SANITARY SEWER TRUNK LINE PROJECT

To: City of West Branch, Iowa

Prepared by: Mia Smith, Sylivia Tumusiime and Spencer Brown

CEE:4763 – Project Management and Design

Date: 12/19/2025

Contents

Section I Executive Summary

The City of West Branch, Iowa is planning for continued residential growth that will require expanded and reliable wastewater infrastructure. To support this development, a student-led capstone design team from the University of Iowa's Department of Civil and Environmental Engineering was tasked with designing a sanitary sewer trunk line to serve parcel 0901176002 located on the western edge of the city. The primary objective of the project was to connect the parcel to the existing wastewater treatment system while providing sufficient capacity for long-term expansion.

The design process included a site visit, surface modeling, and hydraulic analysis using Autodesk Civil 3D. Wastewater flow estimates were developed in accordance with the Iowa Department of Natural Resources Wastewater Facilities Design Standards, and pipe sizing was determined using Manning's equation following Iowa SUDAS criteria. Multiple design alternatives were evaluated, including connection to existing sewer infrastructure, alternative alignments, and varying pipe diameters. Based on hydraulic capacity, constructability, and long-term growth considerations, the recommended solution is a new 15-inch sanitary sewer trunk line approximately 6,700 feet in length.

The final design provides service to the initial development of the parcel and allows for substantial future expansion. Under peak wet-weather conditions, the trunk line is designed to convey approximately 0.81 MGD from the initial development and has sufficient capacity to ultimately serve a total of approximately 2,550 homes, including roughly 1,900 additional homes beyond the original parcel. The alignment was selected to minimize impacts to Cedars Edge Golf Course, private property, and wetlands, while maintaining compliance with regulatory standards. The system includes 23 pipe segments and 24 manholes, with spacing consistent with SUDAS requirements. PVC pipe was selected for its durability, corrosion resistance, cost-effectiveness, and favorable hydraulic performance.

Several constraints and challenges influenced the design. Spatial limitations required careful alignment to avoid existing infrastructure, private property, and environmentally sensitive areas. Topographic variations across the site complicated slope design and required optimization to meet elevation requirements without excessive excavation. Hydraulic performance during early phases of development may present an additional challenge, as flows may not initially meet minimum self-scouring velocity requirements; periodic flushing is recommended until development increases. Environmental considerations, including wetlands and stream meandering, were addressed through alignment selection, the use of reinforced concrete armoring near stream crossings, and the anticipated purchase of wetland mitigation credits.

The societal impact of the project is significant. The proposed trunk sewer will enable future residential development, support economic growth, and improve public health through reliable wastewater collection and treatment. The project contributes to sustainable infrastructure planning by incorporating long-term capacity, environmental protection, and regulatory compliance. At the state level, the project aligns with Iowa's goals for modernizing municipal infrastructure and promoting smart growth. As a student-led initiative, it also demonstrates the value of academic–industry collaboration by providing practical engineering solutions while preparing future professionals.

A preliminary engineer's cost estimate was developed using data from the Iowa Public Works Service Bureau and is presented in Section VII. This estimate accounts for major construction elements, including excavation, pipe installation, manholes, erosion control, and site restoration. The estimated construction cost is $1,859,875. Additional costs are anticipated for temporary and permanent easements required when crossing private property, as well as for the purchase of wetland credits associated with wetland impacts from the project. Including these additional items, the total projected project cost is approximately $2,233,821.

Based on the analyses performed, we recommend proceeding with final design, permitting, and construction planning for the proposed 15-inch sanitary sewer trunk line. This solution provides the City of West Branch with a resilient, scalable, and cost-effective wastewater infrastructure system capable of supporting both immediate development and long-term growth.

Section II Organization Qualifications and Experience

1. **Organization**

   A student-led engineering design team from the Fall 2025 Capstone Design course at the University of Iowa performed the work. The team is comprised of senior undergraduate students from the Department of Civil & Environmental Engineering at the University of Iowa. Each member brings a unique specialization in areas such as hydraulics, structural design, environmental systems, and project management, allowing the team to approach complex infrastructure challenges with a multidisciplinary perspective.

2. **Organization Location and Contact Information**

   The team operates out of the Seamans Center for the Engineering Arts and Sciences, located on the University of Iowa campus in Iowa City, Iowa. The designated Project Manager is Mia Smith, who served as the primary point of contact throughout the project's duration. All communications regarding scheduling, deliverables, and client coordination were directed through Mia Smith.

3. **Organization and Design Team Description**

   As Project Manager, Mia Smith oversaw the overall workflow, ensuring timely delivery and effective communication with the client. As an environmental engineer, Mia Smith dealt with flow estimation, pipe sizing, slope design, and ensured adherence to Iowa DNR Wastewater Facilities Design Standards, as well as municipal ordinances. Sylivia Tumusiime, a civil engineer, supported the team with Civil 3D modeling, plan sheet production, and spatial analysis. Spencer Brown, a civil engineer, was also responsible for flow estimations as well as documentation throughout the project.

Section III Design Services

1. **Project Scope**

   The project involved the design of a sanitary sewer trunk line to serve parcel number 0901176002, located on the western edge of West Branch, Iowa. The primary objective was to connect the site to the existing wastewater treatment facilities, while also enabling the possibility of future development with reliable infrastructure.

   Our team began by conducting a comprehensive site survey and surface modeling using Civil 3D. Land use estimations for the site were obtained using Iowa Statewide Urban Design and Specifications (SUDAS). Sewage generation rates were calculated using the Iowa Department of Natural Resources (DNR) Wastewater Facility Design Standards. This informed the hydraulic load estimation, including wastewater depths, and maximum and minimum allowable flows.

   Following the analysis of the estimated wastewater flow out of the proposed site, we designed the horizontal and vertical alignment of the trunk sewer, ensuring that the proposed system met the elevation and flow requirements of the existing infrastructure. Pipe sizing was decided using Manning's equation, with slope optimization to maintain self-cleansing velocities. Manholes and access structures will be designed at appropriate intervals, incorporating drop structures where necessary to accommodate elevation changes. The scope also includes identifying potential utility conflicts, coordinating with stormwater systems, and ensuring full compliance with Iowa DNR Wastewater Facilities Design Standards and West Branch municipal ordinances.

Figure 1 - Site Location

2. **Work Plan**

Work began on August 25th after receiving the Request for Proposal (RFP) from the client. Careful analysis of the RFP gave an understanding of the project scope, being further expanded upon following the first client contact on August 29th. Each member of the team prepared the proposal documentation for 14 days, consisting of a report and accompanying presentation. A site visit was conducted on September 16th, gaining valuable insight into the environment and path of the potential trunk sewer. Following this, Mia and Spencer spent 30 days evaluating flow estimations for each of the potential design alternatives. After receiving the potential flow that would be leaving the site, Sylivia conducted the sewer design work with Autodesk's Civil 3D program for 49 days, adjusting it as necessary to maximize performance. Once the design work was nearing completion, Mia and Spencer began to combine the semester's work into design deliverables, a report, a presentation, and visual aid poster, and Sylivia produced the drawings of the design. Mia conducted a cost estimation following the data provided by the Iowa Public Works Service Bureau. The timeline of work performed on the design is provided below in the form of a Gantt chart.

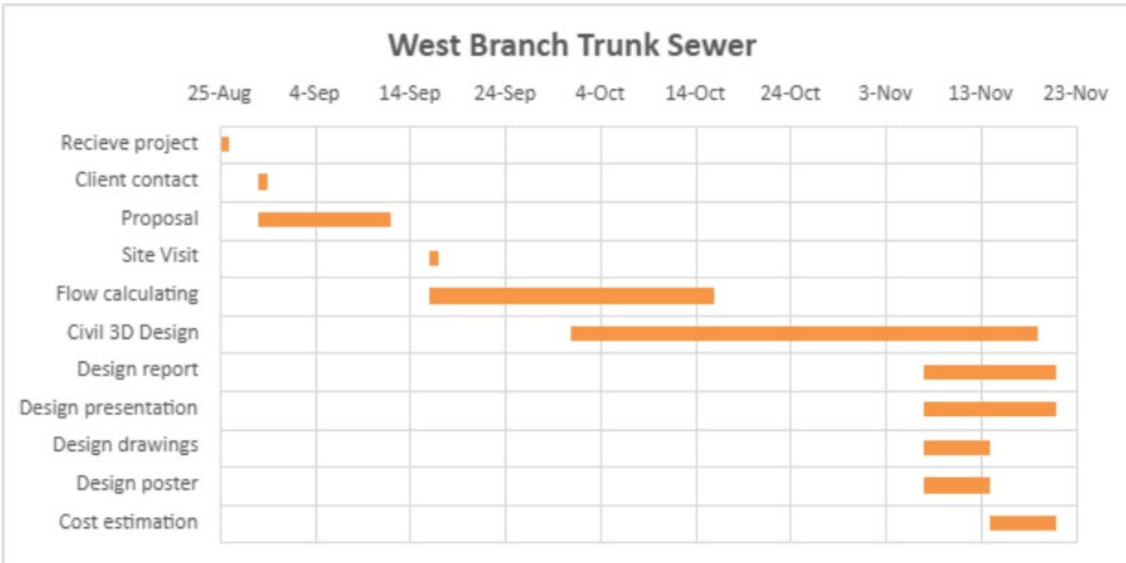

Figure 2 – Work plan Gantt chart

Section IV Constraints, Challenges, and Impacts

1. **Constraints**

   The design of the sanitary sewer trunk line was subject to several key constraints that must be acknowledged and addressed throughout the project. Spatial constraints were present, as the site is bordered by existing infrastructure and natural features that limit alignment options. After leaving the site, the trunk line will pass through Cedars Edge Golf Course, where construction invasiveness shall be minimized to maintain the functionality of the area. The pipe will also travel alongside private property lines, encountering sheds that are located both within private yards and in West Branch city property. Environmental constraints include the presence of wetlands or sensitive areas that must be preserved or mitigated. Regulatory constraints were significant, as the design must comply with the standards of Iowa DNR's Wastewater Facilities Design, Iowa SUDAS, and local municipal ordinances. These constraints are non-negotiable and shaped the scope, methodology, and final recommendations of the project.

2. **Challenges**

   In addition to fixed constraints, the project presented several design and implementation challenges that require proactive planning and technical problem-solving. The first major challenge would be the functionality of the pipe following construction. According to section 3.12.2 of the Iowa DNR Wastewater Facilities Design Standards, the pipe should have a minimum self-scouring velocity of two feet per second. The subdivision on the proposed site, as well as any additional expansions needed to reach capacity, will not appear overnight. The velocity will not reach the minimum for self-scouring. A solution to this problem, until the velocity reaches this level, would be periodic manual flushes of the system to prevent potential erosion. Another major challenge was the topographic variation across the parcel, which complicated slope design and pipe alignment. Ensuring that the new trunk line meets the elevation of the existing system without requiring excessive excavation or pumping infrastructure was a critical design consideration. An additional challenge was the potential for future meandering of the creek running alongside the pipe path. This can be rectified with concrete armoring along the edge of the pipe to prevent the possibility of severe infiltration or failure. The presence of wetlands in the area must be considered as well. Adequate wetland credits need to be purchased to allow for disturbances during construction. The budget constraint, while not explicitly defined in the RFP, was considered during cost estimation and phasing to ensure the proposed design is financially feasible for the City of West Branch. These conflicts were identified early through mapping and field assessment, and mitigation strategies that were developed to avoid costly redesigns or construction delays.
   The integration of stormwater systems was also a challenge, particularly in areas where dual infrastructure coordination was necessary. Additionally, the team

navigated permitting and regulatory review processes, which may involve coordination with multiple agencies and adherence to environmental protection standards. These challenges were addressed through careful planning, field assessments, and the development of alternative design solutions.

3. **Societal Impact within the community and/or the State of Iowa**

   The successful implementation of this project will have a meaningful and positive impact on both the local community of West Branch and the broader State of Iowa. By enabling future development on the designated parcel, the sanitary sewer trunk line will support residential growth, economic expansion, and improved public health outcomes through reliable wastewater management. The infrastructure will enhance the city's capacity to accommodate population increases while maintaining environmental stewardship and regulatory compliance. From a community perspective, the project contributes to long-term planning efforts, ensuring that new developments are supported by sustainable and resilient infrastructure. At the state level, the project aligns with Iowa's goals for modernizing municipal systems, promoting smart growth, and preparing future engineers through experiential learning. As a student-led initiative, the project also demonstrates the value of academic-industry collaboration, providing students with real-world experience while delivering tangible benefits to the community.

Section V Alternative Solutions That Were Considered

The first alternative solution considered for the new sanitary sewer trunk line was to connect the site to the existing West Branch system. Using the flow data and pipe sizing from three different manholes within the network (manholes 17, 20, and 35), we were able to estimate the available space for the new flow out of the trunk sewer. The maximum available flow space in each pipe (with diameters 12 inches, 10 inches, and 8 inches respectively) was calculated with the design standards listed in Iowa SUDAS section 3C-1, shown in Appendix A. Again, the pipes were assumed to have been constructed at the minimum slope required for their diameters. Using Manning's equation, the maximum flow is 0.900 MGD for manhole 17, 0.625 MGD for manhole 20, and 0.413 MGD for manhole 35. The available flow in each pipe was calculated by the difference between each maximum flow rate and the measured flow rates (each adjusted with a peaking factor of 3.6), equaling 0.260 MGD, 0.168 MGD, and 0.011 MGD, respectively. With the flow leaving the site (again, adjusted with a peaking factor of 3.6) being 0.811 MGD, there would not be sufficient space to tie the new development into the existing system. These calculations are provided in Appendix A.

After consultation with the client about these results, it was agreed that a new trunk line to service all new expansion projects would be the best option. Relying on the existing sewer lines would limit the future potential of growth that is expected in the coming years, as well as the number of homes that could be built on the new site. West Branch has plans for development that will also likely exceed the design life of the older pipes as well, thus a new line to service the imminent and eventual needs of the city would be economically efficient.

Another alternative that was considered was the possibility of the pipe running on the west side of the creek of the length between Cubby Park and Main Street, as it would reduce private property interference and would require fewer easements than if the pipe were to run on the east side. However, our engineering judgement lends us the belief that the meandering of the stream near the north end of Gilbert Drive (shown below in Figure 3) would be too severe to reinforce against.

Figure 3 - Potential meandering limiting pipe path

Before selecting a 15-inch sewer for the final design, 16 and 18-inch diameters were considered. The same calculation process was performed with each, utilizing a Microsoft Excel template created for the design work. A 16-inch trunk sewer would be able to service an additional 2286 homes after completion of the 644-unit development, and an 18-inch trunk sewer would be able to service an additional 3066 homes. A 15-inch sewer would be able to serve an additional 1910 homes. These calculations are also attached in Appendix A. After consideration of all options and consultation with the client, it was determined that a 15-inch pipe would be most effective. These larger pipe sizes would likely not be able to reach a functional flow during the life cycle of the sewer line. The 15-inch pipe would efficiently connect at the exit point near the water treatment plant while providing adequate expansion that can be achieved during the life cycle of the sewer.

Section VI Final Design Details

1) **Flow estimation**

The work began with an estimation of the flow that the pipe would need to service the site's development, first without considering the client's desire for further expansion in the future. The area of the site was measured to be roughly 143.13 acres in total. Using Iowa Statewide Urban Design and Specifications (SUDAS) Section 2.3.3, the land use for a medium-density multi-family residential development was selected to be 4.5 units per acre, and 3 people per unit. This would allow roughly 644 units to be built on the site, or 1932 people. Next, the daily Average Wet Weather (AWW) flow for a new municipal system was calculated using the criteria found in Chapter 14 of the Iowa DNR Wastewater Facilities Design Standards, section 14.4.5.3. There, it is stated that "The design for wastewater treatment plants to serve new collection systems shall be based on an average wet weather flow of 100 gallons per capita per day for residential...flow". With the calculated value of 1932 people, this would be a daily AWW flow of 64,407.5 gallons per day (GPD), or 0.0644 MGD. Multiplying this by a peaking factor of 3.6 results in a flow of 0.811 MGD leaving the site. This peaking factor, correlating to population, was sourced from the Iowa DNR Wastewater Facility Design Standards and shown in Appendix B.

Once the flow from the site was determined, the availability for future expansion within a new trunk sewer was calculated. Under the client's advisement, we decided on a pipe with a diameter of 15 inches. The maximum allowable flow for this pipe size was calculated with Manning's Equation while following the design standards in Iowa SUDAS section 3C-1. According to SUDAS, "Pipe sizes 15 inches and smaller should carry the peak flow at a depth of no more than 0.67 of the pipe diameter". The maximum flow (Q max) was obtained with this conservative area estimation. Thus, the maximum allowable flow in this new trunk sewer is roughly 3.21 MGD. The difference between these two flows, or the available space after servicing the site, is 2.41 MGD. After finding the available flow to reach maximum capacity in the pipe, the total number of homes that can be added to the system was calculated. The maximum flow (Q max) was divided by the flow leaving the site (Q in) times the peaking factor of 3.6 to obtain a factor of 3.97. This, when multiplied by the number of homes used as a reference, 644, yields a total number of homes that can be serviced, 2554, or 1910 additional homes after subdividing the original parcel. The calculations for the design flow are provided in Appendix B.

2) **Pipe design**

Once the flow estimations were complete, the design work of the trunk sewer itself was performed using Autodesk Civil 3D. The local map, topography, and streamlines were uploaded from Johnson County and Cedar County GIS datasets in ArcGIS and then clipped and projected and then brought into Civil 3D. The path of the pipe is shown in Figure 4. The pipe network is 6,706 feet long, with an average depth of approximately 8.5 feet. It includes 23 sanitary pipe segments and 24 manhole structures, as well as two drop structures to ensure depth control and avoid deep excavation. All pipe lengths were kept under 400 feet to meet SUDAS requirements. The maximum elevation is 736 feet, and the minimum is 709.6 feet. See Drawing Sheets 1-15 and C.1-C.7, respectively, for the design pipe location plan, section drawings, and manhole structure specifications. PVC was selected for the pipe, due to its cost-effectiveness, durability, and smooth interior surface, which provides excellent flow and reduces clogs. It is resistant to corrosion, lightweight for easier installation, and less prone to root intrusion, making it a reliable and long-lasting material for transporting sewage. Locations where stream bending is present should be concrete reinforced to armor against future meandering and prevent sewer breaching. The pipe should also be insulated with fiberglass pipe insulation sleeves at points where it crosses the stream to combat winter freezing that may occur due to the presence of the stream, despite having adequate cover.

Figure 4 - Path of trunk sewer line

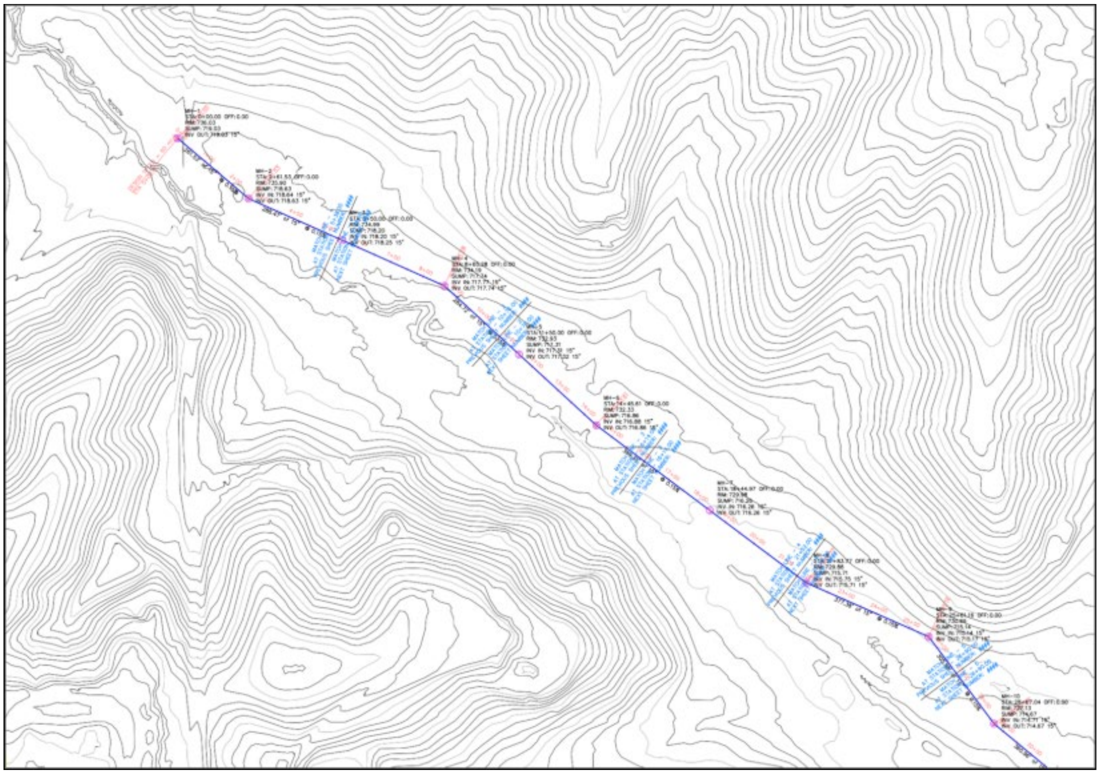

Figure 5 – Sample plan view of the trunk line

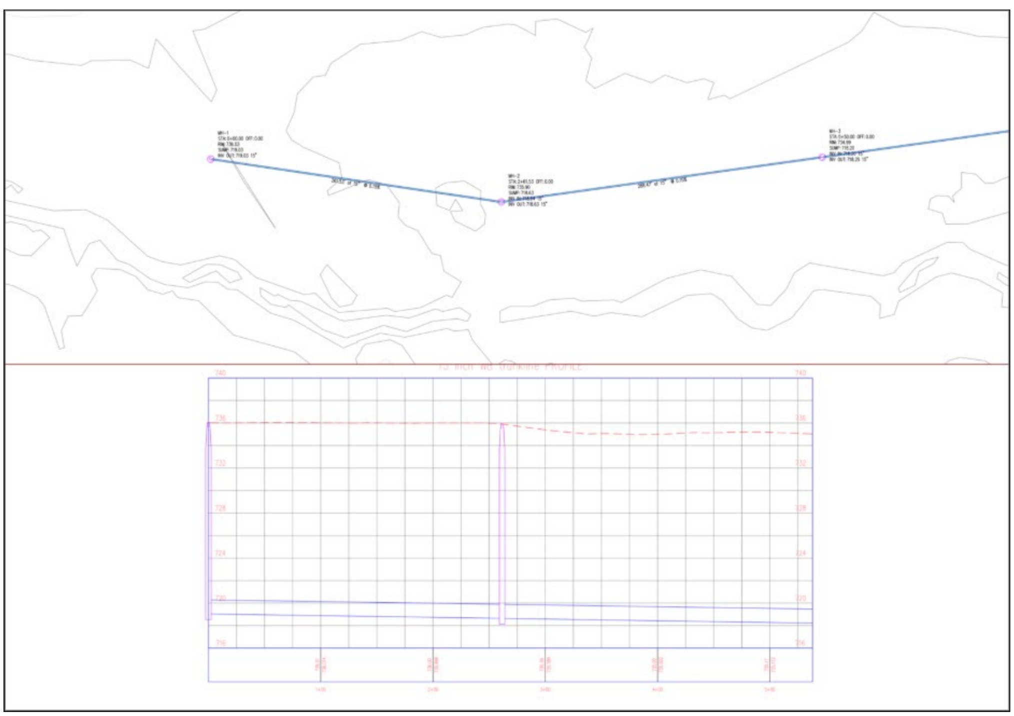

Figure 6 – Sample plan and profile sheet

<u>Section VII</u> Engineer's Cost Estimate

The tentative project cost estimate was estimated using information provided through the Iowa Public Works Service Bureau.

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Work Description	Quantity	Unit	Unit Price (US$)	Amount
Preliminary Survey	1	LS	$ 9,000.00	$ 9,000.00
Clearing/Grubbing	1	AC	$ 25,000.00	$ 25,000.00
Horizontal Drilling	660	FT	$ 130.00	$ 85,800.00
15" PVC	6706	LF	$ 130.00	$ 871,780.00
Geotextile	2212.98	SY	$ 4.00	$ 8,851.92
Manhole	24	EA	$ 8,200.00	$ 196,800.00
Manhole extention	18	EA	$ 400.00	$ 7,200.00
Shoring	3	EA	$ 1,575.00	$ 4,725.00
Top Soil Covering	6438.276	CY	$ 18.00	$ 115,888.97
Under Road Encasement	230	LF	$ 600.00	$ 138,000.00
Seeding	1	LS	$ 25,000.00	$ 25,000.00
Wetland Seeding	1	LS	$ 7,000.00	$ 7,000.00
Silt Fence	13412	LF	$ 2.00	$ 26,824.00
Erosion control	1	LS	$ 18,400.00	$ 18,400.00
			Subtotal	$ 1,540,269.89
		15%	Contingencies	$ 231,040.48
		5%	Administrative & Engineering	$ 77,013.49
			Total	$ 1,848,323.87

Figure 7 – Cost Estimation

Appendix A - Alternative Solution (connecting to existing system)

A. Capacity of Pipe

Pipe sizes 15 inches and smaller should carry the peak flow at a depth of no more than 0.67 of the pipe diameter. Pipe sizes greater than 15 inches should carry the peak flow at a depth of no more than 0.75 of the pipe diameter. See Figure 3C-1.01 to determine full flow values. To calculate 0.67 full and 0.75 full, multiply the full flow values from Figure 3C-1.01 by 0.79 and 0.91 respectively. Iowa DNR uses 0.75 of the pipe diameter for pipes 8 inches to 15 inches with no mention of larger pipes.

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2} \qquad R = \frac{A}{P}$$

E. Minimum Grade

See Table 3C-1.01 below for the minimum slopes for each pipe diameter. Minimum grade on sanitary sewer service stubs should be 1/8 inch per foot.

Table 3C-1.01: Minimum Slope

Pipe Size (inches)	Minimum Slope (ft/100 ft)
8	0.40
10	0.28
12	0.22
15	0.15
18	0.12
21	0.10
24	0.08
27	0.067
30	0.058
36	0.046

PIPE CONNECTION ESTIMATION			**(Estimating the flow coming from the site vs available flow in exisiting manholes)**				
MH Number	**17**	**20**	**35**		new pipe		
S0	0.0022	0.0028	0.004	ft/ft			
d	12	10	8	in	16	in	
A (available for Qmax)	0.352387	0.244713	0.156616	ft2	0.785		(Area solved using (d*0.67) to not exceed capacity)
R	0.112225	0.093521	0.074817	ft	0.1875		(^This allows solving for "maximum" usable space)
Q Max	0.484501	0.336543	0.222183	cfs			
Q Max	**0.900225**	**0.625312**	**0.412826**	MGD			
Q Measured	0.07223	0.04669	0.003	MGD			
Q Existing	**0.260028**	**0.168084**	**0.0108**	MGD			(Average Q from multiplied by peaking factor of 3.6)
Q Available	**0.640197**	**0.457228**	**0.402026**	MGD			
Q in (from site)	**0.231867**	MGD	64407.49	GPD			
Difference	0.40833	0.225361	0.170159	MGD			
	408330.1	225360.9	170159	GPD			

Appendix A - Alternative Solutions (pipe sizing)

ASSUMING A 16 INCH TRUNK SEWER			n (PVC)	0.012	cfs	mgd
S0	0.0014	ft/ft			1	0.5382
d	16	in				
A (available for Qmax)	0.626465	ft2				
R	0.149633	ft				
Q Max	0.830777	cfs				
Q Max	1.543621	MGD				
Q in (from site)	0.231867	MGD				
Q in (from site)	0.231867	MGD	231867	GPD		
Difference	1.311754	MGD	(Available space after servicing site)			
Houses on site	644.0749					
Q Max / Q in	6.657358					
Total homes for sewer	4287.837		Total homes after site		**3643.762**	

ASSUMING AN 18 INCH TRUNK SEWER			n (PVC)	0.012	cfs	mgd
S0	0.0012	ft/ft			1	0.5382
d	18	in				
A (available for Qmax)	0.79287	ft2				
R	0.168338	ft				
Q Max	1.052148	cfs				
Q Max	1.954939	MGD				
Q in (from site)	**0.231867**	MGD				
Q in (from site)	0.231867	MGD	231867	GPD		
Difference	1.723072	MGD	(Available space after servicing site)			
Houses on site	644.0749					
Q Max / Q in	8.431294					
Total homes for sewer	5430.385		Total homes after site		**4786.31**	

Appendix B – Design Flow Calculations

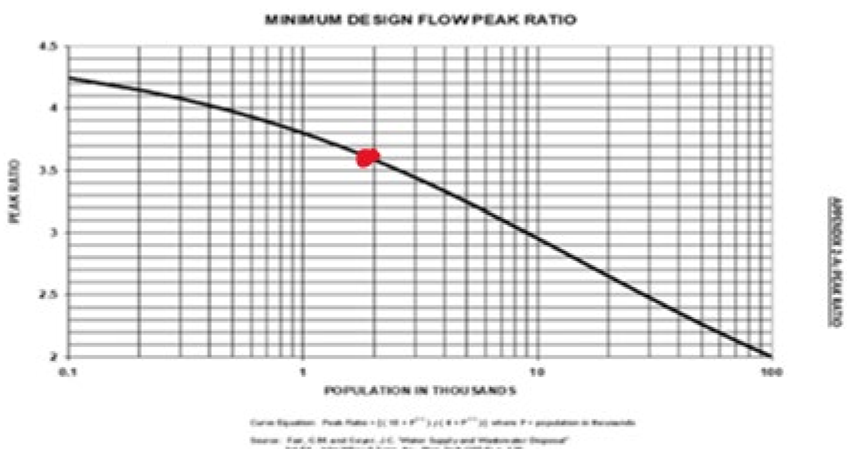
2.3.3 Minimum Design Equivalents

2.3.3.1 Type of development:

2. Multi-family (medium density - 4.5 units/acre, 3 people/unit, or 15 people/acre

Average Wet Weather (AWW) Flow: The daily average flow for the wettest thirty (30) consecutive days for mechanical plants or the wettest 180 consecutive days for controlled discharge lagoons. The respective wettest consecutive (30 and 180) day flows may or may not coincide with precipitation events.

The design of new wastewater systems to serve new collection systems shall be based on an average wet weather flow of 100 gallons per capita per day for residential and commercial flow. If applicable, add 20 gallons per capita per day for out-of-town students + industrial flows + large commercial operations.



Area of site	6234645	ft^2
	143.1278	acre
Multi-medium density	644	units
4.5 units/acre, 3 people/unit	1932	people
AWW Flow	64407.49	gpd
Asuming 100 gpcd	0.064407	mgd
Peaking Factor	3.6	
Flow Leaving Site	**0.231867**	**gpd**

Appendix B - Design Flow Calculations

A. Capacity of Pipe

Pipe sizes 15 inches and smaller should carry the peak flow at a depth of no more than 0.67 of the pipe diameter. Pipe sizes greater than 15 inches should carry the peak flow at a depth of no more than 0.75 of the pipe diameter. See Figure 3C-1.01 to determine full flow values. To calculate 0.67 full and 0.75 full, multiply the full flow values from Figure 3C-1.01 by 0.79 and 0.91 respectively. Iowa DNR uses 0.75 of the pipe diameter for pipes 8 inches to 15 inches with no mention of larger pipes.

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2} \qquad R = \frac{A}{P}$$

E. Minimum Grade

See Table 3C-1.01 below for the minimum slopes for each pipe diameter. Minimum grade on sanitary sewer service stubs should be 1/8 inch per foot.

Table 3C-1.01: Minimum Slope

Pipe Size (inches)	Minimum Slope (ft/100 ft)
8	0.40
10	0.28
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15	0.15
18	0.12
21	0.10
24	0.08
27	0.067
30	0.058
36	0.046

ASSUMING A 15 INCH TRUNK SEWER			n (PVC)	0.012	cfs	mgd
S0	0.0015	ft/ft			1	0.5382
d	15	in				
A (available for Qmax)	0.550604	ft2				
R	0.140281	ft				
Q Max	0.724285	cfs				
Q Max	1.345755	MGD				
Q in (from site)	**0.231867**	MGD				
Q in (from site)	0.231867	MGD	231867	GPD		
Difference	1.113888	MGD	(Available space after servicing site)			
Houses on site	644.0749					
Q Max / Q in	5.803996					
Total homes for sewer	3738.208		Total homes after site		**3094.133**	

Appendix C – Sources

Iowa Statewide Urban Design and Specifications (SUDAS). (2025). *Design Manual (2025 Edition).* Iowa State University Institute for Transportation. Retrieved from https://www.iowasudas.org/manuals/design-manual/

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Montgomery County Sanitary District. (2020). *MSD Standard Drawings 2020* [PDF]. https://www.montsan.org/files/22510a7c9/MSD%20STANDARD%20DRAWINGS%202020.pdf

Appendix D – Client Information and Work Products

Client Contacts:

Dave Schechinger – City Engineering Consultant, Veenstra & Kimm, Inc

Email: dschechinger@v-k.net

Adam Kofoed – City Administrator, West Branch, IA

Email: adam@westbranchiowa.org

Project Location: Parcel number 0901176002, West Branch, Iowa

Tasks Include:

Site Survey and Surface Modeling

Development Scenario Planning

Hydraulic Load Estimation

Trunk Sewer Alignment Design

Pipe Sizing and Slope Design

Manhole and Structure Design

Regulatory Compliance Review

Cost Estimation and Phasing Plan

Documentation and Presentation