

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



GENERAL PERMIT for SEWER EXTENSION CONSTRUCTION

The Missouri Department of Natural Resources hereby issues a permit to:

Construction Permit ID: MOGC00054
Title of Project: Boonville Force Mains-LS 1 and 2
Owner: City of Boonville
Address: 401 Main Street
BOONVILLE, MO 65233

The project will also include general site work appropriate to the scope and purpose of the project and will include all the necessary appurtenances to make a complete and usable collection system. The construction of this project will be in the vicinity of the county below and discharge to Receiving Permit ID below:

County: Cooper Receiving Permit ID: MO0040738

for the construction of (described construction project):

Construction of 2,610 lf of 12-inch and 2,750 lf of 16-inch PVC SDR-21 force mains with cleanouts and air release valves, to parallel existing force mains and increase firm pumping capacity for lift station No. 1 from approximately 2,500 gpm to approximately 4,000 gpm, and increase firm pumping capacity for lift station No. 2 from approximately 2,700 gpm to approximately 4,800 gpm. One manhole will be removed and a new manhole constructed where the new force main from lift station No. 2 joins existing gravity sewer.

Project is in the vicinity of Water St., Rural St., and Morgan St. in Boonville, Cooper County and discharges to an existing system to be treated at Boonville Wastewater Plant, MO-0040738.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department). As the Department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

October 20, 2015

Issue Date

Sara Parker Pauley, Director
Department of Natural Resources

October 19, 2017

Expiration Date

John Madras
Director, Water Protection Program

APPLICABILITY

1. This permit authorizes the construction of gravity sewer extensions, force mains, and lift stations. Storage basins, considered part of the collection system, are also included. Earthen basins are not included under this General Sewer Extension Construction permit.
2. A Sewer Extension Construction Permit may be required by the department due to compliance and enforcement actions.
3. This permit does not apply to:
 - A. Earthen storage basins;
 - B. Projects located within an Approved Sewer Program. These include the City of Blue Springs, City of Columbia, City of Kansas City, City of Jefferson City, City of Joplin, City of Lebanon, City of Springfield, City of St. Peters, Duckett Creek Sewer District, and Metropolitan St. Louis Sewer District;
 - C. Projects funded by the Department of Natural Resources;
 - D. Projects that substantially deviate from the Design Guides in 10 CSR 20-8; and
 - E. Exempt projects unless requested by the applicant or required by enforcement.

PREREQUISITES:

1. The General Sewer Extension Construction Permit application, appropriate fee, and a schedule for construction with the date on which construction will begin and anticipated completion date.
2. The engineering report, as required, plans and specifications each signed and sealed by a professional engineer registered in the State of Missouri. A Summary of Design is an acceptable substitute for the engineering report required by this permit prerequisite.
3. The Design Certification form signed and sealed by a professional engineer registered in the State of Missouri certifying the design of the system was done in accordance with 10 CSR 20-6 and 10 CSR 20-8.
4. A statement from the continuing authority was received accepting the wastewater for treatment.
5. A statement from the continuing authority was received accepting the responsibility for operation, maintenance, and modernization of these facilities

PERMIT CONDITIONS:

1. Contact the department's appropriate regional office 48 hours prior to starting construction. Contact information can be found at <http://dnr.mo.gov/regions/regions.htm>.
2. This permit authorizes the activities and scope of work detailed in the plans and specifications submitted with the request.
3. The construction must be in accordance with the design certification stating the plans and specifications comply with 10 CSR 20-6 and 10 CSR 20-8.

PERMIT CONDITIONS: (continued)

4. State and Federal Law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department's regional office per 10 CSR 20-7.015(9)(E)2.
5. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10).
"There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole."
 - A. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.
 - B. Sewer mains shall be laid at least ten feet (10') horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a ten foot (10') separation, the department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.
 - C. Manholes shall be located with the top access at or above grade level.
 - D. Manholes should be located at least ten feet (10') horizontally from any existing or proposed water main.
 - E. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:
 - 1) The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or
 - 2) Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends ten feet (10') on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the department for use in water main construction.

PERMIT CONDITIONS: (continued)

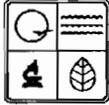
6. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri State Operating Permit to discharge stormwater. The permit requires Best Management Practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the department's ePermitting system available online at www.dnr.mo.gov/env/wpp/epermit/help.htm.

See www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

7. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of Jurisdictional Waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the department's Water Protection Program at (573) 751-1300 for more information.

See www.dnr.mo.gov/env/wpp/401/ for more information.

8. If this project eliminates a wastewater treatment facility, then a full closure plan shall be submitted to the department's appropriate regional office for review and approval of any permitted wastewater treatment system being replaced. In accordance with 10 CSR 20-6.010(12), the closure plan must meet the requirements outlined in Standard Conditions Part III, Section I, of the Missouri State Operating Permit. Closure shall not commence until the submitted closure plan is approved by the department. Form J – Request for Termination of a State Operating Permit, shall be submitted to the department's appropriate Regional Office for termination of any existing Missouri State Operating Permit, once closure is completed in accordance with the approved closure plan.
9. Submit a Statement of Work Completed Form to the department following completion of construction. Submit an electronic copy of the as built plans if the project was not constructed in accordance with previously submitted plans and specifications.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM
APPLICATION FOR CONSTRUCTION PERMIT
SEWER EXTENSION

RECEIVED

SEP 24 2015

Water Protection Program

APD 1578
11/25/2015
2-13-4

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED \$300.00	CHECK NO. 68216
DATE RECEIVED 9/24/15	

NOTE ► PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

- 1.1 Is this a Federal/State funded project? YES N/A Funding Agency: _____ Project #: _____
- 1.2 Has the Department of Natural Resources approved the proposed project's engineering report*?
 YES Date of Approval: 05/21/2014 NO N/A
- 1.3 Is a copy of the appropriate plans* and specifications* included with this application? YES NO
- 1.4 Is a summary of design* included with this application? YES NO
- 1.5 Is the appropriate fee included with this application? (See instructions for appropriate fee.) YES NO

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT

Boonville Force Mains from Lift Stations No. 1 and No. 2

ADDRESS	CITY	STATE	ZIP CODE	COUNTY
401 Main Street	Boonville	MO	65233	Cooper

2.2 Legal Description: ¼, ¼, ¼, Sec. 34, T 49N, R 16W

2.3 Project Components (check all that apply):

- Gravity sewers Pumping stations Force mains Alternative sewer system Other (Describe below.)

2.4 PROJECT DESCRIPTION

See attached.

2.5 DESIGN INFORMATION

A. Population or number of lots to be served by this extension: N/A

B. Estimated flow to be contributed by this extension: Design Average Flow: _____ gpd Design Peak Hourly Flow: _____ gph

C. Industrial Wastes: Type: _____ Flow: _____ gpd

D. Receiving Sewer: Size: 24 inches Capacity: 7000 gpm

3.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
City of Boonville	(660) 882-5257	mcauthon@boonville-mo.org

ADDRESS	CITY	STATE	ZIP CODE
401 Main Street	Boonville	MO	65233

4.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
City of Boonville	(660) 882-5257	mcauthon@boonville-mo.org

ADDRESS	CITY	STATE	ZIP CODE
401 Main Street	Boonville	MO	65233

4.1 A letter from the continuing authority, if different than the owner, is included with this application. YES NO N/A

5.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Jerry Lane / MECO Engineering Company, Inc.	(573) 893-5558	jlane@mecoengineering.com

ADDRESS	CITY	STATE	ZIP CODE
2701 Industrial Drive	Jefferson	MO	65109

6.0 RECEIVING WASTEWATER TREATMENT FACILITY		
NAME Boonville WWTF	TELEPHONE NUMBER WITH AREA CODE (660) 882-4024	E-MAIL ADDRESS wwtp@boonville-mo.org
MISSOURI STATE OPERATING PERMIT # MO 0040738	REMAINING CAPACITY (GPD) 0.7 MGD	
6.1 Has the receiving treatment facility agreed to accept the additional wastewater flow? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
6.2 A letter from the receiving wastewater treatment facility, if different than the continuing authority, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A		
7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law.		
PROJECT OWNER SIGNATURE 		
PRINTED NAME M. L. Cauthon III	DATE 09/21/2015	
TITLE OR COPORATE POSITION Director of Public Works	TELEPHONE NUMBER WITH AREA CODE (660) 882-5257	E-MAIL ADDRESS mcauthon@boonville-mo.org
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176		

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SEP 24 2015

Water Protection Program

Boonville Force Main from Lift Stations No. 1 and No. 2

2.4 PROJECT DESCRIPTION

Construct approximately 2610 L.F. of 12 inch PVC force main from lift station No. 1 to an existing manhole on Rural Street, which has a 24 inch gravity effluent line. This existing line gravity flows to lift station No. 2. This new force main will parallel an existing 12 inch force main which will be kept in service.

Construct approximately 2750 L.F. of 16 inch PVC force main from lift station No. 2 to an existing manhole on Morgan Street, which has a 24 inch gravity effluent line. This existing line gravity flows to the Headworks of the Wastewater Treatment Plant. This new force main will parallel an existing 16 inch force main which will be kept in service.

See attached map.

1.4 DESIGN SUMMARY

Provide a redundant force main from lift station No. 1. This redundant force main will increase firm pumping capacity of existing lift station No. 1 from approximately 2500 GPM to approximately 4000 GPM. Construct 2610 L.F. of new 12 inch PVC force main.

Provide a redundant force main from lift station No. 2. Increase firm pumping capacity of existing lift station No. 2 from approximately 2700 GPM to approximately 4800 GPM. Construct 2750 L.F. of new 16 inch PVC force main.

See attached pump curves for existing pumps at lift station No. 1 and lift station No. 2.

Flushing velocity for lift station No. 1 12" main = 700 GPM

Required flushing velocity for two 12" mains = 1400 GPM

Single lift station No. 1 pump will deliver 2800 GPM, so adequate flow for flushing.

Flushing velocity for lift station No. 2 16" main = 1350 GPM

Required flushing velocity for two 16" mains = 2700 GPM

Single lift station No. 2 pump will deliver 3800 GPM, so adequate flow for flushing.

Pipe Entrance Hydraulic Limitation: Capacity of 24 inch gravity sewer operating with water level even with top of pipe = 16 cfs = 7168 GPM

Pipe Slope Hydraulic Limitation: Minimum pipe slope to carry 4800 GPM is 0.0035 ft/ft

Slope on 24" pipe on Rural Street at terminal manhole for lift station No. 1 is 0.02'/ft: capacity 12,000 GPM

Slope on 24" pipe on Morgan Street at terminal manhole for lift station No. 2 is .04'/ft: capacity 15,000 GPM

So 24 inch sewer pipes at the terminal manholes for each lift station are adequate to carry design lift station flows.

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SEP 24 2015

Water Protection Program

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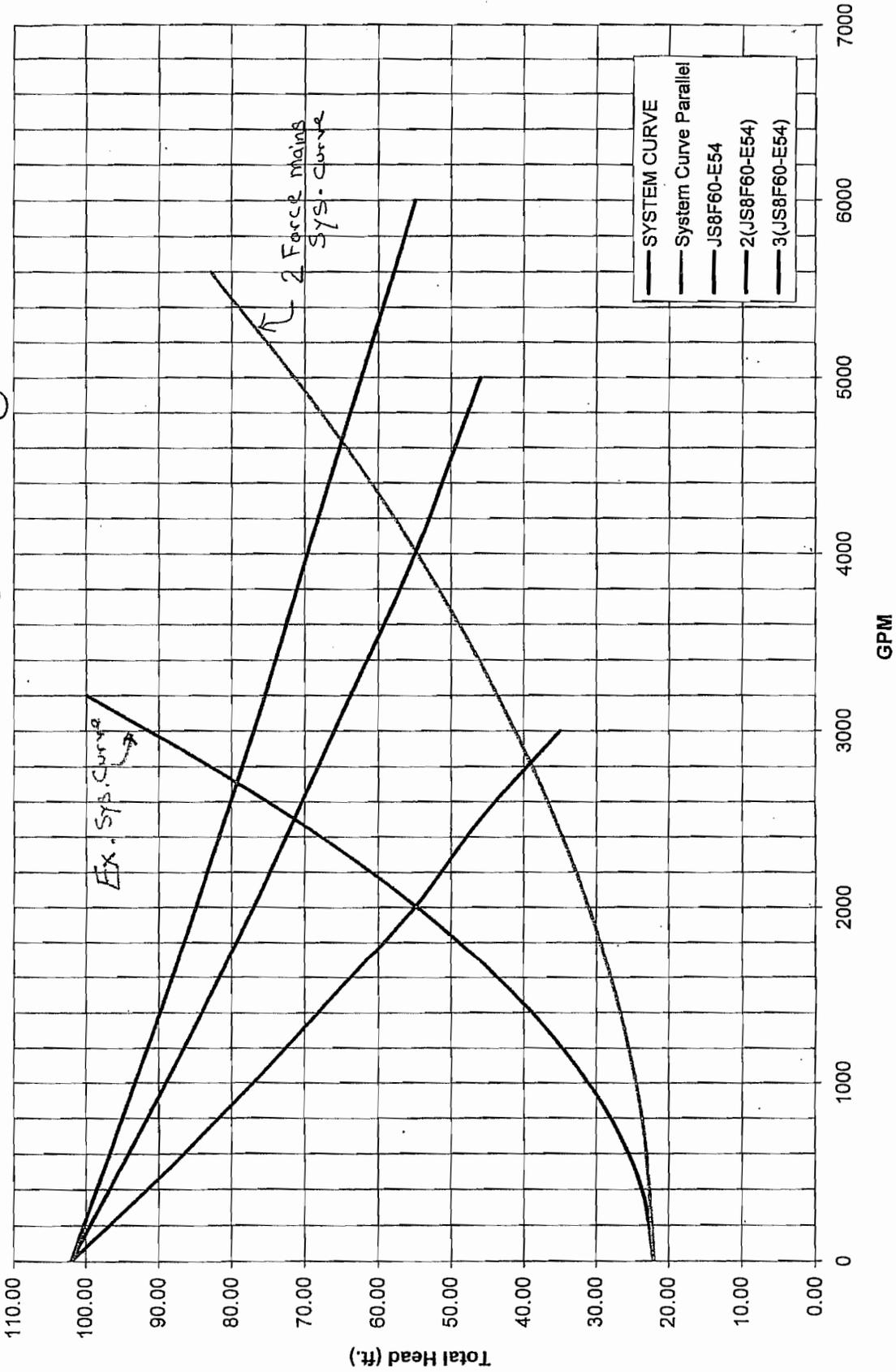
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So 24 inch sewer pipes at the terminal manholes for each lift station are adequate to carry design lift station flows.

Boonville Lift Station #1, System Curve, L = 3550', 12" PVC, C = 130
 L = Equivalent Length of 12" PVC

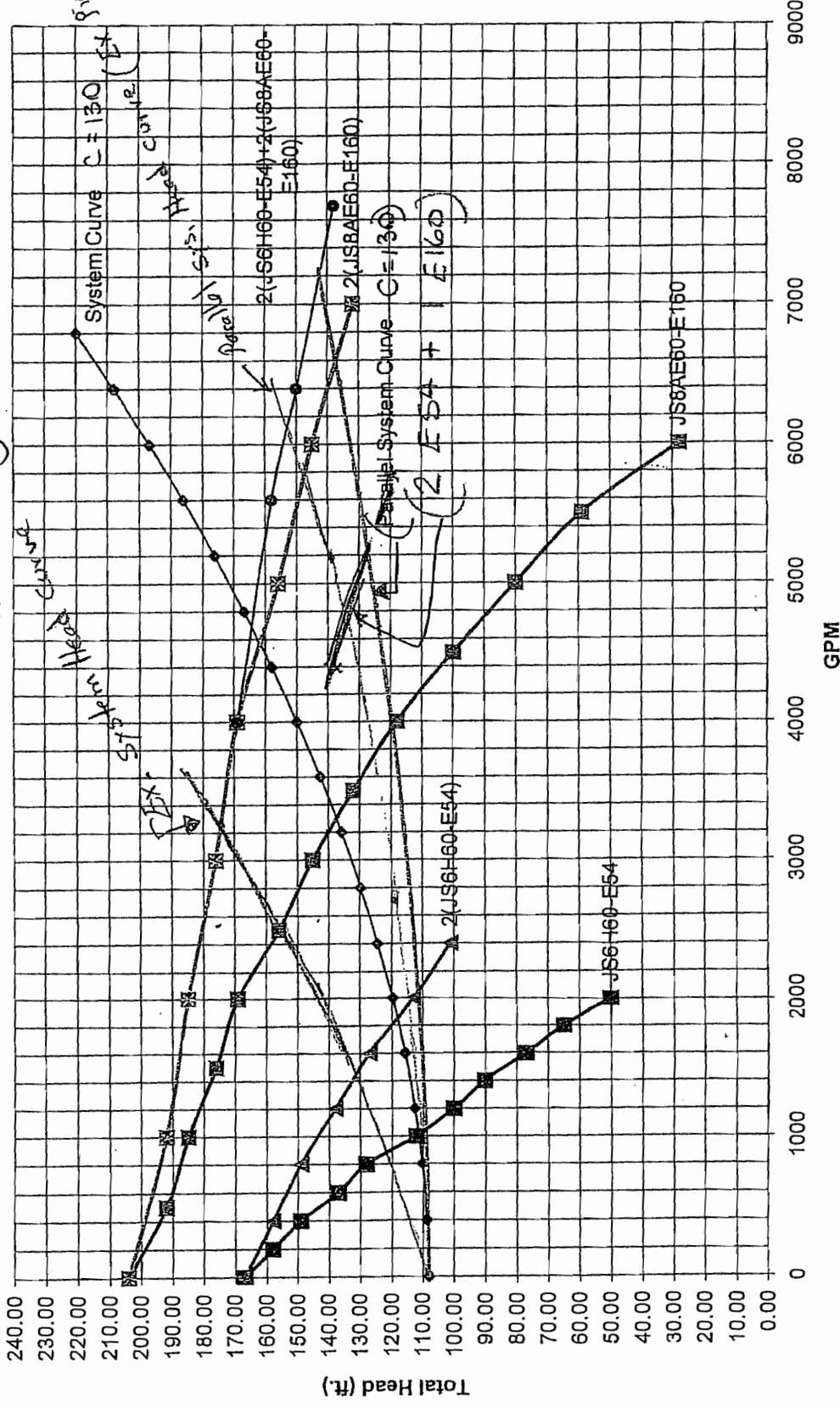


12/27/13

Boonville Lift Station #2, System Curve, L = 5,124', 16" PVC, C=130

L = Equivalent Length of 16" PVC

*9000 gpm
C=130*



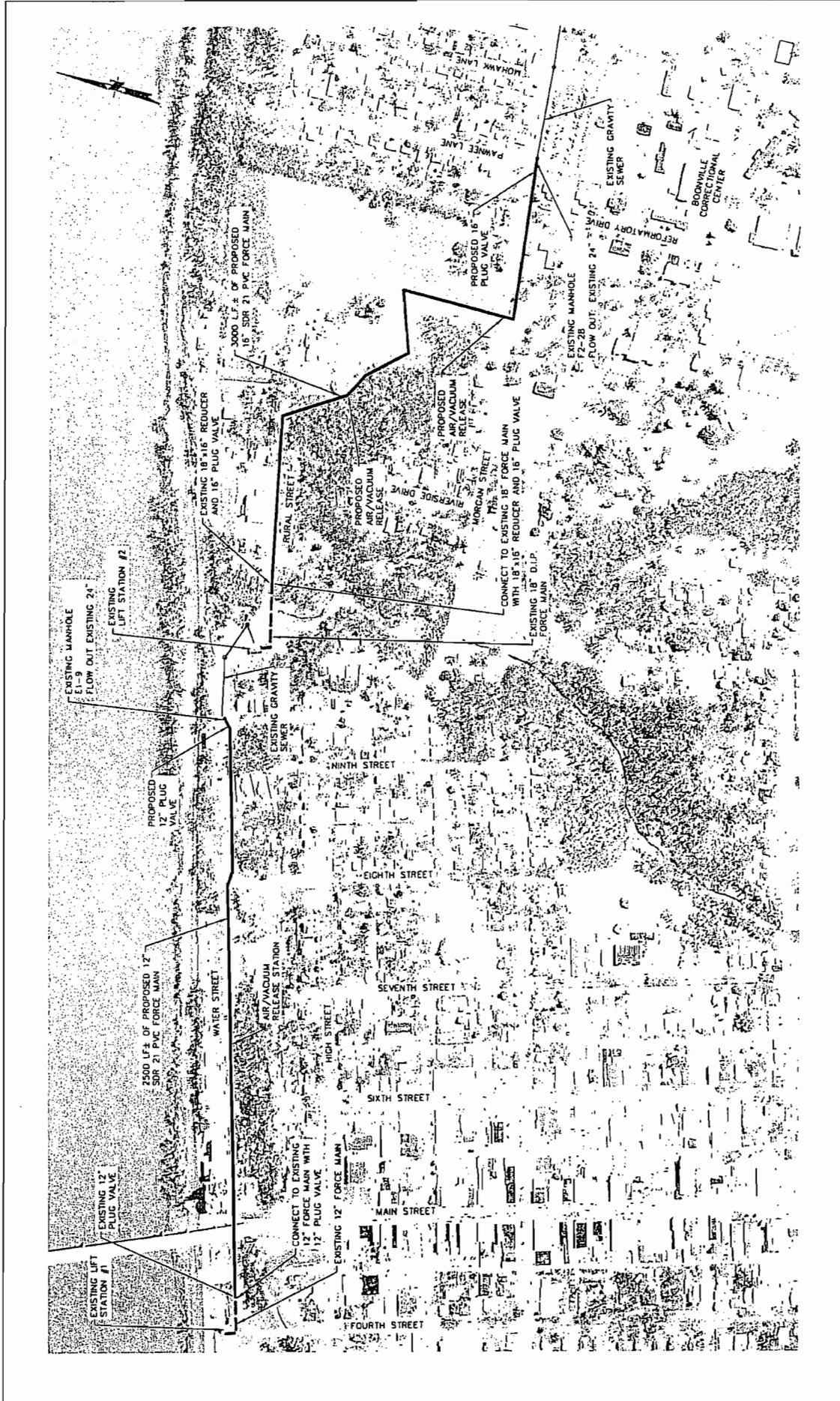
Boonville Force Main from Lift Stations No. 1 and No. 2

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See attached map.



**CITY OF BOONVILLE, MO
SEWER BYPASS STUDY**

DRAWN: J. STEWART
 CHECKED: J. LANE
 DESIGNED: J. LANE
 APPROVED: []
 RELEASED: []
 SCALE: 1" = 350'
 DRAWING NAME: 454225study
 PROJECT NUMBER: 454-194
 SHEET NO: 4

WECO ENGINEERING CO., INC.
 PROFESSIONAL ENGINEERS
 CIVIL, ELECTRICAL, MECHANICAL, SANITARY
 1000 W. MAIN STREET, SUITE 100
 PITTSBURGH, PA 15106-1000
 PH: 724-462-1100
 FAX: 724-462-1101
 WWW.WECOENGINEERING.COM

I, THE PROFESSIONAL ENGINEER, HEREBY CERTIFY THAT I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI AND THAT I AM THE DESIGNER OF THE PROJECT SHOWN ON THIS DRAWING. I AM NOT PROVIDING ANY GUARANTEE OR WARRANTY FOR THE PROJECT. THE USER OF THIS DRAWING SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.

NO.	DATE	REVISION DESCRIPTION

IF THIS DRAWING IS PLOTTED MORE THAN 1117 IN SIZE, IT IS AN UNOFFICIAL COPY. SCALE SHOULD BE ADJUSTED ACCORDINGLY.