERMs) used in this study, and their descriptions, are shown on the FIRM. ERMs shown on the FIRM represent those used during the preparation of this and previous FISs. The elevations associated with each ERM were obtained and/or developed during FIS production to establish vertical control for determination of flood elevations and floodplain boundaries shown on the FIRM. Users should be aware that these ERM elevations may have changed since the publication of this FIS. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the NGVD29. With the finalization of the North American Vertical Datum of 1988 (NAVD88),

many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NGVD29. Structure and ground elevations in the community must, therefore, be referenced to NGVD29. It is important to note that adjacent communities may be referenced to NAVD88. This may result in differences in base flood elevations across the corporate limits between the communities.

For more information on NAVD of 1988, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address <http://www.ngs.noaa.gov>).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 100-year floodplain data, which may include a combination of the following: 10-, 50-, 100-, and 500-year flood elevations; delineations of the 100-year and 500-year floodplains; and 100-year floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the stream studied in detail, the 100- and 500-year floodplains have been delineated using the flood elevations determined at each cross section.

For this revision, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1:1,200 with a contour interval of 2 feet (Kucera International Inc., 1995).

For the streams studied by approximate methods, the 100-year floodplain boundaries were taken from the previously printed FIRM for the Village of Fort Recovery (FEMA, 1987).

The 100- and 500-year floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 500-year floodplain

boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the stream studied by approximate methods, only the 100-year floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodway in this study is presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this study was computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 2). The computed floodway is shown on the FIRM (Exhibit 2). In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 2, "Floodway Data." To reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1, "Floodway Schematic."

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD) | | | |
|-----------------|-----------------------|--------------|----------------------------|---------------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Buck Creek | 308 | 162 | 417 | 1.1 | 918.7 | 918.7 | 919.4 | 0.7 |
| A | 1,307 | 35 | 121 | 3.2 | 924.5 | 924.5 | 924.5 | 0.0 |
| B | 1,796 | 70 | 414 | 1.1 | 928.7 | 928.7 | 928.7 | 0.0 |
| C | 2,432 | 33 | 118 | 3.8 | 928.7 | 928.7 | 928.7 | 0.0 |
| D | 2,524 | 36 | 181 | 2.5 | 932.2 | 932.2 | 932.2 | 0.0 |
| E | 2,879 | 64 | 265 | 1.7 | 932.2 | 932.2 | 932.2 | 0.0 |
| F | 3,171 | 80 | 371 | 1.2 | 934.1 | 934.1 | 934.1 | 0.0 |
| G | 3,386 | 140 | 920 | 0.4 | 935.2 | 935.2 | 936.2 | 1.0 |
| H | 4,071 | 96 | 195 | 1.8 | 935.2 | 935.2 | 936.2 | 1.0 |
| I | 4,243 | 18 | 69 | 5.0 | 936.6 | 936.6 | 936.6 | 0.0 |
| J | 5,213 | 24 | 76 | 3.2 | 940.3 | 940.3 | 940.6 | 0.3 |
| K | 5,707 | 278 | 1,072 | 0.2 | 948.3 | 948.3 | 948.4 | 0.1 |
| L | 6,255 | 85 | 121 | 2.0 | 948.3 | 948.3 | 948.4 | 0.1 |
| M | | | | | | | | |

¹Feet above confluence with Wabash River

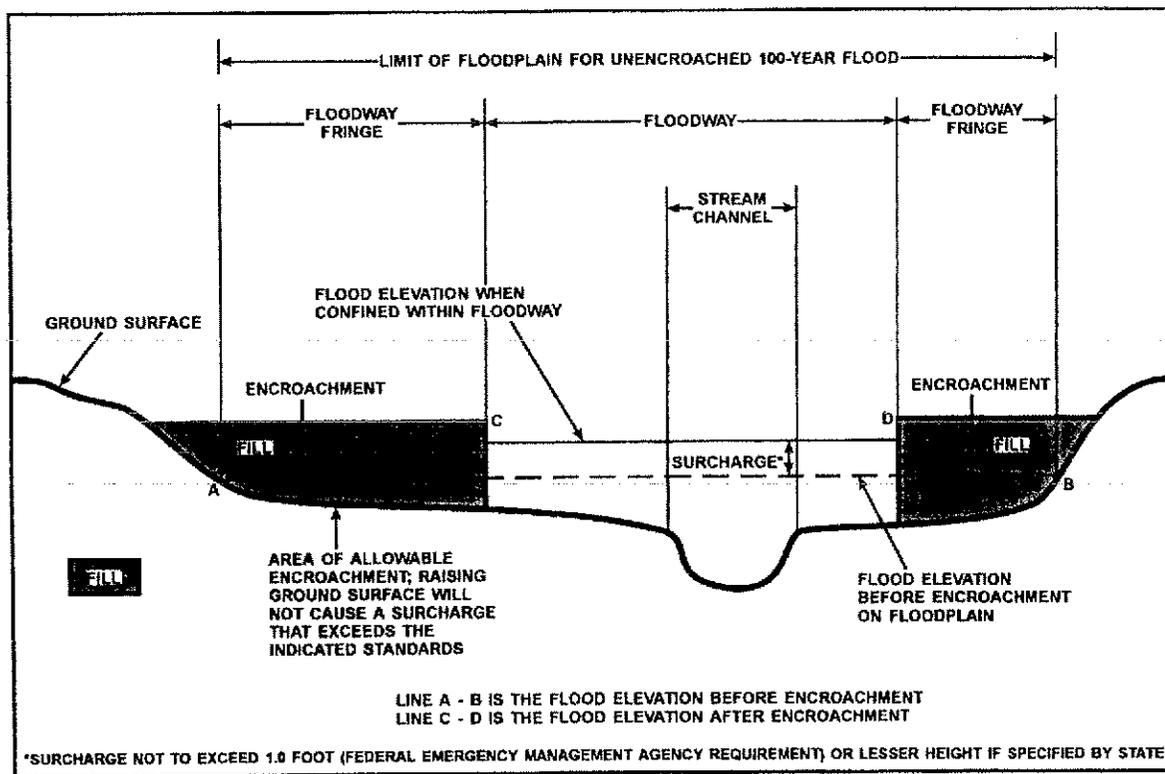
FLOODWAY DATA

FEDERAL EMERGENCY MANAGEMENT AGENCY

VILLAGE OF FORT RECOVERY, OH
(MERCER CO.)

BUCK CREEK

TABLE 2



FLOODWAY SCHEMATIC

Figure 1

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, and areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

7.0 OTHER STUDIES

An FIS has been prepared for the unincorporated areas of Mercer County (FEMA, 2001).

Because it is based on more up-to-date analyses, this FIS supersedes the previously printed FIRM for the Village of Fort Recovery (FEMA, 1987).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, Mitigation Division, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

9.0 BIBLIOGRAPHY AND REFERENCES

Federal Emergency Management Agency. (June 6, 2001). Flood Insurance Study, Mercer County, Ohio (Unincorporated Areas). Washington, D.C.

Federal Emergency Management Agency. (May 1, 1987). Flood Insurance Rate Map, Village of Fort Recovery, Mercer County, Ohio. Washington, D.C.

Kucera International Inc. (April 1995). Fort Recovery Site-Mercer County, Ohio, Scale 1:1,200, Contour Interval 2 feet.

U.S. Army Corps of Engineers, Hydrologic Engineering Center. (May 1991). HEC-2 Water Surface Profiles, Generalized Computer Program. Davis, California.

U.S. Army Corps of Engineers, Hydrologic Engineering Center. (May 1991). HEC-1 Flood Hydrograph Package. Davis, California.

U.S. Census Bureau, Web Page, <http://www.census.gov>, 1998.

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U.S. Department of Agriculture, Natural Resources Conservation Service. (1979). Soil Survey of Mercer County, Ohio. Washington, D.C.

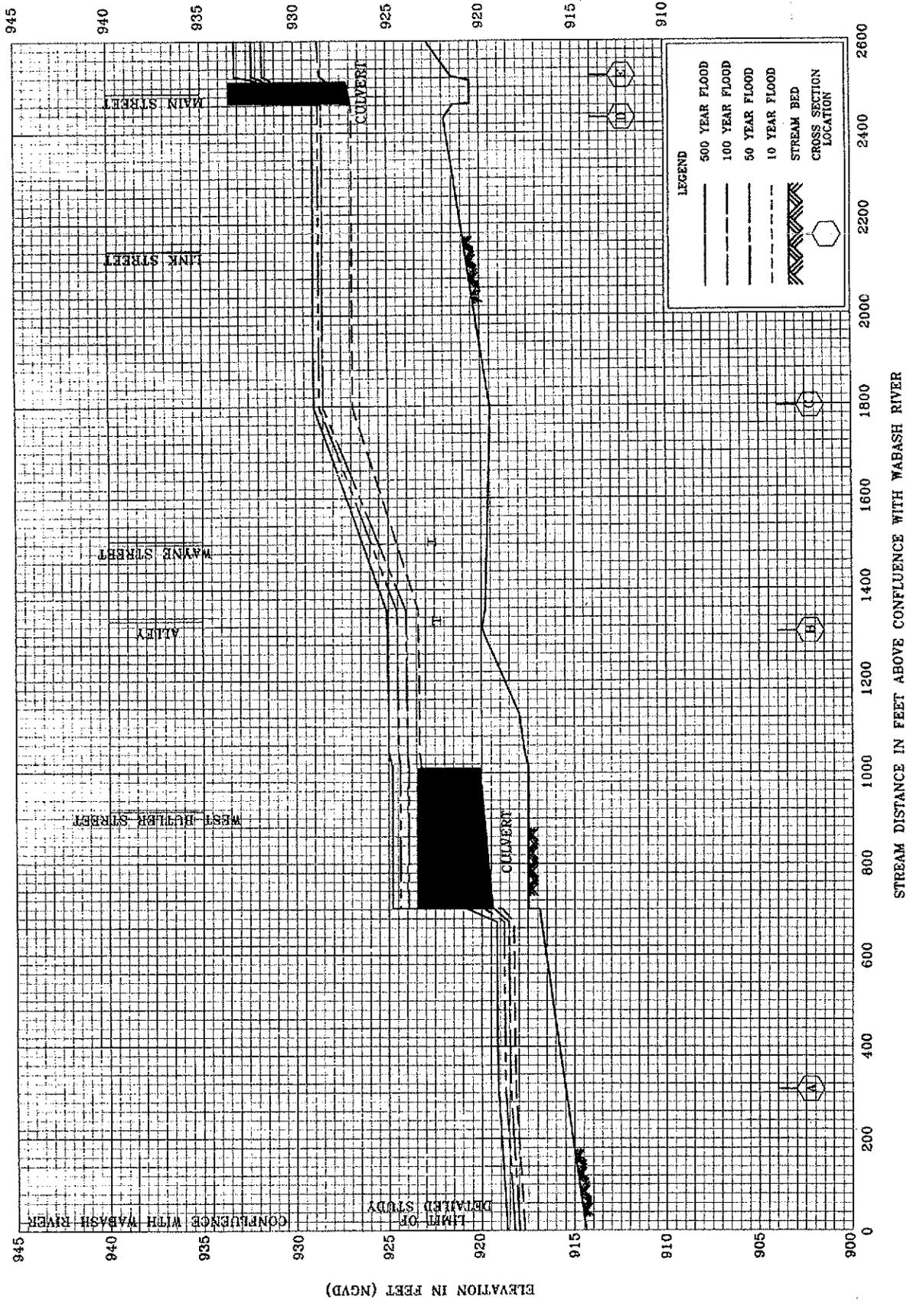
U.S. Department of Agriculture, Natural Resources Conservation Service. (1963). Technical Paper No. 40 (TP-40), Rainfall Frequency Atlas of the United States. Washington, D.C.

U.S. Department of the Interior, Geological Survey. (Fort Recovery, Ohio-Indiana, 1960, photorevised 1994). 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 feet.

FLOOD PROFILES
BUCK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
VILLAGE OF FORT RECOVERY, OH
(MERCER CO.)

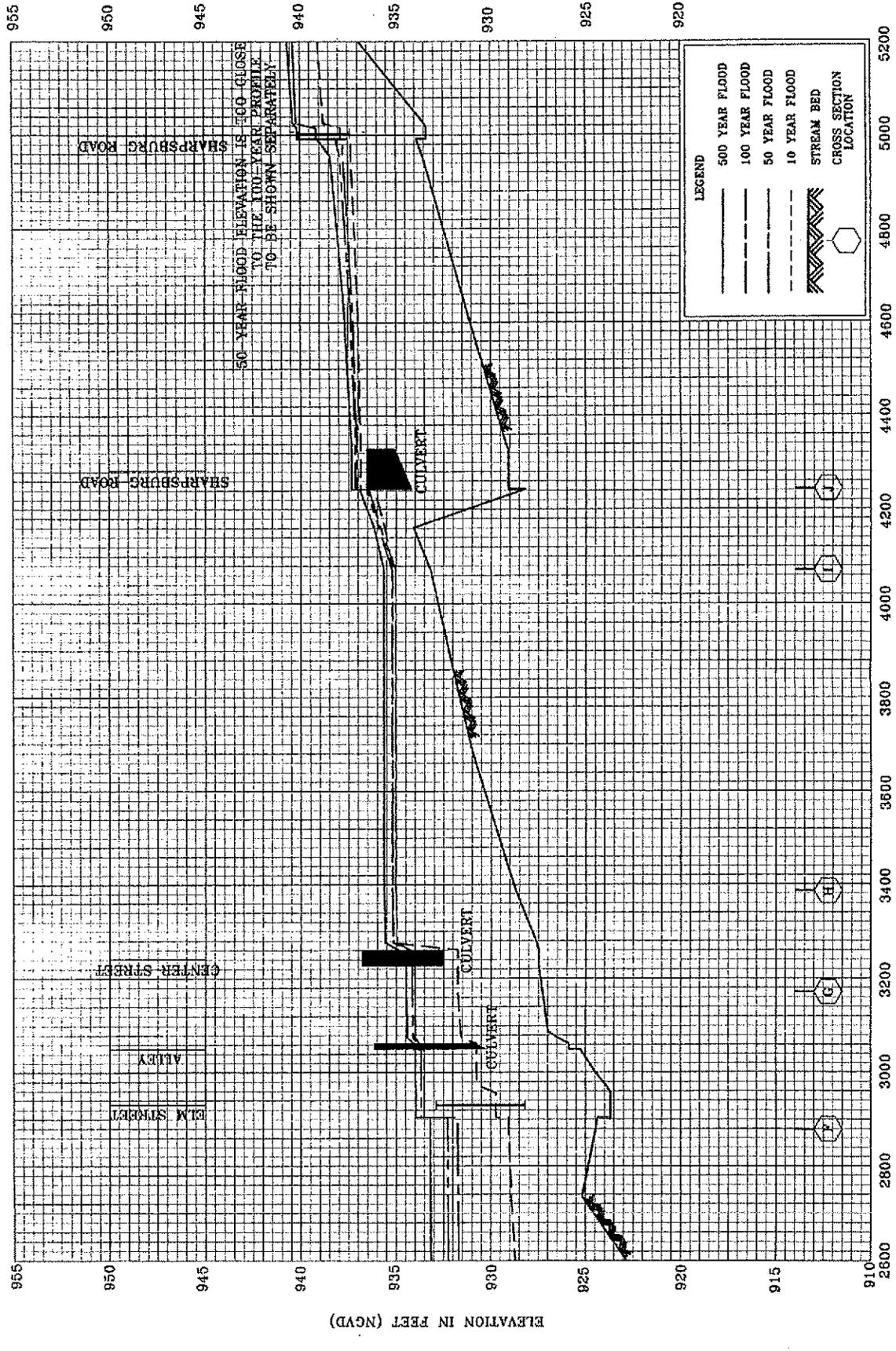
01P



ELEVATION IN FEET (NGVD)

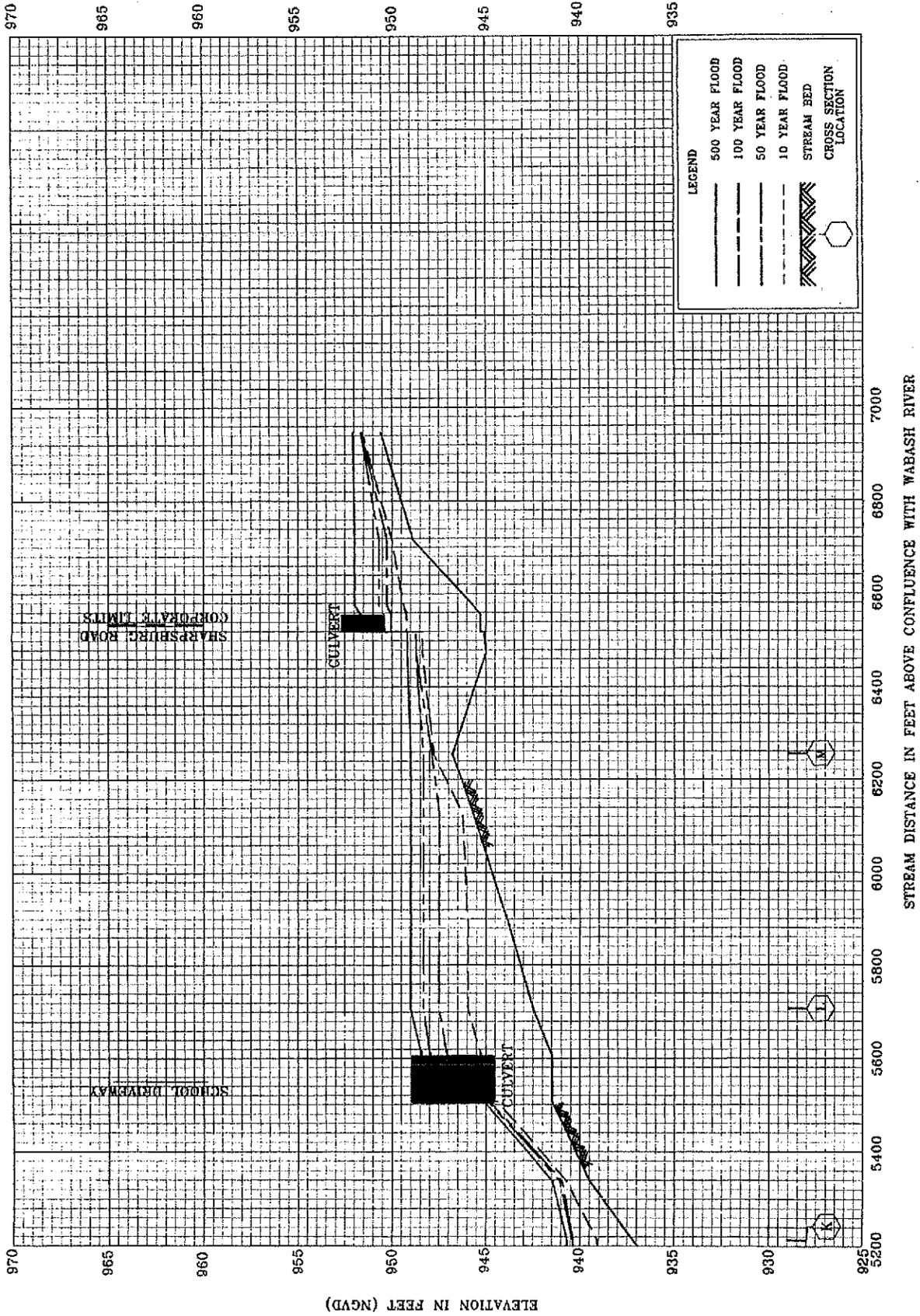
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WABASH RIVER

FLOOD PROFILES
BUCK CREEK



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WABASH RIVER

ELEVATION IN FEET (NGVD)



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WABASH RIVER

ELEVATION IN FEET (NGVD)

William J. Cole

From: William J. Cole
Sent: Wednesday, May 19, 2010 4:04 PM
To: 'Fusonie, Thomas H.'; Ingram, Bruce L.; Miller, Joseph R.; Wilhelmy, Kristi K.; Brewer, Martha C.
Cc: Dale T. Vitale; Jennifer Croskey; Rachel H. Stelzer; Daniel J. Martin; Mindy Worly
Subject: RE: Doner, et al. v. Logan, et al.
Attachments: DeGroot Contract.pdf; DeGroot Invoice.pdf; DeGroot Comments.pdf

Tom:

Items 1 and 4 were inadvertently omitted from yesterday's production. See attached. However, the "scope of work" part of the De Groot contract is partially redacted on the basis of attorney work product. Also attached is item 3, which is also partially redacted on the basis of attorney work product. We do not agree that you are entitled to documents, emails, and other items that Stantec or Dr. De Groot had but did not consider or rely upon in forming their expert opinion. Therefore, we decline to provide you with items 2 and 5, since Dr. De Groot did not rely on either in forming his expert opinion in this case. We also disagree that you are entitled to email that is attorney-client privileged and/or protected attorney work product. The fact that Mr. Henson and Dr. De Groot are not clients of the Attorney General is immaterial, as both are consulting experts for the AG's Office and ODNR. And we do not agree that either Mr. Henson or Dr. De Groot testified to any instructions regarding the work to be performed, beyond their general understanding. Accordingly, we must decline your demand to provide you with every document identified in the privilege log.

William J. Cole

Senior Assistant Attorney General
 Ohio Attorney General Richard Cordray's Office
 Executive Agencies Section
 30 East Broad Street, 26th Floor
 Columbus, Ohio 43215
 614.466.2980 (phone), 866.354.4086 (fax)
 william.cole@ohioattorneygeneral.gov

From: Fusonie, Thomas H. [mailto:thfusonie@vorys.com]
Sent: Tuesday, May 18, 2010 5:25 PM
To: William J. Cole; Ingram, Bruce L.; Miller, Joseph R.; Wilhelmy, Kristi K.; Brewer, Martha C.
Cc: Dale T. Vitale; Jennifer Croskey; Rachel H. Stelzer; Daniel J. Martin; Mindy Worly
Subject: RE: Doner, et al. v. Logan, et al.

Bill,

I received the Stantec and Dr. De Groot files. I've yet to have a chance to review the Stantec documents. As for Dr. De Groot, I did not see the following requested documents:

- 1) copy of his contract;
- 2) copy of the Stantec preliminary report as he testified that he received;
- 3) his emails exchanged related to his expert testimony and review of Stantec work;



6/4/2010

- 4) copy of his invoice;
- 5) the Stantec HEC-HMS & RAS CD he testified receiving

As such, Dr. De Groot has failed to comply with the subpoena. In a last effort to avoid involving the Court, we will give Stantec one more day, until the end of business tomorrow to produce the unredacted Supplemental Agreement.

ODNR/Stantec's decision to withhold an unredacted version of the Stantec Supplemental Agreement despite no objection by Stantec to the subpoena lacks merit. Ms. Worly did not object to the question about the scope of the project that led to Mr. Henson's affidavit. ODNR misreads Mr. Henson's deposition. Mr. Henson was asked not only about his understanding of the scope of the potential project, but "ultimately, what was the scope of the project" that led to his affidavit. ODNR did not object to that line of questioning. Mr. Henson then answered that the scope of the project was described in his report. If the scope of the project is all within his report as Mr. Henson testified, ODNR and Stantec have no basis to withhold the portion of the Supplemental Agreement that describes the scope of the work. As such, Stantec has not complied with the subpoena.

In a last effort to avoid involving the Court, we will give Stantec one more day, until the end of business tomorrow to produce the unredacted Supplemental Agreement.

Finally, Stantec and De Groot cannot withhold communications they had with ODNR on the basis of attorney work product or attorney/client. First, Stantec and Dr. De Groot are not clients of the Ohio Attorney General. Second, Relators are entitled to discovery of all documents that Stantec and Dr. De Groot considered in forming their opinions. We'll give Stantec and Dr. De Groot until the end of business tomorrow to produce every document identified in the privilege log provided to us today.

Tom Fusonie

From: William J. Cole [mailto:william.cole@ohioattorneygeneral.gov]
Sent: Tuesday, May 18, 2010 3:44 PM
To: Fusonie, Thomas H.; Ingram, Bruce L.; Miller, Joseph R.; Wilhelmy, Kristi K.; Brewer, Martha C.
Cc: Dale T. Vitale; Jennifer Croskey; Rachel H. Stelzer; Daniel J. Martin; Mindy Worly
Subject: RE: Doner, et al. v. Logan, et al.

Tom:

Our joint-submission coordinator will be Beth Eckersley, a paralegal in our Office. Ms. Weiss may contact her at 614-728-0467, or by email at beth.eckersley@ohioattorneygeneral.gov. In addition to the Relator depositions, are you agreeable to a joint submission of the supplemental affidavits of Relators who were not deposed? If so, these would also be conditioned upon Respondents' right to object to any of them in whole or in part. Considering the volume of jointly submitted material (affidavits, depositions, and exhibits), I still believe a joint request to reduce the number of copies of joint submissions (perhaps to 5) to the court is appropriate. If you agree, we should file such a request soon.

Stantec and Dr. De Groot have supplied us with their files responsive to your subpoenas. Copies will be delivered to your office today. Much of Stantec's production is on two DVDs, most of which should be directly accessible by office computer. However, you will need the appropriate HEC software to open the modeling files contained within the Hartman Reports folder, and you will need GIS software to open some of the files in the OneRain Gage Adjusted Radar folder.

We are withholding some emails that are attorney-client privileged and/or attorney work-product. A

6/4/2010

Who will be coordinating the preparation of the joint submission from ODNR's end? I'd like to have our paralegal on the case, Courtney Weiss start working out the logistics of gathering and preparing the joint submission.

We do intend to submit additional affidavits. We can't answer when yet, as we're still waiting on Dr. De Groot's compliance with the subpoena served on him.

Tom Fusonie

From: William J. Cole [mailto:william.cole@ohioattorneygeneral.gov]
Sent: Monday, May 17, 2010 11:58 AM
To: Fusonie, Thomas H.; Ingram, Bruce L.; Miller, Joseph R.; Wilhelmy, Kristi K.; Brewer, Martha C.
Cc: Dale T. Vitale; Jennifer Croskey; Rachel H. Stelzer; Daniel J. Martin; Mindy Worly
Subject: RE: Doner, et al. v. Logan, et al.

Tom:

We propose jointly submitting all (not just Relator) depositions with exhibits thereto, provided that Respondents (and presumably, Relators) reserve the right to object to any testimony and/or exhibit (s) therein. We also support a joint motion to reduce the number of submissions of any joint material.

Do you intend to submit any more affidavits? If so, when might we expect to receive a copy(s)?

Bill

From: Fusonie, Thomas H. [mailto:thfusonie@vorys.com]
Sent: Friday, May 14, 2010 3:11 PM
To: William J. Cole; Dale T. Vitale; Mindy Worly; Jennifer Croskey; Rachel H. Stelzer; Daniel J. Martin
Cc: Ingram, Bruce L.; Miller, Joseph R.; Wilhelmy, Kristi K.; Brewer, Martha C.
Subject: RE: Doner, et al. v. Logan, et al.

Bill,

Thank you for the email. As to the Relator Depositions, it is all or nothing. Either ODNR agrees to submit all of them jointly or none of them. We need to know Monday, May 17, 2010, which depositions the State is interested in submitting jointly. Given the number of depositions that need copying and that the deadline for submitting evidence is the day after Memorial Day, if we don't hear from ODNR by the end of the day Monday, May 17, 2010, we're just going to have to go ahead and copy and submit depositions separately.

We've already planned for having to submit an original and 12 copies so we cannot agree to a joint motion to reduce the number of copies of evidence. We might be able to agree to a joint motion to submit a reduced number of any joint submission of depositions.

On an agreed statement of facts, we'll get back to you.

On the issues related to the experts, how is it that the State of Ohio believes it can withhold copies of documents from Dr. De Groot's files on the basis that we already have copies of the complaint and Relator affidavits. Dr. De Groot was served a valid subpoena for his files, which would include the complaint and Relator affidavits in his files. He did not object to production of those documents. We're not aware of authority that a party can withhold a portion of an expert's files because the other party already has a copy of

6/4/2010

some of the documents in the file. In fact, ODNR has taken the exact opposite approach in ODNR v. Baucher.

Likewise, Dr. De Groot did not object to producing documents in his file he did not rely on. Again, we're not aware of a party refusing to turn over portions of an expert's files because the expert did not rely on that portion in preparing his affidavit or report. The absence of reliance on portions of an expert's files is certainly information likely to lead to the discovery of admissible evidence. Again, ODNR took the opposite approach in ODNR v. Baucher, ODNR v. Linn, ODNR v. Minch, ODNR v. Post and ODNR v. Zumberge.

Please advise Dr. De Groot that if we do not receive a complete production of the requested documents by the end of the day Tuesday, May 18, 2010, we'll have to seek the Court's assistance.

On Stantec, ODNR takes the position that despite having Stantec prepare a report and affidavit pursuant to the supplemental agreement, it can redact the portion of the supplemental agreement that describes the scope of Stantec's work. If you have authority to support ODNR's position, we'd appreciate it. Again, it is contrary to ODNR's stance in ODNR v. Baucher and in ODNR v. Linn, ODNR v. Minch, ODNR v. Post, and ODNR v. Zumberge. All cases in which ODNR produced its contracts with its expert in unredacted form. Finally, ODNR's position is contrary to its decision to not object when Relators asked Mr. Henson in deposition to describe the scope of Stantec's work for ODNR in this action. Unless we receive authority from ODNR to support its stance by the end of the day on May 18, 2010, we will be forced to seek the Court's assistance. Please advise Stantec accordingly.

Tom

From: William J. Cole [mailto:william.cole@ohioattorneygeneral.gov]

Sent: Friday, May 14, 2010 10:34 AM

To: Fusonie, Thomas H.; Ingram, Bruce L.; Miller, Joseph R.; Wilhelmy, Kristi K.; Brewer, Martha C.

Cc: Dale T. Vitale; Mindy Worly; Jennifer Croskey; Rachel H. Stelzer; Daniel J. Martin

Subject: Doner, et al. v. Logan, et al.

Counsel:

Our side is meeting on Monday to discuss which, if any, depositions that we are interested in submitting jointly, and will get back to you. Whatever we decide, what are your thoughts regarding a joint motion to the court to reduce the number of required copies of evidence? The rule is original + 12 copies, and with what both sides have, that will be no small effort or cost. We should also think about an agreed statement of facts. While we obviously disagree significantly on key factual issues, there may be *some* facts we can agree upon which can make things easier on us and the court.

In addition to what Jennifer Croskey provided on Monday, we've received documents/material responsive to your subpoena to Philip De Groot, and will provide to you what is not protected work-product by early next week. While both Dr. De Groot and Mr. Henson are testifying experts, we do not agree that you are entitled to requested documents/material which they testified they did not rely upon in forming their expert opinions and reports. We also object to producing documents/material already in your possession, such as copies of the complaint and Relator affidavits. Finally, we do not agree to your request to remove the redaction from the supplemental agreement with Stantec, because the redacted portion is protected work-product material. Mr. Henson only testified generally about the scope of Stantec's work at GLSM during his deposition.

William J. Cole

Senior Assistant Attorney General

6/4/2010

PERSONAL SERVICES
AGREEMENT

THIS AGREEMENT is made this 10th day of February 2010, by and between the State of Ohio, Department of Natural Resources, 2045 Morse Road, D-3, Columbus, Ohio 43229-6893, hereinafter referred to as the "State" or "Department", acting through its director, Sean D. Logan, pursuant to section 1501.01 of the Ohio Revised Code and Philip DeGroot, Ph.D., P.E., and Hydrosphere Engineering, P.O. Box. 360530, Cleveland, Ohio 44136, hereinafter referred to as the "Consultant."

WITNESSETH:

WHEREAS, the Department is the Respondent in an Original Action in Mandamus known as *State of Ohio ex rel. Wayne T. Doner, et al., v. Sean D. Logan, Director, Ohio Department of Natural Resources and Ohio Department of Natural Resources*, Supreme Court of Ohio Case No. 09-1292 (the "Court Case"); and

WHEREAS, the Department wishes to engage the services of the Consultant to provide confidential, expert advice and testimony as appropriate in discovery, pre-hearing, and hearing of matters pertaining to hydrology and hydraulics of the Grand Lake St. Marys, Ohio Watershed insofar as those matters concern the Court Case; and

WHEREAS, The consultant is uniquely qualified to provide said advisory services by virtue of extensive experience teaching and consulting in the field of water resources engineering;

NOW THEREFORE, for the purpose of providing said services and in consideration of the compensation to be paid, the parties hereto covenant and agree as follows:

A. The Department retains the Consultant to undertake and perform all work, duties and activities as Expert Consultant to the Department, which shall include confidential, expert consultant services as outlined in the following scope of work.

SCOPE OF WORK

[REDACTED]

The Department reserves the right to modify the range and scope of services provided by the Consultant and associated costs thereto.

B. The Consultant agrees to perform timely any duties within the scope of his expertise and experience as an expert as are deemed necessary by the Department or the Office of the Attorney General. These duties are to be performed in a professional manner in accordance with accepted established practices and procedures. These duties are to be performed exclusively by the Consultant under the supervision of the Department or the Office of the Attorney General.

C. The Consultant agrees that he will not discuss or disclose any information or materials obtained pursuant to Consultant's responsibilities under this Agreement without the consent of the Department and the Office of the Attorney General. The Consultant agrees to be bound by the terms of all protective orders entered by any court in any case that may develop.

D. In the event that this case has not been settled or otherwise dismissed at the time that the Consultant fulfills his duties under this Agreement, the State and the Consultant may extend and modify this Agreement as deemed necessary by the State for the remainder of this case.

E. This document constitutes the entire Agreement between the parties. Neither party may modify or amend the terms of this Agreement, except by mutual, written agreement. Neither this Agreement nor any rights, duties or obligations described herein shall be assigned by either party hereto without the prior express written consent of the other party. This Agreement shall be construed under the laws of the State of Ohio.

Compensation

A. In consideration of the services to be rendered by Consultant the State covenants and agrees to pay to said Consultant a sum not to exceed Fifteen Thousand and No/100 Dollars (\$15,000.00) in the aggregate payable upon submission of invoices not to exceed Fifteen Thousand and No/100 Dollars (\$15,000.00) by the Consultant, and approved by the Department. Funds for paying for the services have been encumbered by Purchase Order Number _____ and are so certified by the Director of the Office of Budget and Management on _____, 2010. Obligations of the State are subject to the provisions of section 126.07 of the Ohio Revised Code.

B. Consultant shall be paid at the following rates:

- 1) Philip DeGroot, Ph.D., P.E.—One Hundred, Twenty-Eight & No/100 Dollars (\$128.00) per hour.
- 2) Michael Menoes, Ph.D., P.E.—One Hundred, Eight & No/100 Dollars (\$108.00) per hour.

C. Additional compensation for travel costs, including mileage, lodging, or other costs, is expressly waived.

Payment Due Date

A. Payments under this Agreement shall be due on the 30th calendar day after the later of:

- 1) The date of actual receipt of a proper invoice by the State.
 - 2) The date services are accepted in accordance with the terms of the Agreement.
- B. The date of the warrant issued by payment shall be considered the date payment is made.

Invoice Requirements:

- A. Invoices shall be submitted in original and three (3) copies to the State. Proper invoice must include the following information and/or attached documentation:
- 1) Name and address of business concern as designated in the Agreement.
 - 2) Federal Tax Identification Number of business concern.
 - 3) Invoice remittance address.

Improper Invoices

If an invoice contains a defect or impropriety and/or it is not a proper invoice as defined in this Section, a written notification and the improper invoice shall be sent to Consultant for the State within fifteen (15) calendar days after receipt of the invoice. The notice shall contain a description of the defect or impropriety and any additional information necessary to correct the defect or impropriety. If such notification has been sent, the required payment date shall be sixty (60) days after receipt of a proper invoice or service acceptance, whichever is later.

Interest and Overdue Payments

Section 126.30 of the Ohio Revised Code is applicable to this Agreement and required payment of interest on overdue payments for all proper invoices for which the required payment date occurs on or after July 1, 1985. The interest charge shall be at rate per calendar month that equals one-twelfth of the rate per annum prescribed by Section 5703.47 of the Revised Code.

Rights in Data, Patents and Copyrights

The State shall have unrestricted authority to reproduce, distribute and use any submitted report, data or material in whole or in part. No report, document or other material produced in whole or in part with the funds provided to the Consultant by the State shall be subject to copyright by the Consultant in the United States or any other country.

No personnel of the Consultant who exercised any functions or responsibilities in connection with the review or approval of the undertaking or carrying out of any such work shall, prior to the completion of said work, voluntarily acquire any personal interest, direct or indirect, which is incompatible or in conflict with the discharge or fulfillment of their functions or responsibilities with respect to the carrying out of said work. Any such person who, prior to the execution of this Agreement, acquires any such incompatible or conflicting personal interest, or after the effective date of this Agreement voluntarily or involuntarily acquires any such incompatible or conflicting personal interest, shall immediately disclose his or her interest to the Department in writing. Thereafter, he or she shall not participate in any action affecting the work under this Agreement, unless the Department shall determine that, in light of the personal interest disclosed, his or her participation in any such action would not be contrary to the public

interest.

Duration

This Agreement shall terminate on June 30, 2010 unless the Agreement is extended by mutual agreement and in writing. All financial obligations of the State under this Agreement are subject to the appropriation of sufficient funds by the General Assembly and/or approval of the Controlling Board. If at any time sufficient funds are not appropriated to continue funding the payments due under this Agreement, this Agreement will terminate on the date the available appropriation expires without any further obligation by the State.

Termination and Suspension

A. The State may terminate or suspend this Agreement if it appears to the State that the Consultant has failed to perform satisfactorily any requirement of this Agreement or if Consultant is in violation of a specific provision of this Agreement or upon just cause.

B. In the event of termination or suspension of this Agreement, the State shall have ownership and possession of all reports, documents and other materials assembled and prepared pursuant to this Agreement. Upon surrender of such materials, the Consultant will receive compensation for all work performed prior to the date of termination or suspension on a pro rata basis.

In the performance of this contract, the Consultant agrees as follows:

The Consultant shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, disability or military status as defined in section 4112.01 of the Revised Code, national origin, or ancestry. The Consultant shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, age, disability or military status as defined in section 4112.01 of the Revised Code, national origin, or ancestry. Such action shall include, but is not limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, including apprenticeship. The Consultant agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Department setting forth the provisions of this nondiscrimination clause.

The Consultant shall, in all solicitation or advertisements for employees placed by or on behalf of the Consultant, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, disability or military status as defined in section 4112.01 of the Revised Code, national origin, or ancestry.

The Consultant agrees to comply with all pertinent provisions of the Americans with Disabilities Act and agrees to assume full responsibility for noncompliance therewith.

The Consultant shall attempt to purchase services from minority-owned field service agencies and other companies whenever possible. The Consultant shall attempt to procure

necessary materials from minority-owned businesses whenever possible.

The Consultant agrees that it will fully cooperate with the State Equal Employment Opportunity Coordinator, with any official or agency of the State or Federal Government which seeks to eliminate unlawful employment discrimination, and with all other State and Federal efforts to assure equal employment practices under this Agreement, and said Consultant shall comply promptly with all requests and directions from the State of Ohio or any of its officials and agencies in this regard both before and during performance. Consultant agrees to comply with all provisions of Section 125.111 of the Ohio Revised Code.

In the event of the Consultant's noncompliance with the nondiscrimination clauses of this Agreement, this Agreement may be cancelled, terminated or suspended in whole or in part and the Consultant may be ineligible for further State Contracts, and other such sanctions may be imposed and remedies instituted as otherwise provided by law.

The Consultant agrees to comply with all applicable state and federal laws regarding drug-free workplace. The Consultant shall make a good faith effort to ensure that all Consultant employees while working on the Agreement will not purchase, transfer, use or possess illegal drugs or alcohol or abuse prescription drugs in any way.

The Consultant certifies that neither it nor its employees are public employees of the Department under federal and state law for tax, retirement deduction, and Workers' Compensation purposes and that the Consultant carries Workers' Compensation coverage.

The Consultant shall be wholly responsible for any and all claims, actions, damages, liability and expense in connection with and arising from work performance under this Agreement.

The Consultant affirms that, as applicable to it, no party listed in Division (I) or (J) of Section 3517.13 of the Ohio Revised Code or spouse of such party has made, as an individual, within the two previous calendar years, one or more contributions totaling in excess of \$1,000 to the Governor or to his campaign committees.

The Consultant affirmatively represents and warrants to the State that it is not subject to a finding for recovery under R.C. 9.24, or that it has taken appropriate remedial steps required under R.C. 9.24 or otherwise qualifies under that section. Contractor agrees that if this representation or warranty is deemed to be false, the Contract shall be void *ab initio* as between the parties to this Contract, and any funds paid by the State hereunder immediately shall be repaid to the State, or an action for recovery immediately may be commenced by the State for recovery of said funds.

This Agreement may be executed in two or more counterparts, each of which shall be deemed to be an original and taken together shall be deemed to be one and the same instrument. This Agreement may be executed and delivered by facsimile or electronically in Microsoft Word or PDF format.

If required to do so pursuant to Section 2909.33 of the Ohio Revised code, the Consultant hereby represents and warrants that Consultant: (1) has not provided material assistance to an organization listed on the Terrorist Exclusion List of the State Department of the United States; (2) has obtained a current copy of the Terrorist Exclusion List; and, (3) truthfully has answered "No" to every question on the Ohio Department of Public Safety's form "Declaration Regarding Material Assistance/Nonassistance to a Terrorist Organization." If this representation is deemed false, this Agreement is void *ab initio* and Consultant immediately shall repay to the State any and all funds paid under this Agreement. Information and forms concerning the Declaration may be found at: http://www.homelandsecurity.ohio.gov/dma/dma_general_info.asp

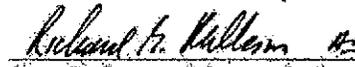
In accordance with Executive Order 2007-01S, the Consultant, by signature on this document, certifies that it: (1) has reviewed and understands Executive Order 2007-01S, (2) has reviewed and understands the Ohio ethics and conflict of interest laws as found in Ohio Revised Code Chapter 102 and in Ohio Revised Code Sections 2921.42 and 2921.43, and (3) will take no action inconsistent with those laws and/or the Executive Order. The Consultant understands that failure to comply with Ohio's ethics and conflict of interest laws or with Executive Order 2007-01S is, in itself, grounds for termination of this Agreement and may result in the loss of other contracts or grants with the State of Ohio. The Executive Order can be found at: <http://governor2.ohio.gov/Portals/0/ExecutiveOrder2007-01S.pdf>

IN TESTIMONY WHEREOF, the said parties hereto set their hands as of the day indicated hereinafter below:

Hydrosphere Engineering
P.O. Box 360530
Cleveland, Ohio 44136
(440) 973-4054

STATE OF OHIO
DEPARTMENT OF NATURAL RESOURCES


Philip DeGroot, Ph.D., P.E.

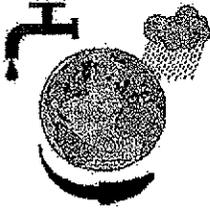

Sean D. Logan, Director (or)
Richard Milleson, Assistant Director

Date: Feb 10, 2010

Date: Feb. 22, 2010.

Federal Tax Identification Number:

269503087



HYDROSPHERE ENGINEERING

P.O. Box 360530
Cleveland, Ohio 44136-0009
440-973-4054 or 330-721-2722

March 31, 2010

Ohio Department of Natural Resources
Division of Soil and Water Conservation
2045 Morse Road Building B-3
Columbus, Ohio 43229

Attention: Jill Evans, Fiscal Administrator

Subject: Invoice for consulting engineering services

Project: Grand Lake St Marys Dates: February 10, 2010 to March 9, 2010

| Contributing Personnel | Description of work | Hours |
|---|--|-------|
| Phillip H. De Groot, Principal hydraulic engineer: | Meetings, document review, report preparation, report review, project administration, affidavit processed. Detailed time sheet attached. | 34.5 |
| Michael C. Menoes Senior hydraulic engineer: | Meetings, document review, report preparation and review, perform simulations. Detailed time sheet attached. | 53.0 |
| Gregory De Groot Engineering Intern | Meeting | 4.0 |

Engineering Rates: Principal hydraulic engineer \$ 128/hour
 Senior hydraulic engineer: \$ 108/hour
 Engineering intern: \$ 72/hour

Total Fee: $(\$ 128/\text{hr} * 34.50 \text{ hr}) + (\$ 108/\text{hr} * 53.0 \text{ hr}) + (\$ 72/\text{hr} * 4.0 \text{ hr}) =$ \$ 10,428

Invoice is payable upon receipt and past due after 30 days. Please send a check for \$10,428 made payable to Hydrosphere Engineering at the above address.

Sincerely,

Philip H. De Groot

Time sheet for Philip H. De Groot

| Date | Task | Hours |
|-------------|--|-------|
| 10-Feb | Phone conversation with Jay Dorsey | 0.5 |
| 11-Feb | Meet with Jay Dorsey and Bill Cole | 4.0 |
| 19-Feb | Review documents obtained from Jay Dorsey | 5.0 |
| 20-Feb | Report preparation, meet with Mike Menoes | 8.0 |
| 21-Feb | Report preparation | 6.0 |
| 22-Feb | Meet with Stantec, Jay Dorsey, Bill Cole, etc... | 6.0 |
| 24-Feb | Report revisions | 2.0 |
| 01-Mar | Review and process affidavit | 1.0 |
| 09-Mar | Review questions developed for attorneys | 2.0 |
| Total hours | | 34.5 |

Time sheet for Michael C. Menoes

| Date | Task | Hours |
|-------------|--|-------|
| 16-Feb | Download documents from ODNR website | 3.0 |
| 17-Feb | Review documents | 4.0 |
| 18-Feb | Review documents, report preparation | 7.0 |
| 19-Feb | Review documents, report preparation | 7.0 |
| 20-Feb | Meet with Phil De Groot, report preparation | 5.5 |
| 21-Feb | Review additional materials | 3.0 |
| 22-Feb | Meet with Stantec, Jay Dorsey, Bill Cole, etc... | 6.0 |
| 23-Feb | Edit reports, develop questions for attorneys | 4.0 |
| 24-Feb | Edit reports, perform peak flow simulations | 4.0 |
| 25-Feb | Review new material, perform peak flow simulations | 3.0 |
| 01-Mar | Review Jay's comments, edit reports | 1.5 |
| 03-Mar | Review affidavit and prepare report | 2.0 |
| 08-Mar | Prepare questions for attorneys | 3.0 |
| Total hours | | 53.0 |

Time sheet for Gregory De Groot

| | | |
|--------|------------------------------------|---------|
| 11-Feb | Meet with Jay Dorsey and Bill Cole | 4 hours |
|--------|------------------------------------|---------|

William J. Cole

From: Dorsey, Jay [Jay.Dorsey@dnr.state.oh.us]
Sent: Tuesday, February 23, 2010 1:28 PM
To: Henson, Tadd; Ringley, Bryon
Cc: William J. Cole; Dale T. Vitale; Mindy Worly; Jennifer Croskey; Rachel H. Stelzer; Daniel J. Martin; Rowan, Charles; Mohr, Dave; Dorsey, Jay
Subject: FW: CONFIDENTIAL ATTORNEY-CLIENT COMMUNICATION AND ATTORNEY WORK PRODUCT Doner update
Attachments: Hydrosphere Comments 23 Feb 2010.pdf

Tadd,

See attached comments on hydrologic model.

All,

Please see second set of comments/suggestions on presentation of findings and focus on more frequent (1, 2, 5, 10-year) events.

Jay

-----Original Message-----

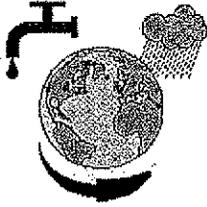
From: Michael C. Menoes [mailto:mikemenoes@zoominternet.net]
Sent: Tuesday, February 23, 2010 1:05 PM
To: Dorsey, Jay
Subject: Re: CONFIDENTIAL ATTORNEY-CLIENT COMMUNICATION AND ATTORNEY WORK PRODUCT Doner update

Jay,

Attached is a PDF file with comments from Phil and I regarding the Stantech model and report. Let me know if you have any questions. Thanks.

Mike

5/19/2010



HYDROSPHERE ENGINEERING

P.O. Box 360530
Cleveland, Ohio 44136-0009
440-973-4054 or 330-721-2722

February 23, 2010

ATTORNEY-CLIENT WORK PRODUCT: CONFIDENTIAL

To: Jay Dorsey
From: Phil De Groot and Mike Menoes
Subject: Comments about the hydrologic model developed for GLSM

REDACTED

- H2. The peak flows determined by the hydrologic model should be checked against the peak flows in the FEMA flood studies and the peak flows predicted by the equations of Koltan (2003). If significant differences exist, Stantec should provide documentation to support those differences.

REDACTED

Subject: Comments about the hydrologic model developed for GLSM (continued)

REDACTED

PHILIP DE GROOT, PH.D.
APRIL 29, 2010

1 what you have there?

2 A. Yes.

3 Q. Okay.

4 A. And the remainder of the pages are notes
5 that were made during the review of the
6 documents by Pressley Campbell and the Corps of
7 Engineers.

8 Q. Okay. And were all of those documents
9 prepared prior to you signing your affidavit in
10 this case?

11 A. All of them, with the exception of the
12 directions on how to get here.

13 Q. Is what you have provided to us today
14 and what we've just talked about your entire
15 file regarding your work for the Attorney
16 General's office in this action?

17 A. No.

18 Q. You have other documents?

19 A. I have a document which was a client --
20 attorney-client confidential.

21 Q. Okay. Does the Attorney General's
22 office represent you, Dr. De Groot?

23 MR. COLE: It's a work product document.

24 Q. What's the general nature of the

PHILIP DE GROOT, PH.D.
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1 document?

2 A. It was a two-page memorandum, which I
3 prepared and provided to the Ohio Department of
4 Natural Resources, if they wished to provide it
5 to Stantec. It was some comments about the
6 hydrologic model that they prepared.

7 Q. So I understand correctly, you have also
8 reviewed stantec's hydrological modeling in this
9 action?

10 A. I can't use the word review, because it
11 was only at the latter part of February, just
12 briefly.

13 Q. Okay.

14 A. So a consequence of the meeting. So
15 there is no quality control or assurances that I
16 did that. It was just an overview of the
17 approach that they were taking.

18 Q. Okay. Where is the -- what document did
19 you review of Stantec?

20 A. That, I can't remember precisely,
21 because there's been so much e-mail exchanged.
22 It would have been whatever report that they had
23 started to put together at the end of February.

24 Q. Okay. Have you -- and were you provided

1 there should be one more.

2 Q. Okay. Without getting into the specific
3 detail of your -- did you -- as I understand it,
4 did you generate a -- you generated a document
5 and provided some comments about Stantec's
6 hydraulic modeling; is that correct?

7 A. Yes.

8 Q. Without getting into the details of what
9 you wrote in that document, did you make any
10 suggestions on improving what they had done?

11 A. Yes.

12 Q. Did you also do any review of any of
13 their hydrology modeling?

14 A. The two are interconnected, so yes.

15 Q. Okay.

16 A. Technically, I did not review their
17 hydraulic model. Technically, I reviewed their
18 hydrology model.

19 Q. Okay. And that was HEC-HMS?

20 A. Yes.

21 Q. Okay.

22 A. Let me rephrase that.

23 Q. Sure.

24 A. I did not actually look at the HEC-HMS

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1 information. I read the summary -- what was in
2 the report and made a comment about what I would
3 do slightly differently if I used HEC-HMS.

4 Q. Okay. So you had suggestions as to what
5 they should do differently?

6 A. Yes.

7 Q. And do you remember when you provided
8 that document to the Attorney General's office?

9 A. I would think it would be the latter
10 part of February.

11 Q. Okay. Was that document, to your
12 knowledge, also provided to anyone at Stantec?

13 A. I do not know if it went beyond the
14 Attorney General's office.

15 Q. You e-mailed your document to the
16 Attorney General's office, or was it mailed, or
17 faxed? How was it delivered?

18 A. I e-mailed it, I believe, to the Ohio
19 Department of Natural Resources.

20 Q. Okay. Do you know who at -- and I'll
21 refer to it as ODNR. Is that okay?

22 A. Yes.

23 Q. Do you know who you e-mailed it to at
24 ODNR?

1 A. Yes.

2 Q. And who was that?

3 A. Jay Dorsey.

4 Q. Anyone else that you e-mailed that
5 document to?

6 A. I don't think so.

7 Q. Okay. And do you have a business e-mail
8 address?

9 A. Yes.

10 Q. Is that what you e-mailed the document
11 from?

12 A. Yes.

13 Q. Are there any other documents in your
14 files that you have not come here with today?

15 A. No. I think you pretty well covered
16 them.

17 Q. So there's a contract, copy of the
18 stantec report, copy of e-mails that you have
19 exchanged in this matter, a copy of the invoice,
20 and there's also additional volumes of the Army
21 corps of Engineers survey report?

22 A. Yes.

23 Q. Correct?

24 MR. COLE: Counsel, do you want the

1 a 15-digit code number and then it is a PDF
2 file.

3 Q. Okay.

4 A. I believe there were eight of them.

5 Q. Okay. They provided --

6 MR. FUSONIE: I want a copy of all of
7 those.

8 Q. Do you know who provided you those?

9 A. Yes.

10 Q. Who did?

11 A. Jay Dorsey.

12 Q. Any other documents you were provided
13 between your third contact with ODNR and your
14 fourth contact, as identified on your
15 handwritten notes dated April 27, 2010?

16 A. No, I don't think so.

17 Q. Then your next -- the next contact
18 you've identified was February 22nd, 2010. And
19 that was at Stantec's office in Columbus?

20 A. Correct.

21 Q. Were you provided a copy of any report
22 from Stantec prior to that meeting?

23 A. No.

24 Q. Were you provided a copy at that

1 meeting?

2 A. Not a paper copy. We were looking at
3 computer slides.

4 Q. So you reviewed, on Stantec's computer,
5 a working report?

6 A. I would not use the word reviewed.

7 Q. You read it?

8 A. No. We were looking at various output
9 from the computer model. We were not reading
10 reports.

11 Q. So you were looking at some of the data
12 of the Stantec report?

13 A. Some of the maps.

14 Q. Some of the maps, okay.

15 Do you remember which maps you were
16 looking at?

17 A. It was generally floodplain maps of
18 Beaver Creek and the Wabash River.

19 Q. Okay. Who was there with you?

20 A. There were about 10 people there. I
21 never received a sign-up list. But the ones
22 that I can remember were Bill Cole, Jay Dorsey,
23 Charles Rowan, Ted Henson, Ted Henson's
24 supervisor, Michael Menoes, and there were some

PHILIP DE GROOT, PH.D.
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1 other representatives from ODNR that I had never
2 met before.

3 Q. Who is Michael Menoes?

4 A. Michael Menoes is the other half of
5 Hydrosphere Engineering.

6 Q. Okay. Did these maps, do you recall,
7 show that the new -- the 500-foot spillway is
8 causing any increased flooding along the Beaver
9 creek?

10 A. If we go with the word any, yes.

11 Q. Okay. How about any increased flooding
12 along the Wabash River after its confluence with
13 the Beaver Creek?

14 A. I don't think so.

15 Q. Not that you recall?

16 A. The scale of the mapping, I could not
17 see the color differential on the Wabash River.

18 Q. Was there any discussion about the fact
19 that there was increased flooding caused by the
20 spillway -- the new spillway along the Wabash
21 River?

22 A. Yes.

23 Q. And what was discussed?

24 A. Discussion is -- as far as my part, I

PHILIP DE GROOT, PH.D.
APRIL 29, 2010

1 was asking them questions -- what I considered
2 to be standard modeling questions if they had
3 considered things.

4 Q. Okay.

5 A. I don't remember specifically what I
6 asked.

7 Q. All right. Going back to February 11,
8 2010, you identified in your notes the Campbell
9 report. Which Campbell report are you referring
10 to?

11 A. The Campbell report that you marked as
12 Exhibit B, Case Leasing and Rental,
13 Incorporated.

14 Q. Okay. So you've identified the May,
15 2006 Campbell report?

16 A. Yes.

17 Q. Were you told that this was the entire
18 Dr. Campbell report?

19 A. I believe there were attachments here
20 that -- exhibits and photos were also provided
21 (indicating).

22 Q. I'm talking about his Case Leasing
23 report. Were you told by ODNR or the Ohio
24 Attorney General's office that the Case Leasing

1 MR. COLE: Objection. How can he know?

2 MR. FUSONIE: I'm asking.

3 Q. You don't know one way or another?

4 A. Correct.

5 Q. Your work for this case, what is the
6 scope of your work, as you understand it?

7 A. On February 22nd, we realized with the
8 late date that I was involved, and my scope,
9 Hydrosphere Engineering's scope, had to be
10 limited to the review of the work by Pressley
11 Campbell; that there was insufficient time to
12 prepare a hydrologic model.

13 Q. But you did also meet with Stantec
14 representatives and ask Stantec representatives
15 questions about some of their data or modeling;
16 is that fair to say?

17 A. I made some observations and had some
18 questions, yes.

19 Q. Okay. I want to go back to Exhibit C,
20 if you could turn to Exhibit C. That's going to
21 be your affidavit and report. It's right here,
22 Doctor (indicating).

23 A. I'm just trying to reorganize the pile.

24 Q. If you could turn to your first report,



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 fax 614.460.5566
 pri@prioio.com www.prioio.com

WITNESS ERRATA SHEET

Case Caption: State of Ohio Ex Rel Wayne T. Doner v Sean D. Logan, Dir ODNR
 Deposition of: Philip De Groot
 Date Taken: 4/29/2010
 File Number: 1961

INSTRUCTIONS

If there are any corrections, indicate them on this form giving the change, page number, line number and reason for the change. Please either use a blank piece of paper if you need more room, or call us for additional sheets.

REASONS FOR CHANGES

- 1) To clarify the record.
- 2) To conform to the facts.
- 3) To correct transcription errors

| Page # | Line # | Change | Reason # |
|--------|--------|---------------|----------|
| | | **See Below** | |

I, Philip De Groot, have read the foregoing transcript of my deposition given on 4/29/2010; together with the corrections on this page noting changes in form or substance, if any, it is true and correct.

Date _____ Signature: _____

Professional Reporters, Inc. does hereby certify that: Philip De Groot did not read or sign his/her deposition taken 4/29/2010; that the deponent was notified by letter and informed of the Rule 30, providing the number of days within which to read and sign the deposition. The witness has not notified our office of the fact of the waiver or of the illness or absence of the witness or the fact of the refusal to sign together with the reason; and the deposition may then be used as fully as though signed.

Date: 05/24/2010 Signature: *Christy M. Heaney*