



Environmental Impact Evaluation
Mansfield Four Corners
Sanitary Sewer Project
Mansfield, Connecticut
January 2016



MILONE & MACBROOM

Engineering | Planning | Landscape Architecture | Environmental Science

Environmental Impact Evaluation Mansfield Four Corners Sanitary Sewer Project

Mansfield, Connecticut

January 2016



Prepared for:

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TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1
1.1 Background	1
1.2 Description of Proposed Action.....	3
1.3 Project Purpose and Need.....	6
1.4 The Connecticut Environmental Policy Act (CEPA)	8
1.5 Relationship to Other Projects and Planning Documents.....	9
2.0 ALTERNATIVES CONSIDERED.....	11
2.1 No Action or No Build Alternative	11
2.2 Postpone Action Pending Future Study.....	12
2.3 Sewer Avoidance	13
2.4 Construction of the Project in a Different Location	13
2.5 Community Conveyance and Treatment System	13
2.6 Collection System and Discharge to UConn Water Pollution Control Facility	14
2.7 Alternative Implementation Approaches.....	16
3.0 EXISTING ENVIRONMENT AND ANALYSIS OF IMPACT	18
3.1 Land Use and Zoning	18
3.1.1 Statewide Policies for Conservation and Development.....	18
3.1.2 Regional Plans of Conservation and Development	31
3.1.3 Mansfield Plan of Conservation and Development	33
3.1.4 Zoning.....	36
3.1.5 Conservation Easement Land.....	42
3.1.6 Existing and Potential Future Land Uses in the Project Vicinity.....	44
3.1.7 Analysis of Direct and Indirect Impacts on Land Use and Zoning	54
3.2 Socioeconomics.....	58
3.2.1 Demographics.....	58
3.2.2 Employment	61
3.2.3 Project Costs, Sewer Assessment, and Tax Base.....	64
3.2.4 Property Relocation or Taking.....	66
3.2.5 Analysis of Direct and Indirect Impacts on Socioeconomics	66
3.3 Community Facilities and Services	68
3.3.1 Education.....	68
3.3.2 Public Safety and Emergency Services	69
3.3.3 Parks and Recreation.....	69
3.3.4 Public Transportation	70
3.3.5 Analysis of Direct and Indirect Impacts on Community Facilities and Services	70
3.4 Aesthetic/Visual Resources	70
3.4.1 Existing Aesthetics.....	70
3.4.2 Future Aesthetics	71
3.4.3 Analysis of Direct and Indirect Impacts on Aesthetic and Visual Resources.....	71

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
3.5 Public Utilities and Services.....	72
3.5.1 Water Supply.....	72
3.5.2 Sanitary Sewer.....	75
3.5.3 Storm Sewer.....	78
3.5.4 Electric, Gas, Telephone, and Cable Service.....	79
3.5.5 Analysis of Direct and Indirect Impacts on Public Utilities and Services.....	79
3.6 Cultural Resources.....	81
3.7 Traffic and Parking.....	82
3.7.1 Existing Roadway Network.....	82
3.7.2 Analysis of Direct and Indirect Impacts on Traffic and Parking.....	82
3.8 Water Resources and Water Quality.....	84
3.8.1 Surface Water Resources.....	84
3.8.2 Stormwater Management.....	88
3.8.3 Groundwater Resources.....	92
3.8.4 Analysis of Direct and Indirect Impacts on Water Resources.....	94
3.9 Flood Hazard Potential.....	95
3.9.1 Existing Conditions.....	95
3.9.2 Analysis of Potential Direct and Indirect Impacts on Flooding.....	98
3.10 Biological Environment.....	99
3.10.1 Vegetation and Wildlife.....	99
3.10.2 Inland Wetlands and Watercourses.....	100
3.10.3 Species of Special Concern.....	106
3.10.4 Fisheries.....	106
3.10.5 Analysis of Direct and Indirect Impacts on Biological Resources.....	108
3.11 Physical Environment.....	110
3.11.1 Topography.....	110
3.11.2 Bedrock Geology.....	110
3.11.3 Surficial Geology.....	112
3.11.4 Analysis of Direct and Indirect Impacts on the Physical Environment.....	115
3.12 Air Quality.....	117
3.12.1 Existing Environment.....	117
3.12.2 Construction Related Activities.....	118
3.12.3 Analysis of Direct and Indirect Impacts on Air Quality.....	119
3.13 Noise.....	119
3.13.1 Existing Environment.....	120
3.13.2 Construction-Related Activities.....	120
3.13.3 Analysis of Direct and Indirect Impacts on Noise.....	121
3.14 Solid and Hazardous Materials.....	121
3.14.1 Existing Environment.....	122
3.14.2 Construction-Related Activities.....	123
3.14.3 Analysis of Direct and Indirect Impacts on Solid and Hazardous Materials.....	124

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
4.0 IMPACT ANALYSIS SUMMARY	125
4.1 Unavoidable Adverse Environmental Impacts	125
4.2 Irreversible and Irretrievable Commitment of Resources	125
4.3 Cumulative Impacts	126
4.4 Mitigation Opportunities That Offset Adverse Environmental Impacts	126
4.5 Certificates, Permits, Approvals	129
4.6 Project Costs and Benefits.....	129
5.0 CONSULTATION AND COORDINATION.....	131
5.1 Scoping	131
5.2 Consultation and Coordination with Agencies/Organizations	132
5.3 Public Review.....	132
6.0 DOCUMENT PREPARERS AND REFERENCES	134
6.1 Public Review.....	134
6.2 References.....	135

LIST OF FIGURES

Figure ES-1	Location Plan.....	ES-2
Figure 1.1-1	Location Plan – Mansfield Four Corners Proposed Service Area.....	2
Figure 1.2-1	Project Components	4
Figure 1.2-2	Parcel Map	5
Figure 3.1-1	Zoning	37
Figure 3.1-2	Conservation Easements	43
Figure 3.1-3	Land Use Map	45
Figure 3.1-4	Site Constraints Map.....	47
Figure 3.1-5	Development Potential Map.....	57
Figure 3.7-1	Transportation Network	83
Figure 3.8-1	Class A and AA Water Quality Designations	85
Figure 3.8-2	Drainage Basin Boundaries	86
Figure 3.9-1	FEMA Delineated Floodplain	96
Figure 3.11-1	Topography.....	111
Figure 3.11-2	Bedrock Geology	113
Figure 3.11-3	Surficial Geology	114

TABLE OF CONTENTS (CONTINUED)

Page

LIST OF TABLES

Table 1.2-1	Projected Wastewater Demands Through 20-Year Planning Period Used for Design	3
Table 1.3-1	Historical Wastewater Planning Activities Relevant to the Four Corners Area	6
Table 1.3-2	Septic System Failures and Repairs in the Four Corners Area	7
Table 3.1-1	Consistency with Growth Management Principle #1	20-22
Table 3.1-2	Consistency with Growth Management Principle #2	23
Table 3.1-3	Consistency with Growth Management Principle #3	24
Table 3.1-4	Consistency with Growth Management Principle #4	25-27
Table 3.1-5	Consistency with Growth Management Principle #5	28-29
Table 3.1-6	Consistency with Growth Management Principle #6	30-31
Table 3.1-7	Schedule of Dimensional Requirements	40
Table 3.1-8	Development and/or /Redevelopment Potential for Parcels in Proposed Sewer Service Area	55-56
Table 3.2-1	Historic Population in Mansfield (1950 – 2010)	58
Table 3.2-2	Average Household Size	58
Table 3.2-3	Projected Maximum Buildout for Parcels with High or Moderate Development or Redevelopment Potential	60
Table 3.2-4	Existing and Estimated Employment in Potential Sewer Service Area	63
Table 3.2-5	Project Cost Estimate	64
Table 3.3-1	Public Schools in the Town of Mansfield	69
Table 3.5-1	Public Water Systems in Proposed Sewer Service Area	72
Table 3.8-1	Septic System Failures and Repairs in the Four Corners Area	88
Table 3.8-2	Summary of Developable Land Area	91
Table 3.10-1	Potential Impacts on Wetlands and Watercourses	110
Table 3.12-1	National Ambient Air Quality Standards	118
Table 3.13-1	Noise Zone Standards for Emitter to Designated Receptor (dBA)	120
Table 3.14-1	Summary of Known Contamination in Project Area	123
Table 4.5-1	List of Potentially Required Construction and Operational Permits	129
Table 4.6-1	Anticipated Cost of Project	129
Table 5.1-1	Summary of Scoping Comments and EIE Sections Where Addressed	132
Table 6.1-1	EIE Contributors	134

TABLE OF CONTENTS (CONTINUED)

APPENDICES

Appendix A	Scoping Documentation and Public Comments
Appendix B	Natural Diversity Data Base Correspondence
Appendix C	Soil Boring Results
Appendix D	Soil Survey Report
Appendix E	EDR Database Results
Appendix F	Proposed Town of Mansfield Regulations and Guidelines



EXECUTIVE SUMMARY

PROJECT PURPOSE AND NEED

The subject Environmental Impact Evaluation (EIE) has been undertaken to evaluate the potential impacts of providing public sewer service to the homes and businesses in the area known as Mansfield Four Corners in the town of Mansfield, Connecticut. Mansfield is located in northeastern Connecticut in Tolland County and encompasses 45.5 square miles of land. The majority of residential properties and many of the businesses in Mansfield are served by individual private septic systems.

Mansfield has been actively evaluating sewer needs in town for many decades, as documented in the 1968 townwide sewer feasibility study that identified the Four Corners area as one of three priority areas for sewer service. More recently, Mansfield's *2006 Plan of Conservation and Development* (POCD) recognized that while most areas of town will continue to rely on on-site septic systems, limited expansions of existing sewer service systems would be appropriate to address town needs. In particular, sewer needs were identified in areas with commercial and industrial land use and higher-density housing, including the area surrounding the intersection of Route 44 and Route 195 known as Mansfield Four Corners. This need is also reflected in the current *Mansfield Tomorrow* POCD, adopted in October 2015.



Providing public sanitary sewer service is essential for the vitality of the Four Corners area, which has a history of contamination from failing septic systems and leaking underground storage tanks. Numerous properties in the Four Corners area have had, and continue to have, chronic wastewater disposal difficulties. Additionally, development that would otherwise be consistent with local, regional, and state land use plans has not been realized in the Four Corners area due to a combination of poor soil conditions, high groundwater, lot size, and site constraint factors.

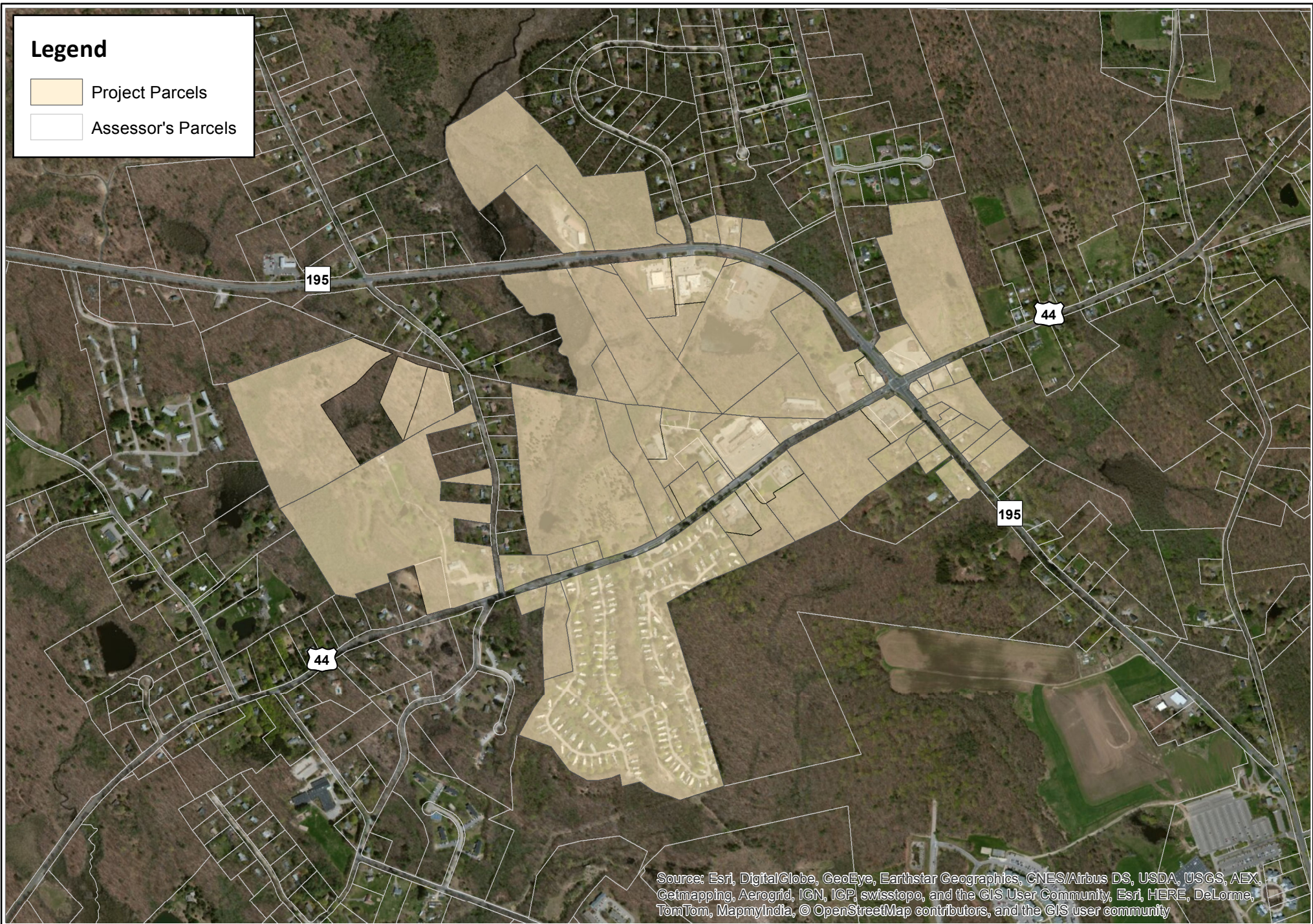
Figure ES-1 is a location plan of the Four Corners Sewer Project area. The proposed sewer service area encompasses approximately 500 acres of land surrounding and extending north and west of the intersection of Routes 195 and 44. This area serves as a commercial hub in northern Mansfield and the northern gateway into town.

The proposed action is to construct sewer collection and transmission appurtenances to serve 61 parcels in the Four Corners area. Wastewater is proposed to be collected through a system of gravity and force mains and discharged to the Water Pollution Control Facility (WPCF) at the University of Connecticut (UConn). The purpose of this proposed action is to:

- Improve and protect the quality of surface water and groundwater in the Four Corners area through abandonment of failing, underperforming, and vulnerable subsurface sewage disposal systems.
- Provide a long-term, reliable system for sewage disposal.
- Prevent future regulatory violations.
- Retain existing commercial businesses and foster new economic development consistent with local, regional, and state plans of conservation and development and local zoning regulations.

Legend

-  Project Parcels
-  Assessor's Parcels



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

SOURCE(S):
USGS Topographic Map via ESRI



MXD: V:\2111-11\GIS\Maps\Location Plan.mxd

Figure ES-1: Location Plan

Mansfield Four Corners Sanitary Sewer Project EIE

LOCATION: Mansfield, CT

Map By: scottb
MMI#: 2111-11
Original: 6/1/2015
Revision: 6/30/2015
Scale: 1 in = 1,000 ft



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ALTERNATIVES ANALYSIS

In accordance with Connecticut Environmental Policy Act (CEPA) requirements, alternatives have been considered for the Mansfield Four Corners Sanitary Sewer Project, including a "no action" alternative and numerous action alternatives. Each has been evaluated based on the ability to meet the project purpose and need. The following alternatives were evaluated:

- No Action
- Postpone Action Pending Future Study
- Sewer Avoidance
- Construction of the Project in a Different Location
- Construction of a Community Conveyance and Treatment System
- Construction of a Collection System and Discharge to UConn WPCF
- Alternate Implementation Approaches

Construction of a sewer collection system and discharge to the UConn treatment plant has the ability to provide a long-term, reliable system for sewage disposal, thus improving and protecting the quality of surface water and groundwater in the Four Corners area from septic systems that are currently underfunctioning or failing; prevent future regulatory violations from occurring from such systems; and provide a mechanism whereby existing and future potential commercial businesses may realize their full development potential, consistent with current zoning and long-range land use plans. As such, this option was selected as the preferred alternative.

EXISTING ENVIRONMENT AND ANALYSIS OF IMPACT

An inventory was conducted of the existing environment, and an analysis was undertaken of potential impacts related to the proposed action. The following elements were considered:

Land Use – Provision of public sewer in the Four Corners area is believed to be consistent with statewide, regional, and local land use plans and zoning regulations. Consistent with Mansfield's POCD, concentrating development within certain planned development areas will discourage overall sprawl in the community.

Socioeconomics – The proposed action is expected to have a positive impact on the local and regional socioeconomic horizon by enabling residential and commercial development and by creation of direct new employment opportunities. The Town of Mansfield will benefit from the increased tax income resulting from private development within the Four Corners area; yet, this increase is expected to have a minimal impact on individual property owners.

Community Facilities and Services – The proposed action is not anticipated to significantly impact education in the town of Mansfield. The development and redevelopment potential within the Mansfield Four Corners area will not necessitate significant expansion of education, health care, public safety, or emergency services. Similarly, the proposed action is not anticipated to negatively impact the town's recreational resources.

Aesthetic and Visual Resources – Potential impacts on aesthetics related to the proposed sewer main are anticipated to be minimal. Most visual impacts will occur during the construction period when clearing

and trenching are ongoing. Such impacts will be temporary. Once constructed, only the two pump stations and manhole covers will be visible. The design of pump station buildings will respect the residential and commercial nature of the surroundings. Longer term, aesthetics in the area are expected to generally improve. Existing buildings, particularly currently vacant buildings, are expected to be redeveloped into sustainable businesses. Various provisions and requirements within Mansfield's Zoning Regulations will ensure that aesthetics are considered for each project consistent with the surrounding area and the remaining structures in the historic village.

Public Utilities and Services – The proposed action is anticipated to have a positive impact on utilities by virtue of providing public sewer to an area of historic and ongoing septic system problems. The UConn sewer system and treatment plant have sufficient capacity to accommodate the project although upgrades to sections of existing piping along Discovery Drive may be needed as projects occur in the future.

Cultural Resources – The land on which construction activities are proposed has been disturbed by past development, with no immediately identified sensitivity to archeological resources. Few historic resources remain in the Mansfield Four Corners historic village and these will not be directly impacted by the proposed project.

Traffic, Transportation, and Parking – Minor and temporary traffic disruption is expected in the project area due to lane closures associated with construction of the sewer collection system. Traffic disruption will be mitigated through the use of well-planned vehicle rerouting, proper construction zone traffic patterns, and public notification of construction periods and locations. Access for emergency vehicles and school buses will be maintained at all times. Traffic issues will be closely coordinated with public safety and education department officials.

Water Resources – The proposed sewer project is expected to have a long-term beneficial impact on local surface water quality through the reduction of untreated wastewater discharges from individual septic systems and their associated bacterial and nutrient loadings. No direct impacts will occur in the tributary to Nelson Brook, Cedar Swamp Brook or its tributaries, or in Mason Brook. Best management practices will be utilized to prevent construction-related activities from impacting these watercourses. A construction stormwater general permit will be required from the Connecticut Department of Energy & Environmental Protection (CTDEEP), which will outline the specific best management practices to be utilized. The Town of Mansfield will continue to require that proper best management practices are utilized to ensure protection of surface water quality during the construction of private development following construction of the sewer collection system. Similarly, significant impacts on groundwater resources are not anticipated as a result of the proposed sewer project. Groundwater quality will be improved for those parcels that currently have failing or underperforming septic systems following connection to the sewer collection system.

Flood Hazard Potential – Direct impacts on flooding are not anticipated. While a portion of the sewer pipe will run through the Federal Emergency Management Agency (FEMA) designated special flood hazard area (SFHA), the pipe will be underground and will therefore pose no obstruction to the conveyance of floodwater within the floodplain. Several vacant lots in the Four Corners area lie within the FEMA-delineated SFHA. In many municipalities across the state, such parcels would have the potential to support intensive development; however, this is not the case in Mansfield. Local

regulations are extremely restrictive relative to development in the floodplain, allowing only parking lots, swimming pools, and accessory buildings.

Biological Environment – The vast majority of proposed sewer construction will occur in areas that are currently paved or in previously disturbed areas that do not support significant biological communities. The design will strive to avoid impacts on nearby wetlands, and if impacts are unavoidable, they will be minimized and/or mitigated. Local wetlands permitting will be required.

Physical Environment – No significant changes are anticipated to the physical environment as a result of the proposed action. Significant modifications to area topography are not contemplated.

Air Quality – The project will not significantly impact air quality in the town or the region. Numerous controls are proposed for minimizing short-term impacts on air quality from fugitive dust and other pollutant emissions during the construction phase of this project.

Noise Quality – The majority of construction activities will occur in the daylight hours to minimize noise impacts. Following construction, there will be no significant environmental noise impact as a result of the proposed action.

Solid Waste and Hazardous Materials – The proposed action will not generate significant solid waste or hazardous materials.

Energy – The proposed action will utilize energy for the pumping and treatment of wastewater. Pump station design will incorporate modern, energy efficient components.

Cumulative and Unavoidable Adverse Environmental Impacts – The potential for cumulative and unavoidable impacts was analyzed. Specific unavoidable environmental impacts include an increase in utility usage and temporary construction-related impacts on air, noise, and traffic. Mitigation measures have been identified with respect to associated short-term air and noise quality. However, a certain degree of additional truck and equipment use and access will be necessary during this time period, which is unavoidable.

Irreversible and Irrecoverable Commitment of Resources – The construction of the proposed project will utilize nonrenewable resources (i.e., construction supplies, fuel, etc.). Since these resources cannot be reused, they are considered to be irreversibly and irretrievably committed.

PROJECT COSTS AND BENEFITS

The total project cost has been estimated by the design engineer to be \$9 million. State funding for this project is estimated at \$3 million through a grant-in-aid to be administered through the CTDEEP.

The following specific benefits are expected to occur as a result of the construction and operation of a sewer system in the project area:

- Improve and protect the quality of surface water and groundwater in the Four Corners area by virtue of abandonment of failing and vulnerable subsurface sewage disposal systems.
- Provide a long-term, reliable system for sewage disposal in the Four Corners area.

- Prevent future regulatory violations related to failing septic systems.
- Retain existing commercial businesses and foster economic development, consistent with local, regional, and state POCDs.

CERTIFICATES, PERMITS, AND APPROVALS

The following table presents some of the pertinent local, state, and federal regulations and statutes that may affect this project.

List of Potentially Required Construction and Operational Permits

Permit/Approval	Reviewing Authority
Wastewater Discharge Approval	University of Connecticut
Stormwater Construction Permit	Department of Energy & Environmental Protection
Construction Dewatering Permit	Department of Energy & Environmental Protection
DOT Encroachment Permit	Department of Transportation
Inland Wetlands Permit	Mansfield Inland Wetlands Agency
Flood Management Certification	Department of Energy & Environmental Protection
Planning & Zoning Permit (Pumping Stations)	Mansfield Planning & Zoning Commission



1.0 INTRODUCTION

1.1 Background

The subject Environmental Impact Evaluation (EIE) has been undertaken to evaluate the potential impacts of providing public sewer service to the homes and businesses in the area known as Mansfield Four Corners in the town of Mansfield, Connecticut. Mansfield is located in northeastern Connecticut in Tolland County and encompasses 45.5 square miles of land. The 2010 census reports the townwide population in Mansfield as 26,543. Connecticut Routes 195, 89, 320, 32, and 275 as well as U.S. Route 44 are all prominent travelways in town, supporting the vast majority of commercial, industrial, and large residential uses. Storrs is a village located in north-central Mansfield along Route 195 just south of its intersection with Route 44. Storrs is well known relative to its affiliation with the main campus of the University of Connecticut (UConn).



The Town of Mansfield is proposing to construct sewer collection and transmission appurtenances to serve 61 parcels in the Four Corners area. Wastewater is proposed to be collected through a system of gravity and force mains and discharged to the Water Pollution Control Facility (WPCF) at UConn. The subject EIE has been prepared to evaluate potential impacts associated with the extension of UConn's sewage collection system to serve the area surrounding Four Corners.

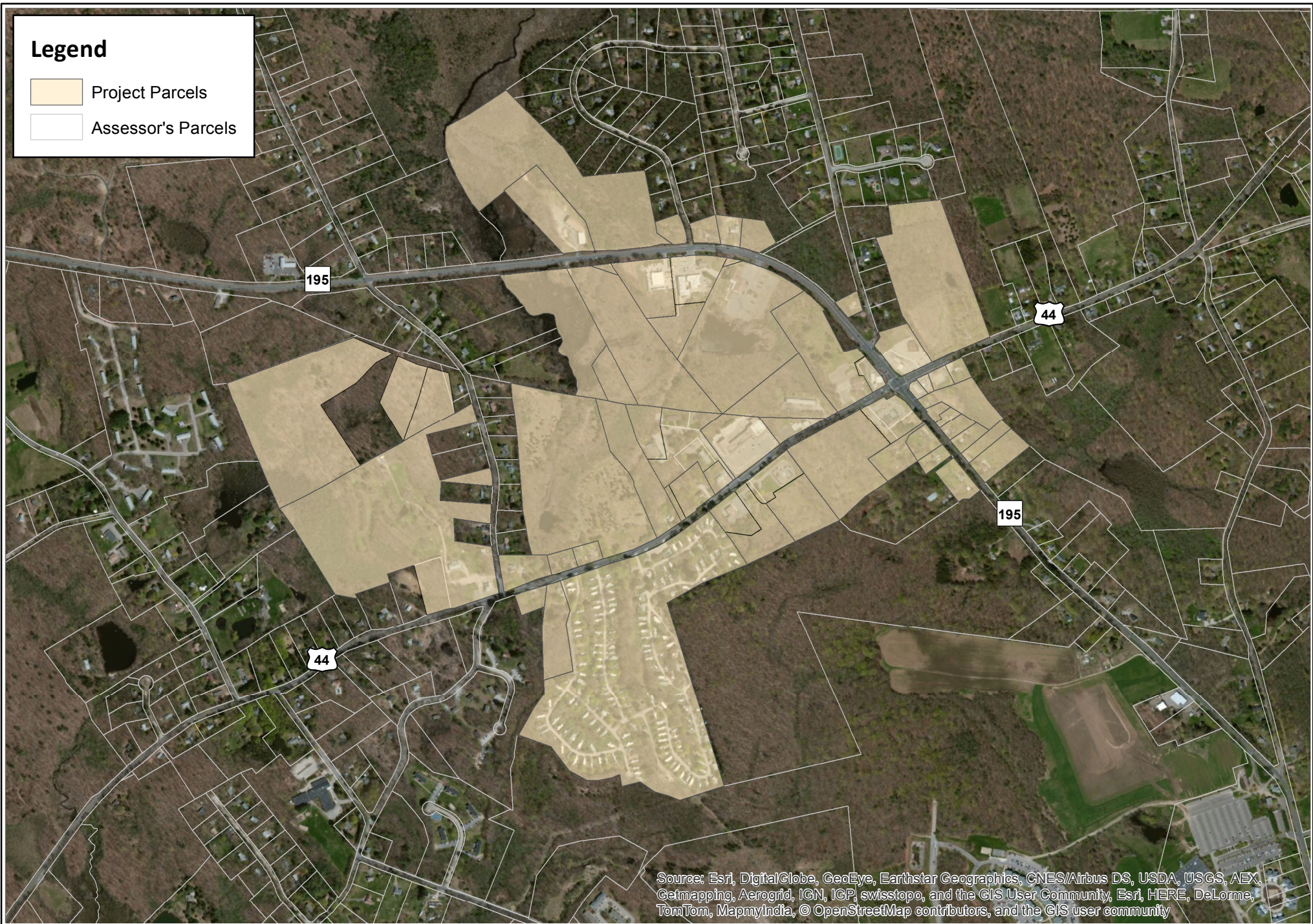
Figure 1.1-1 is a location plan of the Four Corners area. The proposed sewer service area encompasses approximately 500 acres of land surrounding and extending north and west of the intersection of Routes 195 and 44. This area serves as a commercial hub in northern Mansfield and the northern gateway into town and the University. The boundaries of the proposed sewer service area were developed as part of a 2008 Wastewater Facilities Plan prepared for the Town of Mansfield in consideration of a number of factors including land use designations in the town's 2006 Plan of Conservation and Development (POCD), properties with documented water pollution problems, and the potential for installation and operation of septic systems at individual parcels relative to their ability to comply with current health code regulations (including lot size and soil suitability).

The majority of residential properties and many of the businesses in Mansfield are served by individual private septic systems. Sanitary sewer service is provided to a number of Mansfield residents and commercial businesses in the Storrs area through a sewage collection and treatment facility that is owned and operated by UConn. In the southern part of Mansfield, sewer service is provided through a sewage collection and treatment facility that is owned and operated by the Town of Windham. The Town of Mansfield does not own or operate a wastewater treatment facility.

Mansfield has been actively evaluating sewer needs in town for many decades, as documented in the 1968 townwide sewer feasibility study that identified the Four Corners area as one of three priority areas for sewer service. More recently, Mansfield's *2006 Plan of Conservation and Development* (POCD) recognized that while most areas of town will continue to rely on on-site septic systems, limited expansions of existing sewer service systems would be appropriate to address town needs. In particular, sewer needs were identified in areas with commercial and industrial land use and higher-density housing, including the area surrounding the intersection of Route 44 and Route 195 known as Mansfield Four Corners. This need is also reflected in the current *Mansfield Tomorrow* POCD, adopted in October 2015.

Legend

-  Project Parcels
-  Assessor's Parcels



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

SOURCE(S):
USGS Topographic Map via ESRI



Figure 1.1-1: Location Plan

MXD: V:\2111-11\GIS\Maps\Location Plan.mxd

Mansfield Four Corners Sanitary Sewer Project EIE

LOCATION: Mansfield, CT

Map By: scottb
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Original: 6/1/2015
Revision: 6/30/2015
Scale: 1 in = 1,000 ft

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1.2 Description of Proposed Action

The proposed action is the construction and operation of approximately 22,000 feet of sewer piping inclusive of the collection system, a trunk sewer, and a force main; two submersible pump stations; and related equipment and appurtenances to provide public sewer service to the Four Corners area, including properties along Route 195 and Route 44. The proposed infrastructure would be located along Route 195 (Storrs Road) approximately 3,000 feet north and 1,000 feet south along Route 195 from its intersection with Route 44 (Middle Turnpike Road); along Route 44 approximately 600 feet east and 3,700 feet west from its intersection with Route 195; along portions of Professional Park Road off Route 44; and connecting to an existing sewer system on Discovery Drive within the UConn campus.

One submersible pump station is proposed to be located on Route 195 near 1753 Storrs Road near Willard's Home Improvement Center (referred to herein as the Willard's station). A second submersible pump station is proposed to be located at the rear of Jensen's Rolling Hills Community off Route 44 (referred to herein as the Jensen's station). Pump station components have been sized to accommodate peak-hour demands in accordance with standard engineering design practice. Each pumping station will be outfitted with an automatic transfer switch and emergency backup generator that will allow the station to continue operating in the event of a power failure.

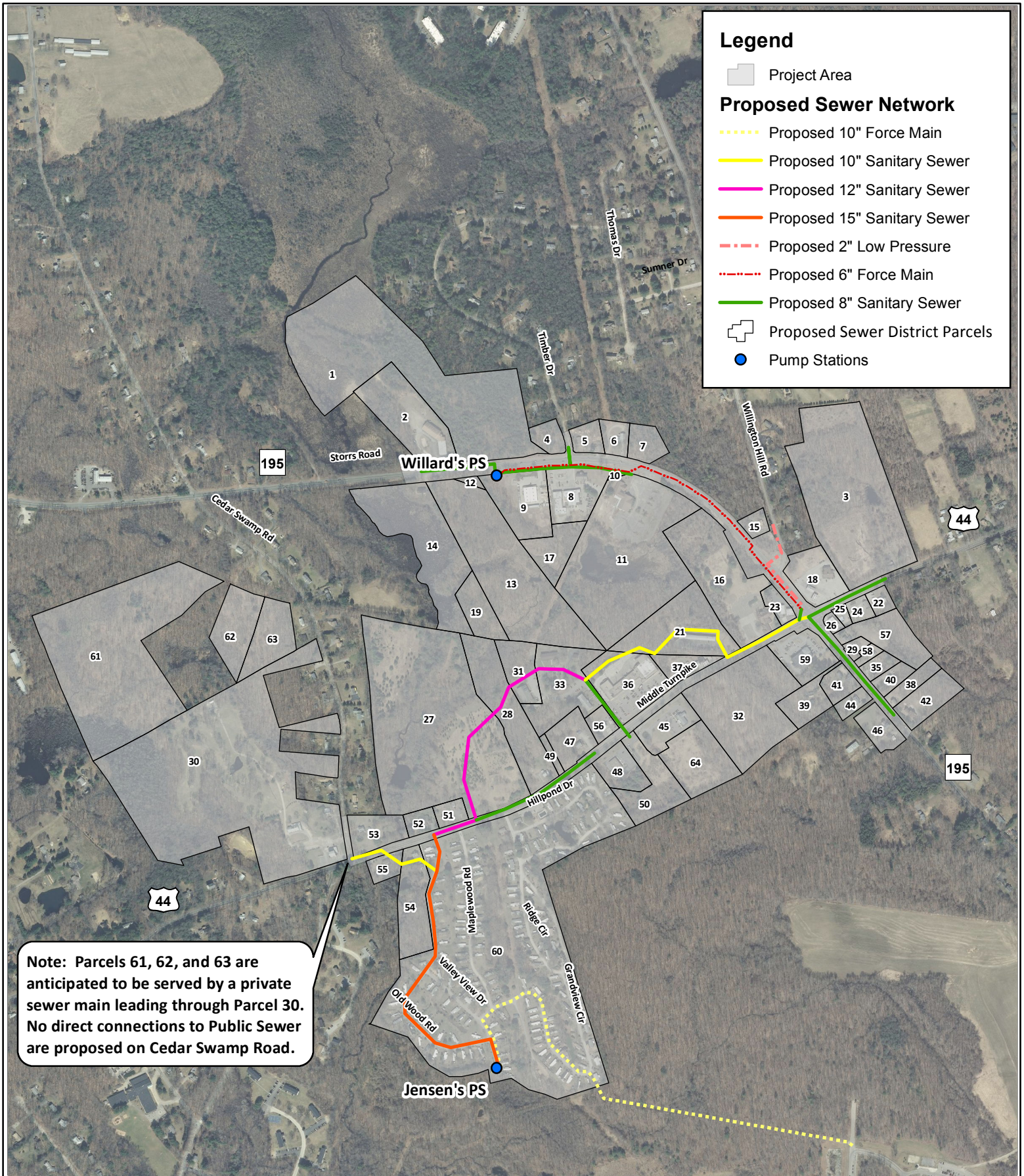
The anticipated average day discharge from the Four Corners area based on intensive buildout conditions is estimated at 0.187 million gallons per day (mgd) through the 20-year planning period. Projected wastewater flows are presented by type of use in Table 1.2-1 below.

**TABLE 1.2-1
Projected Wastewater Demands Through 20-Year Planning Period Used for Design**

Type of Use	Estimated Existing Wastewater Flows	Future Design Wastewater Flows (gpd)*
Residential	26,181	132,791
Commercial	15,524	54,132
Industrial	0	0
Total	41,705	186,923

*Estimate by Weston & Sampson dated June 13, 2011
gpd = gallons per day

Wastewater collected from this system will discharge via a force main to the UConn WPCF for treatment. This facility is located on the main campus in Storrs on LeDoyt Road. Figure 1.2-1 shows the individual components of the proposed project. Figure 1.2-2 is a parcel map of the area that depicts a parcel numbering scheme that will be used throughout this document.



Note: Parcels 61, 62, and 63 are anticipated to be served by a private sewer main leading through Parcel 30. No direct connections to Public Sewer are proposed on Cedar Swamp Road.

SOURCE(S):
CT ECO 2012 Orthoimagery

Figure 1.2-1: Project Components

LOCATION:
Mansfield, CT

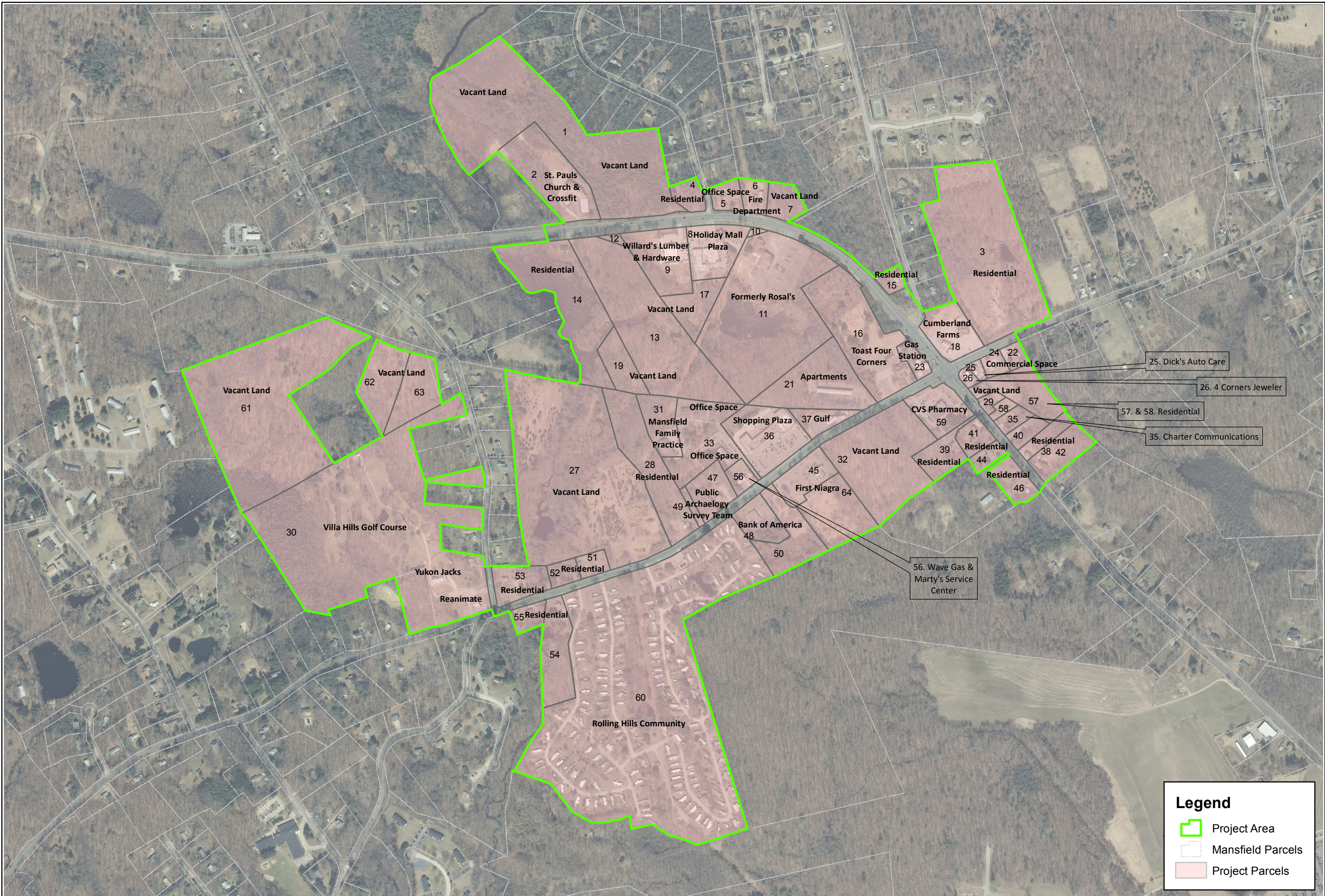


Mansfield Four Corners Sewer Project

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Map By: CMP
MMI#: 2111-11
Original: 3/3/2015
Revision: 1/28/2016
Scale: 1 inch = 875 feet

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Legend

- Project Area
- Mansfield Parcels
- Project Parcels



SOURCE(S):
 CT ECO 2012 CT Orthoimagery
 Town of Mansfield Land Use Layer

Parcel Map
Mansfield Four Corners Sanitary Sewer EIE
Mansfield, Connecticut

Map By: CMP
 MM#: 2111-11
 MXD: V:\2111-11\GIS\Maps\Parcel Map.mxd
 1st Version: 3/10/2015
 Revision: 6/30/2015
 Scale: 1 in = 600 ft

Figure 1.2-2

1.3 Project Purpose and Need

The Four Corners area is one of three primary commercial centers in Mansfield. It serves as the northern gateway to Mansfield and is located at the crossroads of two state arterial roads. This area has been designated in Mansfield's long-range POCDs and numerous iterations of zoning regulations as an area targeted for mixed-use commercial development. Development that would otherwise be consistent with local, regional, and state land use plans has not been realized in the Four Corners area due to a combination of poor soil conditions, high groundwater, lot size, and site constraint factors. Some properties in the study area have lot sizes or configurations that do not allow sufficient room to site a water supply well and a septic tank/field in conformance with current state regulations and standards. Example properties include parcels 10, 12, and 49. Other parcels have potential development densities that cannot be supported within the parcel's site constraints relative to sewage disposal.

Providing public sanitary sewer service is essential for the vitality of the Four Corners area, which has a history of contamination from failing septic systems and leaking underground storage tanks. Numerous properties in the Four Corners area have had, and continue to have chronic wastewater disposal difficulties. Properties affected by groundwater contamination due to leaking underground storage tanks include 607, 611, 625, 632, 643, and 650 Middle Turnpike and 1659, 1646-1650, and 1660 Storrs Road. Contamination of drinking water supplies has been handled on a case-by-case basis, with the Connecticut Department of Public Health (DPH) requiring installation of carbon filters or provision of bottled drinking water (Earth Tech, 2008). Analysis and planning for wastewater management in the Four Corners area have occurred over decades. Table 1.3-1 provides a summary of analysis milestones.

**TABLE 1.3-1
Historical Wastewater Planning Activities Relevant to the Four Corners Area**

Year	Activity
1968	Townwide sewer feasibility study identified the Four Corners area as one of three "first priority" areas for new sewer construction.
1977	Wastewater Facilities Plan was developed to evaluate several different options for northern Mansfield.
1978	Preferred alternative from 1977 plan was adopted for additional study.
1979	Town failed to approve final preferred alternative and instead sought funding for a sewer avoidance plan that focused on the use of on-site septic systems instead of sewers.
1984	Private well contamination from volatile organic compounds (VOCs) occurs.
1985	201 Facilities Plan Supplementary Study by the Town of Mansfield Department of Public Works
1987	The State of Connecticut DPH and DEEP are brought into the fold. Abatement orders are issued for contamination.
1988	DEEP determines that conditions "...create an unacceptable risk of injury to the health and safety of persons using the ground water as a public or private source of water for drinking."
1990	Town of Mansfield implements long-term monitoring program for the Four Corners area.
2004	CTDEEP directs the Town of Mansfield to address ongoing wastewater problems.
2006 – 2008	Wastewater Facilities Plan was prepared for the Town of Mansfield recommending sanitary sewers.
2008	Four Corners Sewer Advisory Committee is established.
2011	Town retains the professional engineering design services of Weston & Sampson engineers to design a sewage collection and transmission system.
2014	Referendum to proceed with Four Corners Sewer Project is passed.
2015	Town retains professional consulting services of Milone & MacBroom, Inc. to undertake an EIE of the proposed sewer project under the Connecticut Environmental Policy Act.

A review of the Eastern Highlands Health District's files was undertaken to ascertain data on septic system failures and overflows. Table 1.3-2 presents a summary of system failures/overflows and system

repairs or replacements based on a review of public records. Failures or overflows were recorded on eight parcels; 28 repairs or replacements were reported from 1990 to 2014. The specific causes of individual septic system failure are not typically tracked by the health department; however, groundwater infiltration and poorly drained soils are common causes of failure and limit options for installing code-compliant systems.

**TABLE 1.3-2
Septic System Failures and Repairs in the Four Corners Area**

Issue	Location within Four Corners	Parcel M/B/L	Parcel #	Year
Repair/Replacement	661 Middle Turnpike	2/8/14	3	1991, 1999
Repair/Replacement	1722 Storrs Road	2/6/14	6	NA
Repair/Replacement	1733 Storrs Road	8/15/9	8	2003
Failure/Overflow	1660 Storrs Road	2/8/13	18	1975
Repair/Replacement	1660 Storrs Road	2/8/13	18	NA
Failure/Overflow	1659 Storrs Road (3 failures)	8/15/12	23	2002-2014
Repair/Replacement	1659 Storrs Road	8/15/12	23	2002
Failure/Overflow	1650 Storrs Road	9/24/19	26	NA
Repair/Replacement	11 Professional Park Road	8/15/18	33	NA
Failure/Overflow	591 Middle Turnpike	8/15/15	36	1973, 1986, 2012
Failure/Overflow	603-607 Middle Turnpike	8/15/14	37	1994
Failure/Overflow	1632 Storrs Road	9/24/14	40	2000
Failure/Overflow	1631 Storrs Road	9/23/6	44	1975
Repair/Replacement	505 Middle Turnpike	8/15/26	53	1990
Repair/Replacement	575 Middle Turnpike	8/15/20	56	2003
Failure/Overflow	1646 Storrs Road	9/24/18	57	2003
Repair/Replacement	1645 Storrs Road	9/24/16	58	1992
Repair/Replacement	632 Middle Turnpike	9/23/2-03	59	1991
Repair/Replacement	536 Middle Tpke (15 repairs, 3 replacements)	8/23/3	60	NA

Note: M/B/L = Map/Block/Lot; NA = Not Available

Continued reliance upon on-site subsurface wastewater disposal systems in the Four Corners area has the potential to result in the following:

1. Continued exposure of the public to the health hazards associated with contact with untreated wastewater
2. Degradation of surface waters
3. Severe limitations for potential development
4. A failure to provide for tax base growth due to the inability to capitalize on potential commercial and higher-density residential economic development opportunities in areas that are supported by local planning and zoning regulations, and local, regional, and state planning documents

Historical groundwater contamination has been documented in the Four Corners area. Groundwater has been monitored by the Connecticut Department of Energy and Environmental Protection (CTDEEP) for many years. Contamination has been caused by a number of leaks from gasoline stations as well as

from failing septic systems. While the gasoline station leaks have been addressed, there is a continuing need to provide adequate, safe sewage disposal to this area.

Not all septic systems within the Four Corners area are failing, and not all parcels require public utilities to enable long-term uses that are consistent with land use plans and zoning regulations. Provision of public sewers would, however, provide relief for those properties that are now experiencing or may in the future experience septic system failure. Moreover, extension of public sewers to the Four Corners area will enable redevelopment with a mixture of residential and commercial uses.

In summary, the purposes of the proposed Four Corners Sanitary Sewer Project are to:

- Improve and protect the quality of surface water and groundwater in the Four Corners area through abandonment of failing, underperforming, and vulnerable subsurface sewage disposal systems.
- Provide a long-term, reliable system for sewage disposal.
- Prevent future regulatory violations.
- Retain existing commercial businesses and foster new economic development consistent with local, regional, and state POCDs and local zoning regulations.

1.4 The Connecticut Environmental Policy Act (CEPA)

The format and content of the subject EIE are based upon the requirements of the Connecticut Environmental Policy Act (CEPA), Sections 22a-1 through 22a-1h of the Connecticut General Statutes (CGS) and Sections 22a-1 through 22a-1a-12 of the Regulations of Connecticut State Agencies (RCSA). State funds will be used in part for the construction of sewage collection and transmission facilities thereby triggering the CEPA process. The sponsoring agency of this project is the CTDEEP.

CEPA recognizes the complex relationship between the natural environment and human actions. The CEPA regulations outline a process whereby, through coordination with local, regional, state, and federal governments as well as public and private entities, a sponsoring state agency can determine and minimize impacts on the resources of the state.

A major function of the CEPA process is the determination of whether or not a project will have a "significant effect." Significant effect means substantial adverse impact on the environment (RCSA 22a-1a-1, Definitions). Agencies preparing such CEPA documents must consider direct and indirect effects as well as cumulative impacts. Public input and participation are major components of the CEPA process. Public participation in the CEPA process is encouraged through contact with interested persons and affected agencies. The overall process for public participation and approval of an EIE is summarized below.

- The sponsoring agency must notify state review agencies and other interested parties with regard to the proposed action via a Scoping Notice. Reviewers are given a minimum of 30 calendar days to respond to the Scoping Notice with comments about the nature and extent of environmental impacts that might result.
- Upon the request by 25 or more people, the sponsoring agency must hold a public Scoping Meeting to further explain the proposed action.

- During the preparation of an EIE, the sponsoring agency must consider the issues and comments provided by the reviewers along with other information gathered. (Refer to Section 5.0 for additional information on project scoping and comments received.)
- After the EIE is prepared, the sponsoring agency must publish notice of its availability and circulate the draft for review and comment. Any interested parties may provide written comment within 45 days.
- Upon the request of 25 or more people, the sponsoring agency must hold a public hearing in accordance with state statutes and Section 22a-1a-11 of the regulations. A period of no less than 30 days following the date of availability of the EIE must transpire before such public hearing is held.
- The sponsoring agency must review comments, perform any additional environmental study and analysis (if warranted), and amend the evaluation as appropriate. It is the sponsoring agency's responsibility to respond to all substantive comments received. The agency then prepares its Record of Decision (ROD).
- The sponsoring agency must forward its ROD and the EIE to the Office of Policy and Management (OPM) for a determination of the adequacy of the evaluation. The following information must be included: (1) public notice documentation; (2) documentation of the public hearing if one is held; (3) comments received from all interested parties along with responses to the pertinent issues raised by the public and state agencies; (4) the agency decision relative to proceeding with the proposed action; and (5) intentions for initiating actions for reducing impacts.
- The CEPA process concludes with the review of the EIE and ROD by OPM and its determination of whether or not regulatory requirements have been satisfied. The EIE and ROD are the basis for the implementation of the project.

1.5 Relationship to Other Projects and Planning Documents

Numerous local, state, and regional planning documents have been evaluated in the context of the subject EIE as listed below:

1. Mansfield Plan of Conservation and Development, 2006
2. Mansfield Tomorrow: Plan of Conservation and Development, 2015
3. Conservation & Development Policies: The Plan for Connecticut 2013 – 2018, Office of Policy and Management
4. Zoning Regulations of the Town of Mansfield, Connecticut – Revised to September 1, 2014
5. Subdivision Regulations, Town of Mansfield, Connecticut – Effective March 31, 2011
6. Inland Wetlands & Watercourses Regulations, Town of Mansfield Connecticut – Effective Date February 15, 2012

7. Aquifer Protection Area Regulations of the Town of Mansfield, Connecticut – Revised effective January 7, 2007
8. Windham Region Land Use Plan 2010 – Adopted January 8, 2010
9. University of Connecticut Water and Wastewater Master Plan, Storrs, Connecticut, June 2007
10. Four Corners Area Wastewater Facilities Plan, Earth Tech, January 2008
11. Northeastern Connecticut Economic Partnership Comprehensive Economic Development Strategy, 2010

The relationship of the Four Corners Sanitary Sewer Project to the above planning documents is presented throughout this document.



2.0 ALTERNATIVES CONSIDERED

In accordance with CEPA requirements, alternatives have been considered for the Mansfield Four Corners Sanitary Sewer Project, including a "no action" alternative and numerous action alternatives. Each has been evaluated based on the ability to meet the project purposes and need presented in Section 1.3 of this document. Some of the information contained in this section has been derived from the analysis conducted by Earth Tech as presented in the January 2008 Four Corners Area Wastewater Facilities Plan. The purpose of that plan was to study and confirm the need for wastewater collection facilities and, as appropriate, determine the best means for wastewater disposal in the Four Corners area over a 20-year planning period from 2010 to 2030.

2.1 No Action or No Build Alternative

Under the no action or no build alternative, a sewer collection system would not be constructed within the Four Corners area. No action relative to sanitary sewer service does not impact the provision of public water supply. In 2014, the Connecticut Water Company (CWC) applied for a Water Diversion Permit from the CTDEEP to supply water to Mansfield, including properties in the Mansfield Four Corners area. Final issuance of the Diversion Permit occurred on June 2, 2015 following a tentative notice to approve the permit as published by DEEP. An administrative hearing was conducted, and a ruling in favor of the permit was issued. Construction commenced in summer 2015 and has continued through early 2016.

The water diversion permit contains a condition that limits CWC to serving uses of an intensity that are consistent with Mansfield's 2006 POCD, the POCD in effect at the time the EIE ROD was submitted. This condition is consistent with the service agreement ratified between CWC and the Town of Mansfield dated January 21, 2014.

Under the no action alternative, sewer service would not be extended to the Four Corners area. Public water supply is expected to improve conditions for those homes and businesses that are currently experiencing drinking water quality and/or capacity issues. However, under this alternative, septic systems will continue to be vulnerable to underperformance and failure. For businesses in the area located within the mixed-use commercial zone, sewage disposal will continue to be a limiting factor to development or redevelopment. Existing septic systems may also be subject to increased stress, overload, or failure as greater quantities of water become available and water use is no longer limited by poorly functioning, low capacity, or poor quality well supplies.

Under the no action alternative, property owners could pursue construction of an engineered system to replace a failing or underperforming system. Engineered systems are commonly used on small lots with high groundwater. A number of options are available:

- Mound Systems – This type of system involves importing non-native soils to a site to construct an engineered leaching field, along with a pump chamber to control the rate at which wastewater is fed into the leaching system. Such systems may cost two to three times a conventional septic system and require extra monitoring and maintenance.

- **Holding System** – An alternate approach to septic systems is a holding tank that collects and stores sewage for subsequent pumping and delivery by truck to a nearby sewage treatment plant. The tank would need to be equipped with a high-level alarm. For a four-person dwelling, even with low per capita waste generation at 50 gallons per person per day, a 7,500-gallon tank would be required, and monthly pumping costs could be \$500 or more. The Public Health Code standard for estimating sewage generation is much higher at 75 gallons per person per day. Such a system would not likely be suitable for businesses or commercial uses that generate a significant amount of wastewater.

Engineered systems will not be economically feasible for many residential and commercial uses and are not likely to support development consistent with long-term planning for the Four Corners area.

The following impacts are likely to occur under the no action alternative:

- Residential and commercial septic systems will continue to be vulnerable, and additional failures will likely occur, requiring costly upgrade or replacement by individual property owners.
- Conditions may worsen if redevelopment of existing uses occurs with the provision of public water to this area, assuming current inadequate well supplies are replaced with a high-quality public water supply.
- Nearby wetlands and waterbodies will continue to be vulnerable to contamination from failing and underperforming subsurface disposal systems.
- Area businesses will continue to be challenged by high maintenance costs and limitations on growth.
- New business interests will likely continue to be deterred.

For these reasons, the no action alternative does not meet the project purpose and need.

2.2 Postpone Action Pending Future Study

Several factors have influenced the timing of the proposed project as described below:

- **Availability of State Grant** – The State Legislature has authorized the CTDEEP to provide \$3.0 million to the Town of Mansfield as a grant-in-aid to assist in completing the Four Corners Sanitary Sewer Project. There is no guarantee that the grant will continue to be available in the future.
- **Ability of the Town to Finance the Project** – The Town's total debt service is very low at present, and interest rates are also low at this time. Both factors lower the total financing cost. Construction costs are likely to increase in the future due to inflation.
- **Continuing Pattern of Failing Septic Systems** – Septic system failures in the Four Corners area have occurred for decades, and many of the systems are reportedly approaching the end of their useful life and will require replacement.

Based on the above factors, postponing future action would likely increase overall project costs and would not address the long-standing septic system issue or the need for public infrastructure to support development. For these reasons, postponing the action alternative does not meet the public purpose and need.

2.3 Sewer Avoidance

Sewer avoidance can sometimes be achieved in areas that are undeveloped or sparsely developed and particularly in areas where impacts would be substantial as a result of the construction of collection and treatment facilities. Sewer avoidance can be effectively achieved in areas where development is unwanted. In such cases, zoning regulations and land use plans are crafted in a manner that limits allowable development to that which the land can accommodate with individual wells and septic systems.

In the case of Mansfield Four Corners, 48 of the 61 parcels in the study area are currently developed. Some of these occupied parcels are considered to be underdeveloped at the current density and use. Avoiding development is no longer an option. Further, this is one of only three areas within Mansfield that is designated for mixed-use development. Land use planning and zoning in Mansfield have focused on concentrating development in designated areas to avoid scattered development throughout town such that the majority of the town can be maintained in a more rural character.

Sewer avoidance is not a viable option in the Mansfield Four Corners area. Existing development patterns, zoning regulations, and long-term land use plans are at odds with sewer avoidance. Sewer avoidance does not meet the basic purpose and need.

2.4 Construction of the Project in a Different Location

In some cases, construction or development alternatives to the proposed action may be conducted in another location. The Mansfield Four Corners area has a long history of failing and underfunctioning septic systems on land that is currently developed. Mansfield Four Corners is also the northern gateway to Mansfield and to UConn from the most common access route (i.e., Interstate 84 and Route 195). Relocating the contemplated project or concentrating development elsewhere in town would not correct the issues in the Four Corners area, would not accommodate a revitalized gateway, and would not be consistent with Mansfield's zoning and long-term land use plans. As such, constructing the project in a different location is not a viable option.

2.5 Community Conveyance and Treatment System

A community subsurface wastewater disposal system is one that collects wastewater from a number of individual properties and discharges to one or more centralized treatment and disposal system(s). The system can discharge to the ground or surface water. In some locations, an alternative to a community subsurface wastewater disposal system is a pre-engineered package wastewater treatment facility, where wastewater is collected from multiple properties and treated at a centralized small "package plant." A pre-engineered system is a preconstructed treatment plant on a much smaller scale than a conventional WPCF (i.e., at a neighborhood scale). Wastewater is treated, disinfected, and directed to surface water or to gravel subsurface. These systems are typically expensive to install and operate, although they can be effective where options are limited.

Groundwater Discharges

A community subsurface system may be feasible when a cluster of properties results in land area that is either too small to support individual subsurface systems or that has inadequate soils. If a nearby parcel is large enough and has suitable soils, one large subsurface system may be able to serve multiple

properties. In the Four Corners area, poor soils and high groundwater are pervasive. The Natural Resources Conservation Service (NRCS) has classified these soils as being very limited relative to their ability to support septic discharges. There are no single parcels or combination of adjacent parcels that are well suited for a community subsurface wastewater system within or near the Four Corners area. For these reasons, this alternative is not believed to be viable.

Surface Water Discharges

Streams within the Four Corners study area include Cedar Swamp Brook, Mason Brook, and Nelson Brook. Mason Brook is a tributary to the Fenton River, which discharges to a public drinking water supply reservoir and therefore cannot accept wastewater discharges. Cedar Swamp Brook and Nelson Brook, as well as the tributaries that drain to them, are small, with limited assimilation capacity to accept wastewater discharges. Additionally, Cedar Swamp Brook, Nelson Brook, and their contributing tributaries all have water quality classifications of A. Treated sewage discharges to Class A waterbodies are prohibited in Connecticut. Further, such a discharge would likely cause significant impact due to lack of dilution. For these reasons, operation of a pre-engineered package wastewater treatment facility is not believed to be feasible.

2.6 Collection System and Discharge to UConn Water Pollution Control Facility

UConn owns and operates a conventional sewage treatment facility at its main campus in Storrs, just south of the Four Corners area. The UConn system serves the campus as well as residential, commercial, and municipal properties located off campus. UConn holds all required permits to accept, treat, and discharge wastewater to the Willimantic River. The facility is designed to treat an average daily flow of 3.0 mgd. In 2014, the average daily flow of UConn's treatment plant was 1.05 mgd.

A conservatively intensive "buildout" analysis of the Four Corners area was conducted by Weston & Sampson Engineers in 2011. Their analysis estimated sewage flows as a result of the development of all currently undeveloped land with moderate to high development potential, as well as redevelopment of existing land uses with the potential for a higher density of use resulting in greater wastewater discharges. Their analysis projected that an additional 0.187 mgd of sewage flows (average daily rate) from existing and future potential land uses within the Four Corners area was possible in the 20-year planning period. Even when factoring in future projected discharges, this is well within the capacity of UConn's current water treatment plant.

Other potential development that could utilize capacity in the UConn treatment plant has been identified as follows:

- Planned development at the UConn Technology Park is projected at 423,500 gallons per day (gpd) (89,600 gpd + 333,900 gpd).
- On-campus expansion associated with NextGenCT is projected at 138,500 gpd.
- Storrs Center is partially developed, with a current demand near 50,000 gpd. With a total demand estimate of 169,300 gpd, this leaves 119,300 gpd of potential future demand.
- The projected Depot Campus demand is 93,800 gpd.
- The King Hill business area projection is 5,000 gpd.

The sum of the above potential future development is expected to add 0.78 mgd of sewage to the UConn system. In addition to these specific projects and uses, an additional allocation of 453,500 gpd (0.45

mgd) of drinking water supply has been attributed to the Town of Mansfield, including development associated with Mansfield Four Corners. Assuming this water allocation is fully converted to sewage discharge and subtracting out the projected Four Corners development at 187,000 gpd (0.19 mgd) leaves 266,500 gpd (0.27 mgd) of remaining Mansfield allocation. The sum of these projected demands, some of which are not anticipated to occur for another 10, 20, or more years, leaves UConn's treatment plant with adequate capacity as demonstrated below.

Total WPCF Capacity:	3.00 mgd
2014 Average Daily Flow:	-1.05 mgd
Committed to Other Areas:	-0.78 mgd
Allocated to Mansfield	-0.27 mgd
<u>Buildout at Four Corners:</u>	<u>-0.19 mgd</u>
Remaining for Other Uses:	0.71 mgd

Concept design plans and computations by Earth Tech in 2008 and more recently by Weston & Sampson show that collection of sewage in the Four Corners area is physically and technically feasible through the use of a combination of gravity and pumping. The majority of the collection system can occur within the public right-of-way and on previously disturbed land. Numerous iterations of piping layout have been evaluated (including the option of laying pipe through wetlands associated with Cedar Swamp Brook) leading to the current proposed layout and construction methodology designed to minimize impact on wetlands and watercourses.

- The conceptual layout by Earth Tech¹ in 2008 envisioned that a gravity sewer main would traverse the central wetland area along the existing Eversource utility easement from the Holiday Mall to the rear of Professional Park Road. The sewer main at Rosal's Apartments would run in front of instead of behind the building as currently envisioned. Additional piping would extend along Route 44 to provide a connection for parcel 45 as opposed to tying this parcel into the system via Professional Park Road. Alternatives evaluated included locating a pumping station to pump through the UConn Technology Park land to a connection on North Hillside Road (now known as Discovery Drive) outside of the existing utility easement, a potential supplementary sewer service area that included Clubhouse Apartments, a pumping station on Hunting Lodge Road instead of at Jensen's Rolling Hills Community, and an alternative arrangement that installed a new sewer main along Discovery Drive. Neither the use of the Eversource utility easement between Route 195 and Professional Park Road (due to construction within or in close proximity to wetlands and floodplains) nor service to Clubhouse Apartments was carried forward by the town. The extension of the sewer along Discovery Drive was deemed infeasible due to concerns regarding the timing of construction; the need for a pumping station in the Jensen's area regardless of that routing; cost associated with the layout due to additional work within the state highway (Route 44); increased force main size; and difficulty maintaining adequate separation distances from water mains, telecommunications facilities, and drainage facilities.
- The layout presented at an April 17, 2014 Four Corners Sewer and Water Advisory Committee meeting added a pumping station between the Holiday Mall and parcel 11 near the pond and rerouted the sewer main from the Cedar Swamp Brook wetland in the utility easement to instead run along Route 195. An option of serving the Timber Drive area was discussed at this meeting but was

¹ Earth Tech, January 2008, *DRAFT Four Corners Area Wastewater Facilities Plan*, Town of Mansfield, CT

ultimately not pursued. A manhole remains at the bottom of Timber Drive to allow connections from parcels 4 and 5 without requiring multiple laterals to be installed beneath Route 195.

- The current routing updates the previous layout by relocating the Willard's pumping station to its present location and extending a sewer main up Professional Park Road to Route 44 to provide potential service to parcels 45, 48, 50, and 64. In addition, the final routing relocates the gravity sewer main from beneath the Route 44 bridge over Cedar Swamp Brook to moving through easements downstream of the bridge on parcels 54 and 55. This change from the August 22, 2014 review plan set was due to concerns regarding the difficulty associated with installing the gravity sewer main beneath the three-sided culvert carrying Route 44 over Cedar Swamp Brook.

Capacity analysis conducted by Weston & Sampson demonstrates adequate pipeline capacity within existing infrastructure to accommodate the additional sewage flows from the Four Corners area. However, UConn may need to evaluate the capacity of certain segments of pipe on Discovery Drive to meet combined peak flows as development occurs in the future.

Construction of a sewer collection system and discharge to the UConn treatment plant has the ability to provide a long-term, reliable system for sewage disposal, thus improving and protecting the quality of surface water and groundwater in the Four Corners area from septic systems that are currently underfunctioning or failing; prevent future regulatory violations from occurring from such systems; and provide a mechanism whereby existing and future potential commercial businesses may realize their full development potential, consistent with current zoning and long-range land use plans. As such, this option was selected as the preferred alternative.

2.7 Alternate Implementation Approaches

During the CEPA scoping process, a number of residents suggested alternate implementation approaches to providing service. Each is described and evaluated below.

"Pay for Service" Option – During the scoping process, one Mansfield resident suggested that sewer service be private-sector funded in a manner that commercial development would pay its own way when services are needed.

Under the preferred alternative (i.e., collection and treatment at the UConn WPCF), the major outlay of cost occurs in two areas: (1) constructing the sewer collection system; and (2) constructing and operating the treatment facility. In this case, the treatment facility has already been constructed and is fully operational. UConn charges its non-university customers a rate to discharge to its facility to cover operating costs; however, the facility itself has already been constructed.

The pay-as-you-go option is not physically or financially practical. It would be neither feasible nor fair for the first commercial customer to front the full cost of constructing an individual collection system or a collection system capable of accommodating the entire service area. Commercial developers do not have access to state funding or the ability to bond and finance projects through the mechanisms available to the Town of Mansfield although they do have the authority to levy assessment fees on future users through a developer's permit agreement. It would not be reasonable to require commercial users to construct a collection system capable of accommodating future uses and equally unreasonable to construct multiple sole-source collection systems to serve the Four Corners area. As such, this implementation approach was not considered further.

Scaled-Down Version to Accommodate a Lower Density of Development – The possibility of considering a scaled-down sewer collection system to represent a more moderate development scenario was also suggested at the scoping meeting, citing that cost savings could be achieved in terms of pipe diameter and pump station size.

The collection system will be designed in accordance with state code and with capacity to serve the area based upon a full buildout scenario (20-year planning period), consistent with allowable development per zoning code and Mansfield's POCD. The majority of the cost of the sewer collection system is associated with installation. A comparatively small savings is achieved in downsizing pipe diameters and pumping components. In addition, these items could require upgrade in the future if the moderate development scenario were exceeded. This would result in significant additional expenditures above the base project cost. Given the relatively small cost savings and potential for future upgrade costs, this implementation approach was not considered further.

Phased Project to Accommodate Needs as They Occur – A suggestion to phase development over a longer period of time was considered such that the sewer collection system could be constructed in phases to meet community needs, market forces, and financial resources as they evolve. This type of approach would be logical in undeveloped areas where a phased buildout can be designed and planned in advance, such as at a new industrial park. In Mansfield Four Corners, development has already occurred throughout the area, and the need is dispersed. The existing and potential future development is not conducive to phasing; therefore, this implementation approach was not considered further.

Order-of-Construction Sequence – One commenter in the scoping process suggested that construction begin at the discharge point to the UConn sewer system on Discovery Drive and proceed toward the pumping station at Jensen's Rolling Hills Community, followed by the collection system leading out from that pumping station. The reasoning was that if cost overruns were encountered, the project could be truncated but still be functional and connected to the WPCF. Such a strategy is logical and will be considered in developing the final design plans and specifications for this project.



3.0 EXISTING ENVIRONMENT AND ANALYSIS OF IMPACT

3.1 Land Use and Zoning

An understanding of land use plans and policies at the local, regional, and state levels is essential to the analysis of potential alterations of conditions and land uses in a project area. The following discussion sets the framework of land use policies that apply to the Mansfield Four Corners area. Consistency of the proposed action with these plans, policies, statutes, and regulations is evaluated throughout this document.

3.1.1 Statewide Polices for Conservation and Development

The following discussion presents portions of the *Conservation and Development Policies Plan for Connecticut (2013-2018)* (the Plan, State Plan, C&D Plan) as they relate to the proposed action. Italicized sections are direct excerpts from the Plan. For an expanded review of the State Plan, the reader is directed to the full document on file with the Connecticut OPM and also posted on the state's website.

The C&D Plan is a statement of the state's growth, resource management, and public investment policies. It provides a policy and planning framework for the administrative and programmatic actions and capital and operational investment decisions of state government, which in turn influence the future growth and development of Connecticut.

The Connecticut General Assembly, in accordance with Sections 16a-24 through 16a-33 of the CGS, establishes the State Plan. The policies of the Plan are intended to guide the planning and decision-making process of state government relative to: (1) addressing human resource needs and development; (2) balancing economic growth with environmental protection and resource conservation concerns; and (3) coordinating the functional planning activities of state agencies so as to accomplish long-term effectiveness and economies in the expenditure of public funds.

Growth-Related Project Requirement

CGS Section 16a-31(a) requires state agencies to determine the consistency of their proposed actions with the state C&D Plan. In making this determination, the agency must first determine if a proposed project is considered a "growth-related project" pursuant to CGS Section 16a-35c(a)(2).

Section 16a-35c(2) defines a growth-related project as any project that includes:

- (A) the acquisition of real property when the acquisition costs are in excess of one hundred thousand dollars, except the acquisition of open space for the purposes of conservation or preservation;
- (B) the development or improvement of real property when the development costs are in excess of one hundred thousand dollars;
- (C) the acquisition of public transportation equipment or facilities when the acquisition costs are in excess of one hundred thousand dollars; or

- (D) the authorization of each state grant, any application for which is not pending on July 1, 2006, for an amount in excess of one hundred thousand dollars, for the acquisition or development or improvement of real property or for the acquisition of public transportation equipment or facilities (with certain defined exceptions).

The contemplated sewer project is believed to be a growth-related project as it will receive state grants in excess of one hundred thousand dollars for the development and improvement of real property. For all proposed growth-related projects, the State Plan is used to determine if the area is located within a priority funding area as no state agency, department, or institution may provide funding for a growth-related project unless it is located in a priority funding area or if the project meets certain criteria. The Four Corners area is depicted in the State Plan largely within two classifications: Priority Funding Area and Balanced Priority Funding Area. Criteria defining these areas, as well as Conservation Areas, are described below.

Priority Funding Areas – Priority funding areas are delineated based on conditions that exist at the census block level, which is the smallest geographical unit delineated by the U.S. Census Bureau. Priority funding areas are classified by census blocks that include: (1) designation as an urban area or urban cluster in the 2010 census; (2) boundaries that intersect a ½-mile buffer surrounding existing or planned mass-transit stations; (3) existing or planned sewer service from an adopted wastewater facility plan; (4) existing or planned water service from an adapted public drinking water supply plan; and (5) local bus service provided 7 days per week. *Growth-related projects may proceed without an exception in such areas.*

Balanced Priority Funding Areas – The State Plan defines balanced priority funding areas as areas that *meet the criteria of both priority funding areas and conservation areas. State agencies that propose certain actions in these areas must provide balanced consideration of all factors in determining the extent to which it is consistent with the policies of the State C&D Plan.* In general, *growth-related projects may proceed without an exception if the sponsoring agency documents how it will address any potential policy conflicts.* Some examples of addressing policy conflicts in balanced priority funding areas include maintaining the integrity of local bus routes; protection of large wetlands, local historic districts, areas of contribution to public water supply wells, public drinking water supply watershed areas, and water quality improvement areas; and promoting appropriate development standards within designated floodplains. Such measures are addressed in the subject EIE.

Conservation Areas – Conservation areas are delineated based on the presence of factors that reflect environmental or natural resource values. In contrast to priority funding areas, which are based on man-made census blocks, conservation areas are based on existing environmental conditions such as soils or elevation, which often have no visible boundaries. Conservation areas include any one or more of the following factors: core forest areas greater than 250 acres based on the 2006 land cover data set; existing or potential drinking water supply watersheds; aquifer protection areas; wetland soils greater than 25 acres; undeveloped prime, statewide important, and locally important agricultural soils greater than 25 acres; category 1, 2, or 3 hurricane inundation zones; 100-year flood zones; critical habitats; and locally important conservation areas. *Growth-related projects may only proceed with an exception, namely that the project must be supported by a local POCD.*

According to Map 20 in Mansfield's 2006 POCD, significant portions of two parcels on Route 195 (Parcel 13, MbLu 8/15/6 and Parcel 14, MbLu 8/15/4) are designated by the Town of Mansfield as open space. Parcel 14 currently has an existing single family house located on it. Lands that have some form of

restriction on development, such as permanently protected open space or property in which the development rights have been acquired, are classified as Protected Lands on the Locational Guide Map.

Consistency of Project with the State Plan

The State Plan embodies six growth management principles as follows. Following each growth management principle is an explanation of how the proposed action is consistent with the State Plan:

1. *Redevelop and revitalize regional centers and areas with existing or currently planned physical infrastructure.*

The Mansfield Four Corners area is designated as a Regional Center in the 2010 Windham Region Land Use Plan. While the town is now part of the Capital Region Council of Governments (CRCOG), the CRCOG land use plan has not yet been updated to include Mansfield. As such, the Windham Region Council of Governments (WinCOG) Plan remains in effect. The Plan includes the following description of Regional Centers:

" . . .REGIONAL CENTERS are the highest priority for all forms of redevelopment and development including commercial, urban-density residential and industrial. Remediation and infill are strongly encouraged where these areas have become derelict, contaminated (brownfields), or otherwise underutilized. The intent is to promote the viability and revitalization of these areas and encourage actions that make these areas attractive and rewarding places to live, learn, work, shop, and recreate. All development in REGIONAL CENTERS must be sensitive to existing neighborhoods and environmental concerns."

Consistent with the regional center designation, this project will enable development, redevelopment, and revitalization in an area with existing and currently planned physical infrastructure. Public water mains have been installed in the Mansfield Four Corners area, with activation in the near future, and this project proposes the addition of sewers. Planning for construction of water and sewer facilities was underway prior to the adoption of the 2013-2018 Conservation and Development Policies Plan. Table 3.1-1 provides a detailed assessment of the consistency of the proposed action with Growth Management Principle #1.

**TABLE 3.1-1
Consistency with Growth Management Principle #1**

Policy	Consistency
Ensure the safety and integrity of existing infrastructure over its useful life through the timely budgeting for maintenance, repairs, and necessary upgrades.	<i>Infrastructure will be maintained, repaired, and upgraded by the CWC and the Town of Mansfield consistent with each entity's current practices and future plans.</i>
Focus on infill development and redevelopment opportunities in areas with existing infrastructure, such as in city or town centers, which are at an appropriate scale and density for the particular area.	<i>Future development in the Four Corners area will focus on infill and redevelopment consistent with its designation as a regional center and consistent with the local plan and zoning regulations. Forty-eight of the 61 parcels in the proposed sewer service are currently developed. Of those that are undeveloped, several are located adjacent to developed property that is owned by the same owner.</i>

Policy	Consistency
<p>Encourage multi-disciplinary approaches to infrastructure planning and design. For example, for transportation projects in areas with combined sewers, seek to preserve the functional capacity of wastewater treatment plants by designing projects that enhance the infiltration of stormwater generated by the existing street network and other impermeable surfaces through "green infrastructure" measures such as pervious pavement material and the incorporation of urban green spaces.</p>	<p><i>The existing stormwater management system in the project area will continue to be separate from the proposed sewer system. The Town of Mansfield has drafted stormwater management regulations that are specifically aimed at low impact development and stormwater management that embraces "green infrastructure." Refer to Appendix F of this EIE.</i></p>
<p>Coordinate the timing of any planned expansion of existing infrastructure to meet state and regional growth objectives.</p>	<p><i>The Four Corners area is specifically identified as a regional growth area as well as a local planned business area. The planned infrastructure will support growth objectives in the area.</i></p>
<p>Perform a life-cycle cost analysis to identify potential cost burdens beyond the initial capital investment for any proposed action involving the expansion of infrastructure beyond the current limits of the existing or planned service area for the particular form(s) of infrastructure, except when necessary to address immediate public health or safety concerns.</p>	<p><i>The proposed action will address immediate public health and safety concerns. It will also enable development of the area consistent with planned growth. The Town of Mansfield will be responsible for any future life-cycle cost analyses related to the sewer service area.</i></p>
<p>Promote the continued use or adaptive reuse of existing facilities and developed property, including brownfields in strategic locations.</p>	<p><i>This project will support the existing uses in the project area and adaptive reuses as they occur.</i></p>
<p>Proactively identify and market available properties that are currently served by infrastructure and that could meet the needs of new or expanding businesses, especially those within close proximity to existing industry clusters.</p>	<p><i>The Four Corners area has transportation infrastructure as well as electrical, telephone, and cable service. Water lines have been installed and are expected to be operational in the near future. Numerous properties are anticipated to develop or expand following the construction of sanitary sewers.</i></p>
<p>Promote supportive land uses around rail stations, airports and sea ports, and discourage uses that are not dependent upon, or complimentary to, the available infrastructure.</p>	<p><i>N/A. There is no rail, air, or sea travel in close proximity to the project area. The 2015 Northeast Corridor Tier 1 Environmental Impact Statement includes an alternative to locate a railroad station in Mansfield near UConn. Town staff intends to recommend that the station be located to take advantage of a planned development area such that the station could be within 2.5 miles of Four Corners.</i></p>
<p>Utilize the state's strategic location and infrastructure to promote expansion of markets for Connecticut grown and manufactured products.</p>	<p><i>There is no existing or planned industry or manufacturing within the project area. While such use would not be consistent with existing zoning regulations, the Mansfield Tomorrow POCD does recommend updating zoning regulations to allow for light industrial uses in areas designated as a Mixed Use Center, such as portions of Four Corners. Additionally, the proposed UConn Technology Park (primarily research) on Discovery Drive is located adjacent to the Four Corners sewer project area.</i></p>

Policy	Consistency
Encourage local zoning that allows for a mix of uses "as-of-right" to create vibrant central places where residents can live, work, and meet their daily needs without having to rely on automobiles as the sole means of transport.	<i>The local zoning in the Four Corners area supports a mix of uses, including residential and commercial uses. The proximity to UConn and the Technology Park specifically presents live/work opportunities through the use of walkways, public transit, and bike lanes.</i>
Promote urban areas as centers for arts, entertainment and culture, while also supporting community-based agriculture, historic preservation, and access to urban green spaces and waterways.	<i>N/A. The project area is not designated as an urban area.</i>
Capitalize on opportunities to develop and deploy innovative energy technologies, and promote distributed generation and microgrids where practical to provide reliable electrical power during outages and peak demand periods.	<i>N/A. There are no presently identified opportunities within the project area to develop energy distribution.</i>
Minimize the potential risks and impacts from natural hazards, such as flooding, high winds and wildfires, when siting infrastructure and developing property. Consider potential impacts of climate change on existing and future development.	<p><i>The stringent regulations surrounding development in floodprone areas in Mansfield minimize the potential risks and impacts from such a hazard. The project area is not in peril relative to its proximity to major waterways and associated potential impacts of climate change. Pump stations will not be located within the SFHA, and sewer mains will be installed below grade. The separation of storm sewers from sanitary sewers will prevent the sewer infrastructure from being overwhelmed by heavy rainfall events that are expected to become more frequent due to climate change.</i></p> <p><i>The Mansfield Tomorrow POCD recommends several actions to improve resilience to climate change including an assessment of the resilience of all town infrastructure. It also recommends updating the Town's Engineering Standards and Specifications to include the use of more recent rainfall data for design of stormwater management systems.</i></p>

2. Expand housing opportunities and design choices to accommodate a variety of household types and needs.

Mansfield Four Corners hosts a variety of residentially and commercially zoned areas. Single-family homes, apartments, and mobile homes currently exist within the project area, and projected residential uses include expanded opportunities in each of these three types of housing. In addition, the design guidelines discussed in Section 3.1.4 and the future land use plan discussed in Section 3.1.3 outline the desire for a pedestrian-friendly area with pedestrian and bicycle connectivity. With completion of Discovery Drive, Mansfield Four Corners has pedestrian and some bicycle connectivity to town facilities on Route 275 (such as the Town Hall, Community Center, and Senior Center) via routes through UConn. Table 3.1-2 provides a detailed assessment of the consistency of the proposed action with Growth Management Principle #2.

TABLE 3.1-2
Consistency with Growth Management Principle #2

Policy	Consistency
Enhance housing mobility and choice across income levels and promote vibrant, mixed-income neighborhoods through both ownership and rental opportunities.	<i>It is anticipated that future residential development within the Four Corners area will include both ownership and rental opportunities.</i>
Support adaptive reuse of historic and other existing structures for use as residential housing.	<i>N/A. Installation of sewers will not have any positive or negative benefit to adaptive reuse of structures for residential housing. Only four historic structures lie within the project area, and two of the structures are on parcels considered to have a "High" redevelopment potential.</i>
Provide favorable loan terms for multi-family housing and mixed-use properties in targeted areas.	<i>N/A. Loan terms for multi-family housing and mixed-use are outside of the scope of the proposed action.</i>
Market urban communities to people most likely attracted to working and/or living in urban environments, such as young people and "empty nesters."	<i>N/A. The Four Corners area is not an urban center.</i>
Support local efforts to develop appropriate urban infill housing and neighborhood amenities to make better use of limited urban land.	<i>N/A. The Four Corners area is not an urban center.</i>
Promote housing and/or affordable housing as part of mixed use and transit-oriented developments within walking distance to public transportation facilities.	<i>There are currently bus stops located within 0.5 mile of all parcels within Mansfield Four Corners. The potential for increased public bus transportation (WRTD, UConn) is expected in Mansfield Four Corners as a secondary benefit of the project.</i>
Identify innovative mechanisms, utilizing decentralized or small-scale water and sewage systems, to support increased housing density in village centers and conservation subdivisions that lack supporting infrastructure.	<i>Refer to Section 2.0 of this EIE.</i>
Encourage and promote access to parks and recreational opportunities, including trails, greenways, community gardens and waterways, for affordable and mixed-income housing.	<i>N/A. However, with completion of Discovery Drive to Route 44, the Route 44 Section of the Four Corners area is connected by roads and sidewalks to recreational facilities at UConn.</i>

3. Concentrate development around transportation nodes and along major transportation corridors to support the viability of transportation options.

This project will support more compact development patterns near major transportation routes (i.e., State Routes 44 and 195) as these are the two primary roads planned for installation of sewer mains. As discussed in Sections 3.1.3 and 3.3.4, the Windham Region Transit District (WRTD) and UConn both currently provide bus service in or through portions of the Mansfield Four Corners area. Local and regional planning documents have long encouraged expansion of bus service to the Mansfield Four Corners area (e.g., the 2006 Mansfield POCD). Table 3.1-3 provides a detailed assessment of the consistency of the proposed action with Growth Management Principle #3.

TABLE 3.1-3
Consistency with Growth Management Principle #3

Policy	Consistency
Promote compact, pedestrian-oriented, mixed use development patterns around existing and planned public transportation stations and other viable locations within transportation corridors and village centers.	<i>The Four Corners area is strategically located along two transportation corridors (Route 195 and Route 44) with daily bus service and in relatively close proximity to Interstate 84. Installation of sanitary sewers combined with public water service will allow for more compact development within this area.</i>
Encourage a network of pedestrian and bicycle paths and greenways that provide convenient inter- and intra-town access, including access to the regional public transportation network.	<i>The proposed sewer lines and appurtenances will be constructed within an area that is currently accessible to the regional public bus network. Walkways, multi-use paths, and bike lanes provide a connection to the Nash Zimmer Transportation Center at Storrs Center, providing national bus service.</i>
Ensure that the planning, design, construction, and operation of state and local highways accommodates municipal plans and the needs of all users, to the extent possible.	<i>N/A. No state or local highways are planned, designed, or will be constructed as part of the proposed action. Future development and redevelopment will need to be consistent with the operation of state and local highways.</i>
Improve transit service and linkages to attract more customers through better integration of all transportation options and advances in technology, while providing convenience, reliability, safety and competitive modal choices.	<i>N/A. The proposed action will not have a direct effect on transit service or transportation linkages. Increased bus transportation is expected as future development and redevelopment occur within the project area.</i>
Coordinate with host municipalities on supportive land use regulations, such as transit-oriented development zones and freight villages where practical, to make the most effective use of transportation facilities for the movement of people and/or goods.	<i>The Four Corners area is strategically located along two transportation corridors (Route 195 and Route 44) with daily bus service and in close proximity to Interstate 84. The Town of Mansfield is currently revising its zoning regulations (See Section 3.1.4).</i>
Identify brownfields and other strategic sites that are (1) within one-half mile or walking distance of public transportation facilities and/or (2) near other inter-modal transportation nodes and facilities, and consider them for designation as pre-approved development areas.	<i>N/A. There are no brownfields within the project area.</i>
Restore strategic shipping channels and pier areas to their authorized depths when dredging is recommended in Connecticut's Deep Water Port Strategy Study.	<i>N/A. There are no shipping channels or ports in close proximity to the project area.</i>

4. Conserve and restore the natural environment, cultural and historical resources, and traditional rural lands.

The natural environment, cultural and historic resources, and traditional rural lands within the Four Corners area will continue to be protected through local zoning and wetland regulations as will the integrity of environmental assets such as nearby public water supplies. For example, all project activities within 150 feet of wetlands are subject to review under local wetland regulations. Future development or redevelopment in the Four Corners area will be subject to wetland regulations and the

wetland review process as well as requirements of Mansfield's zoning regulations, which include protections for natural resources, cultural and historic resources, and other important resources.

In addition, the *Mansfield Tomorrow* POCD contains several recommendations for strengthening land use regulations on a variety of topics, including Goal 2.6, Strategy B, which calls for further strengthening land use regulations that promote protection of natural systems and habitats. Specific recommendations include the following:

- Strengthening regulations protecting critical natural resource areas, wetlands, water bodies, interior forest tracts, soils, and steep slopes.
- Establishing green infrastructure standards that maximize infiltration of stormwater and natural drainage

In response to Plan recommendations regarding land use regulation, the town is in the process of a comprehensive rewrite of zoning and subdivision regulations, including new stormwater regulations to be applied townwide that will require predevelopment hydrology to be maintained to the maximum extent feasible through use of low impact development practices. Table 3.1-4 provides a detailed assessment of the consistency of the proposed action with Growth Management Principle #4.

TABLE 3.1-4
Consistency with Growth Management Principle #4

Policy	Consistency
Continue to protect permanently preserved open space areas and facilitate the expansion of the state's open space and greenway network through continued state funding and public-private partnerships for the acquisition and maintenance of important multi-functional land and other priorities identified in the State's Open Space Plan (i.e., Green Plan).	<i>Currently preserved open space will not be directly impacted as a result of the proposed action, including property identified in the state's Open Space Plan. Parcels currently identified as locally designated open space are considered to have "low" redevelopment potential.</i>
Limit improvements to permanently protected open space areas to those that are consistent with the long-term preservation and appropriate public enjoyment of the natural resource and open space values of the site.	<i>No improvements are proposed that would impact permanently protected open space. Owners of permanently protected open space will have the option to connect existing structures to the sewer system (e.g., Parcel 14 – see Section 3.1.5).</i>
Protect and preserve Connecticut Heritage Areas, archaeological areas of regional and statewide significance, and natural areas, including habitats of endangered, threatened and special concern species, other critical wildlife habitats, river and stream corridors, aquifers, ridgelines, large forest areas, highland areas, and Long Island Sound.	<i>The proposed action will have no impact on Connecticut Heritage Areas or any of the listed natural resources under this policy. The sanitary sewer will largely be constructed within roadway rights-of-way and previously disturbed areas. Refer to Section 3.4 for a discussion of aesthetic resources; Section 3.5 for a discussion of impacts on the UConn WPCF (the releases of which eventually reach Long Island Sound); Section 3.6 for a discussion of archaeological resources; Section 3.8 for a discussion of river and stream corridors and aquifers; and Section 3.10 for a discussion of endangered, threatened, and special concern species and other critical wildlife habitats.</i>

Policy	Consistency
<p>Encourage collaborative ventures with municipalities, private non-profit land conservation organizations and other entities to provide a system of appropriately preserved and managed natural areas and resources that allow for a diversity of well-functioning habitats and the sustainable use of resources.</p>	<p><i>Since this is a municipal-sponsored project, collaboration with local policies for managing natural areas and resources is inherent with the local protections provided in Mansfield's wetland and zoning regulations and individual project reviews.</i></p>
<p>Seek to achieve no-net-loss of wetlands through development planning that: 1) avoids wetlands, whenever possible; 2) minimizes intrusions into wetlands when impacts are unavoidable; 3) mitigates any resulting impacts through wetland enhancement or creation; and 4) encourages ongoing maintenance of functional wetlands and buffer areas.</p>	<p><i>Refer to Section 3.10 for a discussion of inland wetlands. The proposed sewer project has been designed to minimize direct impacts on wetlands and watercourses. Less than 5,000 square feet of temporary direct wetland impacts is expected.</i></p>
<p>Revitalize rural villages and main streets by promoting the rehabilitation and appropriate reuse of historic facilities, such as former mills, to allow a concentration of higher density or multiple use development where practical and consistent with historic character.</p>	<p><i>The proposed sewer project is designed to support revitalization but will not directly promote it. Mansfield Four Corners is a suburban village/main street area without significant historic facilities such as mills that could be repurposed.</i></p>
<p>Utilize the state's renewable power generation potential to the extent that is compatible with state goals for environmental protection, and minimize potential impacts to rural character and scenic resources when siting new power generation facilities and/or transmission infrastructure.</p>	<p><i>The proposed project is not designed to generate electricity.</i></p>
<p>Encourage municipalities to build capacity and commitment for agricultural lands preservation.</p>	<p><i>The proposed action will not adversely affect any active agricultural lands in the project area.</i></p>
<p>Develop, through the Governor's Council on Agricultural Development, a comprehensive Strategic Plan for Agriculture in Connecticut.</p>	<p><i>N/A. This policy refers to a state action that is beyond the reach of the proposed action.</i></p>
<p>Promote agricultural businesses and supportive industries that are vital to the local and regional economy, while simultaneously preserving prime farmland through the acquisition of development rights and, to the extent practical, the avoidance, minimization, and/or mitigation of the loss or conversion of agricultural lands associated with state-sponsored development actions.</p>	<p><i>Prime farmland soils are located throughout the project area, with significant contiguous coverage of such soils occurring on Parcels 3, 11, 12, 13, 29, 32, 50, 57, and 64 (refer to Section 3.1.6 for a discussion of how the parcels are identified). However, only parcels 3 and 57 appear to have been recently used for agriculture. The proposed sewer project will not impact prime farmland soils that are actively used (or recently used) for agriculture.</i></p>
<p>Promote Connecticut's commercial and recreational fishing and aquaculture industries consistent with marine productive capacities and environmental protections.</p>	<p><i>There are no significant commercial fisheries or aquaculture industries within the project area. Recreational fishing will not be impacted by the proposed project, although the elimination of sewer overflows will prevent adverse impacts on recreational fishing caused by such overflows.</i></p>
<p>Utilize the landscape to the extent practical and incorporate sound stormwater management design, such as low impact development techniques, in existing and new development to maintain or restore natural hydrologic processes and to help meet or exceed state and federal water quality standards, so that the state's waters can support their myriad functions and uses.</p>	<p><i>The Town of Mansfield has drafted stormwater management regulations that are specifically aimed at low impact development and stormwater management that embraces "green infrastructure." Refer to Appendix F of this EIE.</i></p>

Policy	Consistency
<p>Manage water resource conflicts by balancing the competing needs of water for human consumption, waste assimilation, habitat sustainability, recreation, power production, agriculture and transporting people and goods.</p>	<p><i>This project is believed to be in balance with water for human consumption and other uses. The proposed action will not increase water use and is anticipated to improve water quality to the benefit of the surrounding environment.</i></p>
<p>Rely upon the capacity of the land, to the extent possible, to provide drinking water and wastewater disposal needs beyond the limits of the existing service area. Support the introduction or expansion of public water and/or sewer services or advanced on-site wastewater treatment systems only when there is a demonstrated environmental, public health, public safety, economic, social, or general welfare concern, and then introduce such services only at a scale which responds to the existing need without serving as an attraction to more extensive development.</p>	<p><i>This project expands sewer services into the Four Corners area, a section of Mansfield where there are demonstrated environmental concerns related to sewage overflows and economic concerns related to the lack of sewer infrastructure to support existing business and residential development and future development that is consistent with the Town's land use plan and underlying zoning. Services are being introduced at a defined scale in an attempt to limit development outside of the proposed service area such that outlying areas of Mansfield will continue to have a rural atmosphere.</i></p>
<p>Minimize the siting of new infrastructure and development in coastal areas prone to erosion and inundation from sea level rise or storms, encourage the preservation of undeveloped areas into which coastal wetlands can migrate, and undertake any development activities within coastal areas in an environmentally sensitive manner consistent with statutory goals and policies set forth in the Connecticut Coastal Management Act.</p>	<p><i>N/A. This project is not located in a coastal area.</i></p>
<p>Protect the ecological, scenic and recreational values of lakes, rivers and streams by promoting compatible land uses and management practices in the vicinity of these resources.</p>	<p><i>The proposed action will not directly impact the ecological, scenic, or recreational values of lakes, rivers, and streams (See Section 3.8). Development and redevelopment projects within the sewer service area will be evaluated by local officials and commissions on a case-by-case basis applying updated zoning regulations, stormwater management regulations, and other applicable local policies.</i></p>
<p>Protect, maintain and restore the chemical, physical, and biological integrity of surface waters to ensure that existing and designated uses are maintained.</p>	<p><i>Refer to Section 3.8. The proposed action is expected to have a benefit to surface water quality by removing the threat of sewer overflows.</i></p>
<p>Promote innovative land conservation and banking practices that further local, regional and state conservation and development objectives, and minimize the need to expand infrastructure to support new development in rural areas.</p>	<p><i>N/A. The proposed action will not directly promote land conservation and banking practices.</i></p>

5. Protect and ensure the integrity of environmental assets critical to the public health and safety.

The integrity of environmental assets, such as nearby private and public water supplies, will continue to be protected through local zoning and wetland regulations. For example, as described in Sections 3.5.5 and 3.8.4, this project will be designed to provide proper protective setbacks from existing private and public water supply wells. Table 3.1-5 provides a detailed assessment of the consistency of the proposed action with Growth Management Principle #5.

**TABLE 3.1-5
Consistency with Growth Management Principle #5**

Policy	Consistency
Utilize a multiple barrier approach, including source water protection and appropriate treatment, to ensure the availability of safe and adequate public water supplies that meet or exceed state and federal drinking water standards.	<i>A small portion of the Four Corners area is located within the Fenton River watershed, which is a drinking water supply watershed for the Willimantic Reservoir that is utilized by Windham Water Works for public water supply. Removal of the threat of sewer overflows is expected to benefit surface water quality in this watershed. Final project elements will be designed consistent with Connecticut DPH best management practices for construction within drinking water reservoir watersheds.</i>
Identify water supply resources sufficient to meet existing demand, to mitigate water shortages during droughts, and to meet projected growth and economic development over at least the next 50 years.	<i>N/A. The proposed sewer project will not impact water supply resources. The project area will soon be served by public water supply. Individual water supply planning takes place by the water utilities.</i>
Ensure that water conservation is a priority consideration in all water supply planning activities and regulatory decisions.	<i>Both UConn and CWC practice rigorous water conservation in their respective systems. The Mansfield Tomorrow POCD recommends promoting the expansion of Town water conservation efforts separate from the proposed action.</i>
Utilize an integrated watershed management approach to ensure that high quality existing and potential sources of public drinking water are maintained for human consumption.	<i>Project elements within the drinking water reservoir watershed of the Willimantic Reservoir will be designed consistent with Connecticut DPH best management practices for construction.</i>
Allow redevelopment and rebuilding of coastal areas consistent with coastal area management principles and regulations and prevailing federal rules and requirements.	<i>N/A. The project is not located in a coastal area.</i>
Discourage new development activities within floodway and floodplain areas, manage any unavoidable activities in such areas in an environmentally sensitive manner and in compliance with applicable laws, and seek to prevent the loss of life and property by maintaining existing dikes, channels, dams, and other barriers, or removing such structures where removal would be a more cost-effective option for reducing threats to downstream property.	<i>Refer to Section 3.9. Project elements will not increase or decrease flood hazard potential in the project area. Future development within the sewer service area will be subject to zoning regulations that strictly control what may be developed in the special flood hazard area.</i>

Policy	Consistency
<p>Minimize the impacts of development on drinking water sources by utilizing development forms and densities that limit impervious surface coverage to 10% of the overall area to be developed and which preserves the most amount of land in a natural or undisturbed state.</p>	<p><i>Project elements within the drinking water reservoir watershed for the Willimantic Reservoir will be designed consistent with Connecticut DPH best management practices for construction. The Town of Mansfield has drafted stormwater management regulations that will limit impervious surface coverage or require low-impact development or mitigation activities. Refer to Appendix F of this EIE.</i></p>
<p>Preserve and maintain traditional working lands for the production of food and fiber, and support niche agricultural operations that enhance community food security throughout Connecticut.</p>	<p><i>N/A. There are no active agricultural lands within the project area.</i></p>
<p>Attain National Ambient Air Quality Standards in accordance with Connecticut's State Implementation Plan, with emphasis on cost-effective strategies and effective enforcement of regulated sources.</p>	<p><i>See Section 3.12. The proposed action is not expected to have an adverse impact on air quality.</i></p>
<p>Reduce carbon dioxide emissions in this state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan.</p>	<p><i>See Section 3.12. The proposed action is not expected to have an adverse impact on air quality. Future development has the potential to reduce vehicular air emissions if it brings work, living spaces, and commercial needs within walking or biking distance.</i></p>
<p>Promote transportation alternatives to the automobile, such as bicycling, walking, and public transportation as a means to reducing energy consumption, air pollution, and obesity-related health care costs.</p>	<p><i>The proposed action does not involve transportation alternatives although increased bus service and increased pedestrian and bicycle connectivity with UConn are occurring as part of another ongoing project.</i></p>
<p>Emphasize pollution prevention, the efficient use of energy, and recycling of material resources as the primary means of maintaining a clean and healthful environment.</p>	<p><i>The proposed action will have minimal impacts on energy. Pumping stations are being designed to be energy efficient. Future development and redevelopment impacts on energy and recycling will be evaluated on a case-by-case basis as projects are proposed.</i></p>
<p>Proactively address climate change adaptation strategies to manage the public health and safety risks associated with the potential increased frequency and/or severity of flooding and drought conditions, including impacts to public water supplies, air quality and agriculture/aquaculture production.</p>	<p><i>The aboveground portions of the proposed sewer project will be located outside of the SFHA, while pipes will be located below grade. In addition, the sanitary sewers will be separate from the existing storm sewers and will therefore not be affected by increased rainfall. The proposed project is not expected to be adversely impacted by climate change. All town infrastructure will be evaluated as part of the town's Climate Action Plan, soon to be developed.</i></p>

6. Promote integrated planning across all levels of government to address issues on a statewide, regional, and local basis.

The proposed action is the result of long-standing state, regional, and local planning goals for the Four Corners area:

- State Plans – State planning in the Four Corners area has been reflective of a mixed-use growth area for over a decade. The prior State Plan depicted the Mansfield Four Corners area as a growth area, where staged urban-scale expansion is supported in zones suitable for long-term economic growth that are currently less than 80% built up but have existing or planned infrastructure to support future

growth in the region. The legislatively authorized state grant to support this project is indicative of project support from the majority of Connecticut's elected officials.

- **Regional Plans** – As noted in response to Growth Management Principle #1, the Four Corners area was designated as a regional center in the 2010 Windham Region Land Use Plan. More specifically, the Four Corners Water and Sewer project was also identified as a Community Project of Regional Significance in the 2010 Northeastern Connecticut Economic Partnership Comprehensive Economic Development Strategy.
- **Local Plans** – The Four Corners area has been a focus for commercial growth since the town adopted its first Plan of Development in 1971. More recently, the town's 2006 POCD included a recommendation to seek state and federal funding to extend public sewer and water service to the Four Corners area. The recently adopted *Mansfield Tomorrow* POCD identifies availability of water and sewer service in the Four Corners area as one way in which the town can measure success in achieving Goal 9.2: "Water and wastewater infrastructure improvements conserve natural resources and support smart growth patterns to help preserve rural character." Table 3.1-6 provides a detailed assessment of the consistency of the proposed action with Growth Management Principle #6.

TABLE 3.1-6
Consistency with Growth Management Principle #6

Policy	Consistency
Develop and implement a robust framework for geographic information sharing that will service the common needs of all users and permit the orderly storage, organization, and handling of large amounts of geographic data.	<i>N/A. This policy addresses planning beyond the reach of a sewer extension project.</i>
Initiate a progressive program for the sharing of planning data among state agencies, regional planning organizations, and municipalities.	<i>N/A. This policy addresses planning beyond the reach of a sewer extension project.</i>
Support the creation of an objective and uniform water and sewer need assessment protocol to help municipalities realistically assess their options for addressing community development goals, relative to cost, environmental and public health considerations, and local management capacity.	<i>The proposed action is the <u>result</u> of the Town of Mansfield realistically assessing its options for addressing its community development goals relative to cost, environmental and public health considerations, and local management capacity through multiple other planning documents.</i>
Encourage municipalities to incorporate utility service areas from approved wastewater facility plans and water supply plans into the local plan of conservation and development, so that any future state agency-sponsored actions can be coordinated and designed to accommodate locally-desired development forms and/or outcomes that are consistent with growth management principles.	<i>N/A. This policy addresses planning beyond the reach of a sewer extension project.</i>
Provide advisory statements to state agencies as required under CGS Section 16a-31 when they prepare required programmatic plans and undertake certain actions using state or federal funds, to ensure that the State C&D Plan is implemented on a consistent basis.	<i>N/A. This policy addresses planning beyond the reach of a sewer extension project.</i>

Policy	Consistency
Assist municipalities and regional planning organizations in the planning and implementation of cooperative ventures that are intended to reduce the property tax burden on residents, while providing essential services and equipment more efficiently.	<i>N/A. This policy addresses planning beyond the reach of a sewer extension project.</i>
Encourage regional planning organizations and economic development districts to develop coordinated and effective regional plans and strategies for implementing projects that address the priorities of each region.	<i>N/A. This policy addresses planning beyond the reach of a sewer extension project.</i>

As described in detail in the foregoing narrative, this project is believed to be consistent with the State Plan. Consistency with regional and local plans is further described in Sections 3.1.2 and 3.1.3, respectively.

3.1.2 Regional Plans of Conservation and Development

The Town of Mansfield is located within Tolland County and historically located in the Windham Planning Region. Until its dissolution on June 30, 2014, WinCOG was the regional planning authority. According to the Connecticut OPM, Connecticut's planning regions provide a geographic framework within which municipalities can jointly address common interests and coordinate such interests with state plans and programs. State statutes authorize the secretary of the OPM to designate or redesignate the boundaries of logical planning regions whereas the member municipalities of each planning region are authorized under separate state statutes to establish a formal governance structure known as a regional council of governments (RCOG).

OPM recently completed a comprehensive analysis of the boundaries of logical planning regions in Connecticut under Section 16a-4c of the CGS (2014 Supplement). This analysis resulted in the number of planning regions being reduced from the original 15 to 9 as a result of four voluntary consolidations and the elimination of two planning regions. As a result, the Town of Mansfield is now a member of CRCOG. However, this change is so recent that the CRCOG plan does not yet specifically address planning in Mansfield. Thus, historic regional planning in Mansfield must continue to consider the former WinCOG planning documents as the Town of Mansfield adopted that plan through its participation in WinCOG along with the general policies of the CRCOG plan.

Prior to the consolidation, the former WinCOG region encompassed 327 square miles in east-central Connecticut and had nine member communities: Chaplin, Columbia, Coventry, Hampton, Lebanon, Mansfield, Scotland, Willington, and Windham. The 2010 *Windham Region Land Use Plan* (Section 1.5) identifies Mansfield Four Corners as a Regional Center. According to the plan, "*Regional Centers are the highest priority for all forms of redevelopment and development including commercial, urban-density residential, and industrial. Remediation and infill are strongly encouraged where these areas have become derelict, contaminated (brownfields), or otherwise underutilized.*" The plan also states that, "*Infill development of vacant or under-utilized properties within regional centers is the highest development priority. New investment in infrastructure, if necessary, should focus on improving infill capacity.*" The plan further states that "*development should be sensitive to water resources and public water supply recharge areas particularly as it relates to impacts to the Fenton and Willimantic River systems.*" The former WinCOG Plan encourages focusing development in Regional Centers, Commercial Nodes, and Rural Community Centers such as Mansfield Four Corners.

The proposed sewer collection system is consistent with historic regional planning in that it places priority for redevelopment and development in a Regional Center. Sensitivity to public water supply recharge areas and water resources is discussed in Sections 3.5 and 3.8 of the subject EIE.

The CRCOG *2014-2024 Regional Plan of Conservation and Development* does not specifically include information about Mansfield, but the general policies are considered to apply to the town now that Mansfield has been incorporated into CRCOG. General policies that are related to the proposed sewer project include:

- Grow and Develop in Harmony with Natural Resources:
 - Encourage zoning regulations to allow increased development intensity where compatible with natural resources constraints and existing infrastructure, such as water, sewer, and roadways.
 - Strongly encourage municipalities to facilitate the development of clustered housing, where appropriate, to preserve and protect natural resources.
 - Work with municipalities and developers to employ current best management practices to prevent nonpoint source pollution from construction and existing development and encourage use of Low Impact Development (LID) techniques for new development.
- Protect Water Supply and Increase Water Conservation Efforts:
 - Strongly support the preservation of existing reservoirs and other water supply sources.
- Guide Growth to Regional Centers and Areas of Established Infrastructure:
 - Encourage residential, commercial, and industrial development in areas where adequate infrastructure is available.
- Increase Sustainable Redevelopment and Infill Development Efforts:
 - Support redevelopment in urban as well as rural areas already served by infrastructure.
 - Encourage mixed use, compact development and incorporation of diverse, affordable housing in infill developments where appropriate.
- Use Existing Water and Sewer Infrastructure to Guide Future Growth:
 - Work with local officials and utility providers to encourage the development of an infrastructure system that meets desired local and regional growth patterns.
 - Discourage the joint extension of sewer and water service into unserved rural areas, except for extensions scaled to serve areas planned for significant commercial or industrial development.
- Coordinate and Promote Regional Land Use, Infrastructure, and Fiscal Policies for Economic Development:
 - Encourage higher-density development in core areas of the region with infrastructure adequate to support such development.

The proposed sewer extension in light of historical development patterns, zoning regulations, local planning policies, and the recent extension of water main, is believed to be consistent with the general principles contained in the CRCOG regional plan.

The Northeastern Connecticut Economic Partnership consists of communities in the former WinCOG region and the Northeastern Connecticut Council of Governments (NECCOG) planning region. The 2010

Comprehensive Economic Development Strategy (CEDS) document was developed with a broad base of community participation to provide a strategy to address the economic problems and develop the potential of the area. The CEDS promotes sustainable economic development and opportunity, effective transportation systems, enhancement and protection of the environment, and the balancing of resources through sound management of development. The vision and goals of the CEDS include the following that are related to the proposed sewer project:

- Goal 1 is to "foster a strong and innovative regional economy." Objective C of this goal is to "build upon strong traditional and regionally emerging economic clusters that are or have the potential to be recognized by the State of Connecticut."
- Goal 2 is to "maintain and strengthen our economic competitiveness." Objective C of this goal is to "increase housing opportunities to accommodate a variety of housing types and needs."
- Goal 3 is to "balance growth with the desire to protect the region's rural character and natural resources." Objective B of this goal is to "direct development to regional growth centers and areas with existing physical infrastructure."

The Mansfield Four Corners Sewer Project is specifically listed as a Priority Regional Project on page 62 of the CEDS, noting that the "proposed project promotes numerous goals, objectives, and recommendations contained in municipal, regional and state land use plans." The description also states that the project "will address an existing environmental health problem, foster the local and regional economy and enhance the quality of life for residents and visitors in eastern Connecticut."

Provision of sewer service in the Four Corners area is believed to be consistent with regional planning that places an emphasis on regional centers and rural community centers and concentration of significant commercial and industrial development in areas planned for such development. Provision of public water and sewer service has long been a goal for this area to support such growth.

3.1.3 Mansfield Plan of Conservation and Development

A Plan of Conservation and Development (POCD) documents the community's land use characteristics and establishes a land use philosophy and planning framework for managing the town's future physical, economic, and social environment. The POCD specifies goals, policies, and land use recommendations designed to protect and promote the overall health, wealth, and safety of existing and future residents. POCDs are required by CGS Section 8-23 to be updated at least every ten years. The previous and current Mansfield POCDs were adopted in accordance with the provisions of Section 8-23 of the CGS, as amended.

The previous Mansfield POCD from 2006 identified Mansfield Four Corners as one of several Planned Development Areas, and one of the stated goals of the previous POCD was to strengthen existing commercial areas at Four Corners. The Future Land Use Plan (Map 22) of the 2006 POCD identified much of the Mansfield Four Corners Area to be Planned Business/Mixed Use or Planned Office/Mixed Use. The 2006 POCD also recommended initiatives to document surface and groundwater quality and public health issues in the Four Corners area and to seek state and federal funding to extend public sewer and water services to this area

In November 2011, the Town of Mansfield was awarded a Community Challenge Planning Grant from the U.S. Department of Housing and Urban Development (HUD) Office of Sustainable Housing and

Communities (OSHC) to assist in planning for growth anticipated as a result of the new UConn Technology Park and expanded public water system while preserving the rural agricultural character and heritage of the community. Rather than proceed through a typical POCD update and piecemeal amendments to the existing zoning regulations, the town has taken a broader approach to incorporate changes to the plan and regulations that will guide the town's development for many years to come. The document, entitled *Mansfield Tomorrow: Plan of Conservation and Development*, became effective October 8, 2015.

Mansfield Tomorrow is intended to serve as the foundation of new zoning and subdivision regulations. Mansfield's 20-year vision is to "be a community of historic rural villages, flourishing farms, and protected open spaces, and the home of the University of Connecticut's flagship campus. Through a smart growth approach, Mansfield will accommodate growth in designated areas of compact development, avoiding sprawl and preserving rural character. The compact areas include a vibrant town center and neighborhoods with diverse housing adjacent to campus, attractive mixed use centers at Four Corners and in southern Mansfield, as well as room for new businesses at Perkins Corner and the Depot Campus area. These areas will provide compact and walkable locations for growth. Outside of these designated areas, Mansfield will promote rural character, agriculture, and natural open space, through preservation and stewardship."

In particular, the Four Corners area is identified in *Mansfield Tomorrow* as being intended as one of "the areas of greatest activity and density in Mansfield" as well as serving as one of the economic and social hubs for the community. The land use priority in mixed-use centers is to promote infill development and redevelopment that support the creation of compact, walkable districts with a mixture of multi-family residential, office, commercial, research and development, and light industry uses. Specific goals identified in *Mansfield Tomorrow* that are common to the proposed sewer project are discussed below:

- Goal 2.2 of *Mansfield Tomorrow* states that "*Mansfield has healthy watersheds with high-quality ground and surface water resources and aquatic habitats.*" Strategy B under that goal supports the pursuit of grant funds to improve the health of watersheds in Mansfield, such as by reducing the potential for sewer failures and overflows to occur, which impacts water quality.
- Goal 2.3 of *Mansfield Tomorrow* states that "*Mansfield's soil, plant and wildlife habitats are healthy and diverse.*" One of the measures of effectiveness of the associated strategies is to increase the acres of contiguous interior forest tract and grasslands/shrublands. This would be accomplished by coordinating development reviews to maintain buffers around developed areas.
- Goal 2.4 of *Mansfield Tomorrow* indicates that "*the Town is taking steps to moderate or adapt to the impacts of climate change.*" Strategy B under that goal indicates that the town's Engineering Standards and Specifications should require use of updated rainfall data for design of stormwater management systems in place of older standards which relied on smaller storm sizes than currently realized today.
- Goal 2.6 of *Mansfield Tomorrow* indicates that "*Mansfield's land use regulations promote the protection and enhancement of natural systems.*" Strategy A under that goal supports the identification of potential issues related to natural resource protection prior to application submission. This will be accomplished by encouraging developers to identify natural resource protection goals as part of the preapplication process, updating regulations to require documentation related to existing or potential contamination of water and soils on and in the

vicinity of the proposed project, and updating regulations to require evaluation of potential impacts on nearby resources including wells, farmland, forests, and aquatic and wildlife habitats. Strategy B calls for strengthening land use regulations that promote protection of natural systems and habitats.

- Goal 4.2 of *Mansfield Tomorrow* states: "*Mansfield's land use regulations maintain rural character in the majority of town, protect historic resources and accommodate future growth in smart growth, compact patterns in designated Mixed Use Centers and Compact Residential areas.*" Strategy E under that goal calls for updating regulations for the Four Corners Mixed-Use Center area to allow for business, residential, and mixed-use development and include form-based development standards to ensure desired character and connectivity.
- Goal 6.1 states: "*Mansfield has balanced economic development efforts with sensitivity to preserving the town's unique blend of rural character and college town amenities to create an attractive location for businesses, workers and residents.*" The plan supports improvements to water, wastewater, and transportation infrastructure in the four commercial target areas, including the Mansfield Four Corners area, to support business growth and redevelopment.
- Goal 9.2 states: "*Water and wastewater infrastructure improvements conserve natural resources and support smart growth patterns to help preserve rural character.*" Strategy A supports water and wastewater infrastructure practices that protect the town's overall rural character by directing development to appropriate areas. Limiting expansion of water and wastewater infrastructure to areas designated as Mixed-Use Centers, Compact Residential, Commercial, and Institutional and areas with environmental contamination affecting water quality and/or posing a hazard to human health is sought. Seeking state and federal funding to defray costs associated with water and wastewater infrastructure improvements is supported, along with identifying local financing options for water and wastewater projects, such as property owner assessments and impact fees in order to reduce the financial impact on the general taxpayer.
- Goal 9.5 states: "*Mansfield's land use policies and regulations ensure that infrastructure systems support smart growth, protect rural character and promote resource conservation.*" As part of this effort, the plan cites focusing development in Mixed-Use Centers and Compact Residential areas such as Mansfield Four Corners.

Plans are well underway to provide public water supply to portions of Mansfield, including the Four Corners area. An EIE for the water supply project was approved by OPM, and the project has been issued a Water Diversion permit by the CTDEEP. In its permit, DEEP specified that CWC will be limited to serving uses of an intensity specified by the 2006 POCD (the Plan in effect as of September 2013 when the EIE was approved by OPM). This is in keeping with the town's intent to maintain low-intensity uses where currently zoned as such (i.e., R-90 and RAR-90). Furthermore, this is in keeping with the stated POCD goals and objectives for the Four Corners area and is complementary to the provision of sewer service. Finally, the POCD and the zoning regulations are consistent with the allowable land uses and intensity of development.

The proposed sewer collection system is consistent with historical POCDs and the current *Mansfield Tomorrow* POCD. Current and historic plans clearly identify Mansfield Four Corners as an area that is in need of public water and sewer service and appropriate for mixed-use development. The town has identified areas that are appropriate for commercial and higher-density development as a balance to prevent induced growth in other areas of Mansfield not identified or suitable for such growth.

3.1.4 Zoning

Figure 3.1-1 depicts zoning within the Four Corners area. Zoning designations include Planned Business Zone 3 (PB-3), Rural Agricultural Residence 90 Zones (RAR-90), Residence 90 Zones (R-90), and small areas designated as Professional Office Zone (PO-1) as well as a Flood Hazard Zone (FH). The upper extent of the sewer system is proposed to extend north on Route 195 to St. Paul's Church servicing PB-3, PO-1, and R-90 zoned parcels and just south of Four Corners servicing a handful of PB-3 and RAR-90 zoned parcels. Along Route 44, service connections are to pass through the central section of PB-3 business zoning and extend to the south end of Cedar Swamp Road encompassing several RAR-90 zoned parcels. The connection runs south, servicing the Jensen's Rolling Hills mobile home community.

Land Uses Allowed by Existing Zoning

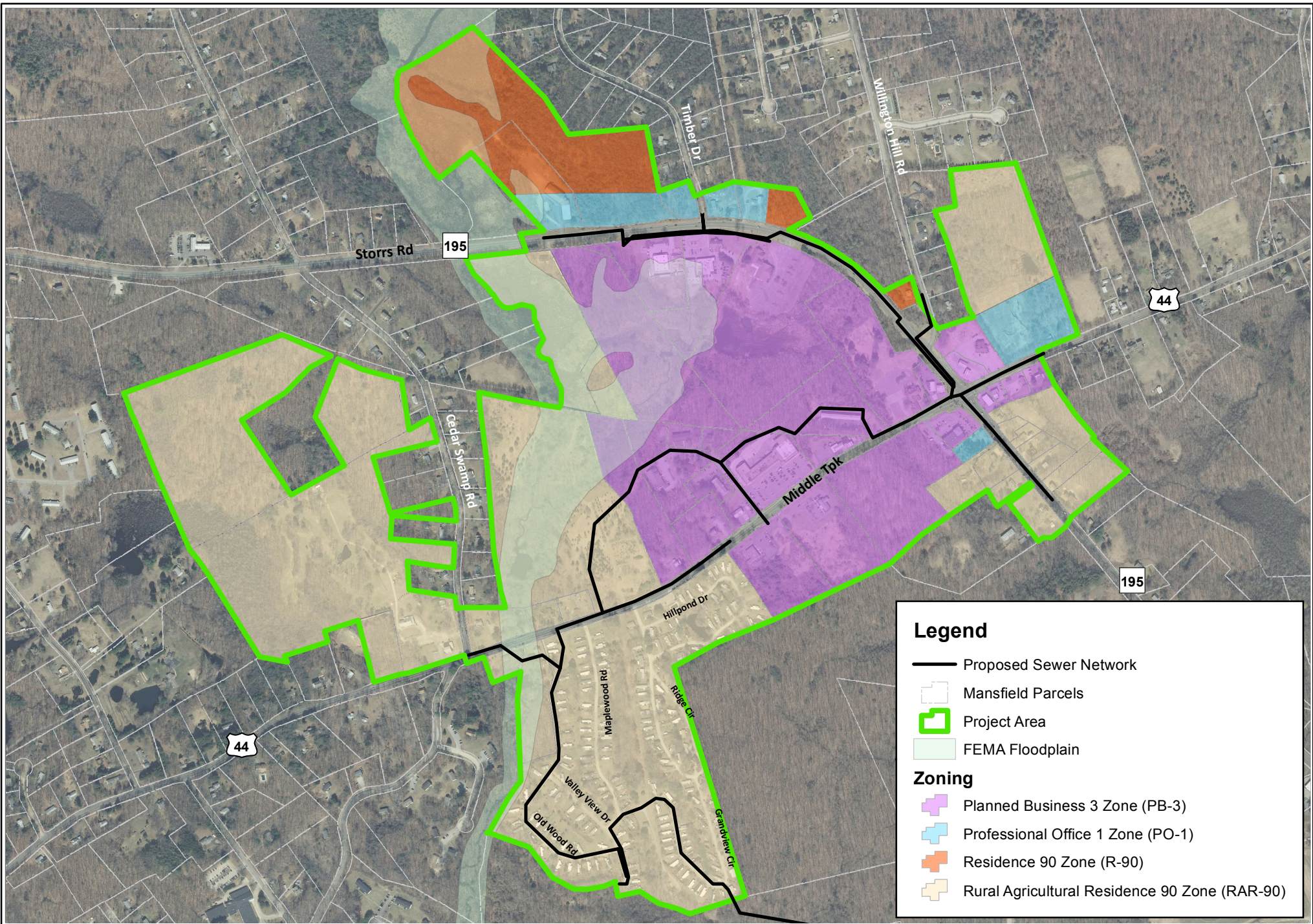
Permitted uses in each of these zoning districts are summarized below. Current zoning limits potential land uses because while planned for, public water and sewer service are not yet available. Specifically, Article VII, Section N of Mansfield's Zoning Regulations (updated September 1, 2014) states the following:

"The Planned Business-3 zone is situated in the "Four Corners" area of Town at or near the intersection of State Routes 44 and 195. This historically important crossroads area has provided in part commercial services to Mansfield residents and visitors for over 200 years. Due in part to the lack of public sewer and water services, many properties in this area have deteriorated over the past few decades and a number of businesses have closed. Consistent with Mansfield's Plan of Conservation and Development, it is the Town's objective to revitalize the Four Corners area and Town officials are working to address existing infrastructure needs.

Due to current infrastructure deficiencies, the current listing of permitted uses in the Planned Business zone is limited. However, upon approval of commitments to provide public sewer and water services to this area, it is the intent of the Planning and Zoning Commission to review and, as appropriate, modify zone classifications and zone boundaries; the listing of permitted uses, maximum height and coverage requirements and all other associated land use regulations."

Revisions to the Zoning Regulations are underway in accordance with the proposed water and sewer service extensions into the Mansfield Four Corners area as called for in the Zoning Regulations. As of the publication of this document, the 2014 Zoning Regulations continue to be applicable. Potential revisions to the zoning regulations are discussed at the end of this section.

The following uses are permitted in all zones except the flood hazard zone: fire stations, parks and playgrounds, buildings and facilities owned and/or operated by the state or federal government for governmental use (those involving hazardous waste require a special permit), public utility installations (by special permit), signs, accessory buildings and uses (with certain limitations), home occupations and use of residence or accessory building for personal business use (with certain limitations), and family day care homes.



Legend

- Proposed Sewer Network
- Mansfield Parcels
- Project Area
- FEMA Floodplain

Zoning

- Planned Business 3 Zone (PB-3)
- Professional Office 1 Zone (PO-1)
- Residence 90 Zone (R-90)
- Rural Agricultural Residence 90 Zone (RAR-90)

SOURCE(S):
 CT ECO 2012 Orthoimagery
 Mansfield 2007 Zoning Map
 CT DEEP Parcels



Figure 3.1-1: Zoning Map

MXD: Y:\2111-11\GIS\Maps\Zoning.mxd

Mansfield Four Corners Sanitary Sewer EIE

LOCATION: Mansfield, CT

Map By: CMP
 MMI#: 2111-11
 Original: 3/16/2015
 Revision: 1/28/2016
 Scale: 1 in = 800 ft

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Planned Business 3 (PB-3) – The Planned Business zone includes the entirety of the Four Corners Planned Business District, along Storrs Road (Route 195) and Middle Turnpike (Route 44). The maximum building height within this district is 40 feet, and the maximum building ground coverage is 20%. Lots may be created off private roads in this zone, and each new building must have a minimum of 500 square feet of floor area on the ground level. Within this district, the uses listed below are allowed upon approval of a special permit.

- Retail uses
- Banks
- Professional offices and personal services
- Repair services or business (bicycles, radios, televisions, home appliances, office equipment, computers, watches, clocks, shoes, internal combustion engines, and similar uses)
- State-licensed group day care homes
- Commercial printing or production accessory to an on-site retail business
- Commercial recreation facilities
- Game arcades as a primary (more than three games) and not accessory use
- Automobile sales
- Automotive service stations and garages
- The sales, service, and repair of motorcycles and small internal combustion engines
- The use of live music associated with any hotel, motel, restaurant, or commercial recreation facility
- The sale of alcoholic liquor
- Restaurants without drive-through service (only if served by public water and sewer, requires 100-foot setback from residential)
- Hotels, motels, tourist homes (only if served by adequate public water and sewer)
- Adult-oriented establishments
- Minor changes to existing shopping centers may be performed without a special permit.

Rural Agricultural Residence 90 (RAR-90; lot size generally 90,000 sf) – The Rural Agricultural Residence District includes the portion of the planned service area to the west of the Four Corners Planned Business District as well as parcels along Route 195 southeast of the intersection of 195 and 44 and several discrete parcels in other portions of the planned service area. The maximum building height within this district is 35 feet. Within this zoning district, the following uses are allowed:

- One single-family dwelling (minimum floor area of 800 square feet)
- One two-family dwelling per 120,000-square-foot lot provided certain setback requirements are met (minimum floor area of 800 square feet per unit)
- One single-family dwelling with one efficiency dwelling unit (by special permit)
- Hospitals, sanitariums, nursing homes, convalescent hospitals, and other residential treatment facilities (by special permit)
- Community residences for mentally retarded persons or childcare residential facilities (special permit may be required)
- Community residences for mentally ill adults
- Group homes (by special permit)
- Churches or other places of worship (by special permit)
- Schools, libraries (by special permit)
- State-licensed group day care homes (by special permit)
- Recreational uses such as golf courses, cross-country skiing facilities, or day camps (by special permit)
- Reservoirs, sewage treatment plants and related facilities, communication facilities (by special permit)

- Cemeteries (by special permit)
- Agricultural uses and preservation uses (special permit may be required)

Residence 90 (R-90; lot size generally 90,000 sf) – Only four parcels within the planned sewer service area are zoned R-90, including a portion of the St. Paul's parcel, two currently undeveloped parcels along Route 195, and one single-family residence near the intersection of Route 195 and Willington Hill Road. The maximum building height within this district is 35 feet. Within this zoning district, the following uses are allowed:

- One single-family dwelling (minimum floor area of 800 square feet)
- One single-family dwelling with one efficiency dwelling unit (by special permit)
- Cemeteries (by special permit)
- Community residences for mentally retarded persons or childcare residential facilities for children with mental or physical disabilities (special permit may be required)
- State-licensed group day care homes (by special permit)

Professional Office 1 (PO-1) – All or portions of seven parcels within the planned sewer service area are zoned PO-1. Six of these are located along Route 195 (including St. Paul's and the four parcels adjacent and to the east of it), and one parcel is on Route 44, immediately adjacent to Cumberland Farms. The maximum building height within this district is 40 feet, and the maximum building ground coverage is 15%. Lots may be created off private roads in this zone, and each new building must have a minimum of 500 square feet of floor area on the ground level. Within this zoning district, the following uses are allowed:

- Offices for medical, legal, real estate, insurance, financial, engineering, architectural, and counseling services; offices for educational, charitable, and civic organizations; and other office uses of a similar nature
- One dwelling unit provided it is on the same property as a professional office
- State-licensed group day care homes or state-licensed child day care centers (by special permit)

Flood Hazard (FH) – All or portions of 17 parcels within the planned sewer service area are zoned FH. These parcels are located within the 1% annual chance floodplain of Cedar Swamp Brook. Seven of the parcels are located on Route 195, two of the parcels are "landlocked" between Route 195 and Route 44, and the remaining eight parcels are located along Route 44. The following uses are allowed within this zoning district by special permit:

- Agricultural and horticultural uses such as dairies and the keeping of farm animals, field crops, orchards, greenhouses, fish harvesting and accessory buildings, but not commercial caged poultry or caged livestock operations or other intense commercial agricultural uses or the production or processing of fertilizers, forest, or mineral products
- Open space recreational areas
- Parking areas
- Certain accessory buildings
- Sand and gravel removal or fill operations
- Hydropower facilities
- Swimming pools

Dimensional Requirements

Article Eight of the Zoning Regulations provides the list of required site dimensional requirements by zone. These are enumerated for the project area in Table 3.1-7 although additional conditions apply for many of the zones on a site-specific basis that result in greater minimum setbacks than those presented in the table. Not all of the existing development meets these requirements. In many cases, setbacks are not achieved, and any redevelopment would require variances.

**TABLE 3.1-7
Schedule of Dimensional Requirements**

Zone	Minimum Lot Area (1)	Minimum Lot Frontage/Feet	Minimum Front Setback Line (Feet) (2)	Minimum Side Setback Line (Feet) (2)	Minimum Rear Setback Line (Feet) (2)	Maximum Height (Feet)	Maximum Building Ground Coverage
R-90	90,000 sq. ft.	200	60	35	50	35	None
RAR-90	90,000 sq. ft.	200	60	35	50	35	None
PB-3	None	300	30	30*	30	40	20%
PO-1	2 acres	150	60	25	50	40	15%

1. For subdivision lots in the R-90 and RAR-90 zones approved after June 1, 2006, the Planning and Zoning Commission shall have the right to authorize or require the minimum acreage for each new subdivision lot to be reduced to less than 90,000 square feet in size.
 2. The Planning and Zoning Commission shall have the authority to reduce or increase front, side, and/or rear setback line requirements for properties within one of the 10 historic village areas (including part of Mansfield Four Corners).
- * On at least one side; other side may be zero.

Design Development District Regulations

Zones PO-1 and PB-3 are considered to be part of Design Development Districts (Article X). Article X, Section A.4(d) indicates that dimensional requirements related to building and site design may be altered through the site plan approval or special permit approval process following a public hearing. Article X, Section A.11 outlines the design criteria specific to the Four Corners area. All proposed development in zone PB-3 must address the Architectural and Design standards under Article X, Section R as well as the following:

- Incorporation of prominent pedestrian-oriented and extensively landscaped streetscape along Route 44, Route 195, and Discovery Drive, including walkway/bikeway, pedestrian sitting areas, bicycle racks, bus stops, and bus shelters, with a minimum width of 50 feet of streetscape area
- New buildings should be typically located close to the streetscape with side or rear parking.
- All parking areas must be designed to provide clearly defined pedestrian pathways.
- Incorporation of a variety of aesthetic requirements

Historic Village Regulations

Portions of the proposed sewer service area are located within the Mansfield Four Corners Historic Village area as designated in the 2006 POCD. The provisions of Article X, Section J.2 apply to those parcels mapped within the village that require exterior construction:

- New buildings and site improvements are required to fit the individual characteristics of the particular site and village neighborhood, including being designed to avoid impacts to significant trees, stone walls, scenic views and vistas, and other contributing historical village features.
- Structural elements must be in scale and proportional to adjacent buildings and other visual structures, and traditional building materials (e.g., wood or brick siding or equivalent) must be used.
- Spacing between roadside structures within the village must be maintained.
- Setbacks from roadways and property lines must be consistent with neighboring structures within the village area.
- The height of new buildings must be consistent with neighboring structures within the village area (typically one and one-half to two stories).

Anticipated Zoning Revisions

The 2014 Zoning Regulations call for "the Planning and Zoning Commission to review and, as appropriate, modify zone classifications and zone boundaries, the listing of permitted uses, maximum height and coverage requirements, and all other associated land use regulations." Based on committee work to date, the potential changes may include the following:

- Addition of multi-family and research and development uses to PB-3, and also to PO-1 although multi-family would be at a smaller scale.
- Updated historic village design criteria
- Changes to design and development standards
- Changes to the review process and requirements

Multi-family uses have been envisioned in the Mansfield Four Corners area for some time (since at least 2006), and research and development uses are envisioned to be possible associated with the future UConn Technology Park on Discovery Drive.

Potential Overlay Zones

In spring 2012, the Planning and Zoning Commission was presented with a variety of options for regulating development along potential water supply extensions, which encompass an area within and beyond the proposed Four Corners Sanitary Sewer Project. Three options were considered:

1. Allow the underlying zoning to guide development.
2. Amend the regulations to reference the state's Conservation and Development Policies Plan.
3. Develop an overlay zone.

The first option was believed to fall short of providing strong protections. The second option was not favored by the commission and town staff because it would have required references to the state's plan, which was being updated in 2012, with an uncertain timetable. The third option was deemed most acceptable and is being pursued as part of the update to the Zoning Regulations.

The Town of Mansfield anticipates that the overlay zone, as developed and reviewed, will be consistent with the broader planning effort that will continue through 2016. Specifically, the rewritten zoning regulations will incorporate an overlay zone, and the updated POCD (*Mansfield Tomorrow*) will include policies, goals, and objectives that steer development to appropriate areas and away from areas

adjacent to the water mains and sewer collection systems that traverse areas that are currently designated Protected Lands and Conservation Areas on the State Plan. Goal 4.2, Strategy A of *Mansfield Tomorrow* indicates that the Zoning and Subdivision regulations will be updated through the use of an overlay zone in areas designated as Rural Residential/Agricultural/Forestry, Rural Residential Village, or Village Center in order to limit the number of connections within 1,000 feet of new water and sewer mains to prevent sprawl and retain low-density character. Overlay zones would not apply to properties or portions of properties zoned PB-3 or PO-1.

Zoning regulation changes currently under review by the Planning & Zoning Commission are anticipated to be completed in 2016. Although the associated text has not yet been adopted, the intent of the regulations relative to the overlay zone is to: (1) allow subdivision of land in accordance with the underlying zoning, and (2) to allow growth in designated areas of Mansfield consistent with historic and long-range planning documents while preventing the degradation of the rural character of the town. By concentrating development in specific areas, sprawl development can be avoided.

In conclusion, the proposed action is consistent with and supports local zoning regulations.

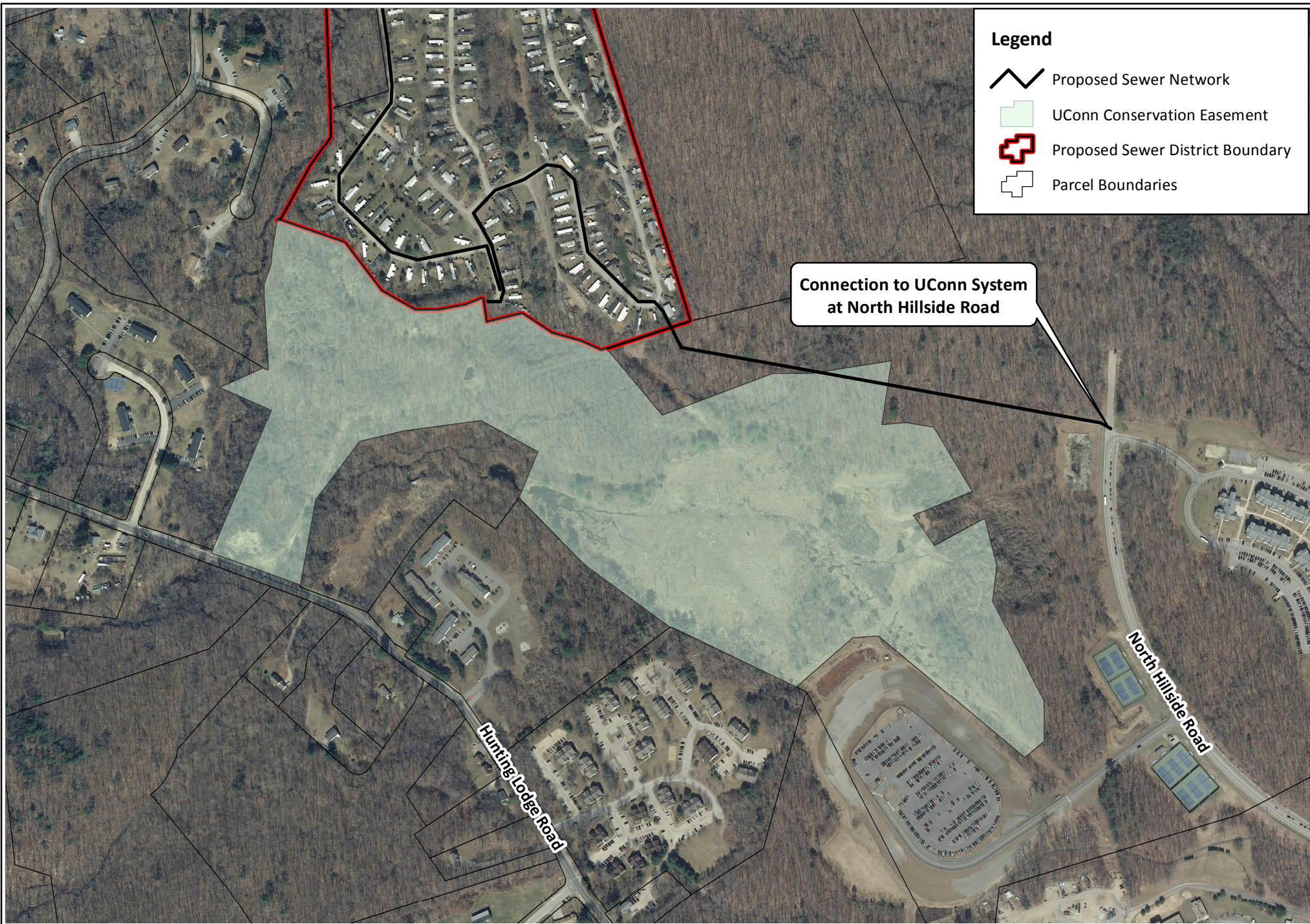
3.1.5 Conservation Easement Land

Figure 3.1-2 depicts an existing conservation area located east of Hunting Lodge Road, south of Route 44, west of Discovery Drive, and north of North Eagleville Road. This parcel of land, described as Lots 11 and 16 in Block 23 on the Mansfield Tax Map 8, includes ± 64 acres of protected land. The Commissioner of Energy and Environmental Protection accepted the conservation agreement proposed by UConn on July 29, 2008. The conservation area is proposed to be expanded as part of the Discovery Drive installation by UConn.





According to the Conservation Agreement, UConn shall maintain the parcel and preserve its natural, scenic, aesthetic, and special character. The parcel is to be conserved and protected as a natural habitat for birds, wildlife, plants, and similar ecosystems. There shall be no industrial, commercial, agricultural, or forestry activities conducted on the parcel. No structures, improvements, or alterations shall be placed on the parcel, nor shall there be any disturbance to soil, topography, water systems, wetlands, or natural habitats.

After written approval has been granted from the Grantee (i.e., the Commissioner of the Department of Energy and Environmental Protection) and any other local or state agencies for which approval is required, UConn may install new utilities or convey easements for such utilities within existing rights-of-way.

The sewer connection from the proposed Jensen's Pump Station to Discovery Drive will be routed through several hundred feet of the existing conservation easement land within an existing utility right-of-way (ROW) within the protected conservation lands. With the additional proposed conservation easement area, nearly the length of the sewer pipeline alignment will be within conservation lands. The utility ROW was in place when the existing conservation land was established. UConn may grant utility easement rights to the Town of Mansfield with DEEP approval. This approval will be a condition of the project moving forward.



Legend

-  Proposed Sewer Network
-  UConn Conservation Easement
-  Proposed Sewer District Boundary
-  Parcel Boundaries

**Connection to UConn System
at North Hillside Road**

SOURCE(S):
 2012 Aerial Photo from CT ECO
 2015 Assessor's Database
 Mansfield Town Files

Figure 3.1-2: Conservation Easement

MXD: Y:\2111-11\GIS\Maps\Figure3.1-2Easement.mxd

**Mansfield Four Corners
Sanitary Sewer Project EIE**

LOCATION: Mansfield, CT

Map By: scottb
MMI#: 2111-11
Original: 6/8/2015
Revision: 6/8/2015
Scale: 1 in = 500 ft

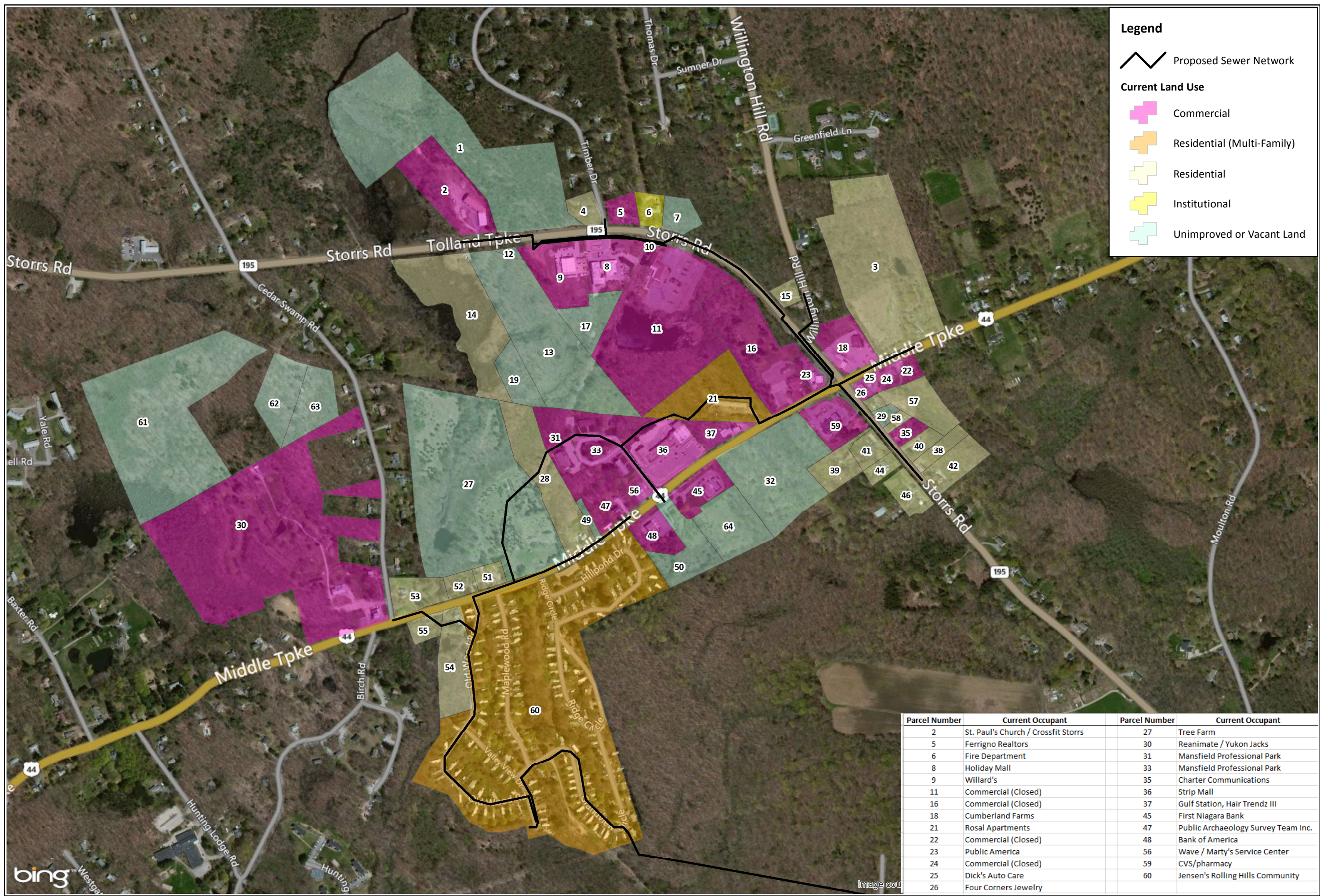
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3.1.6 Existing and Potential Future Land Uses in the Project Vicinity

The boundaries of the proposed sewer service area were originally developed as part of the draft 2008 *Four Corners Area Wastewater Facilities Plan* prepared by Earth Tech. The analysis below considers information from various sources to determine the potential development and redevelopment potential of each parcel in the area. The following information and assumptions have been made to conduct this analysis:

- Parcels have been numbered to be generally consistent with previous efforts by the town although some parcels have subdivided or merged since that time. Parcels herein are numbered from 1 to 64; however, there is no parcel 20 (the previous parcel 20 was combined with parcel 18 by Cumberland Farms) or parcels 34 or 43 (these were combined with parcel 33 in the professional park). As such, 61 distinct parcels are located in the potential sewer service area.
- Parcel mapping in Geographic Information System (GIS) was obtained from the Town of Mansfield, and pertinent information was taken from the Town of Mansfield Assessor GIS parcel viewer on the town website. Parcel boundaries were adjusted to be current with the Mansfield Assessor database as of June 2, 2015.
- Wetlands were considered based on three sources: (1) areas that have been field delineated as shown on the plans prepared by Weston & Sampson that were reviewed for this EIE; (2) areas of wetland soils as available in GIS from the CTDEEP website; and (3) low-lying, wet areas observable on the 2012 aerial photograph of the area available from CT ECO.
- Floodplains are the 1% annual chance floodplain mapped by FEMA for regulatory purposes.
- Parcels that are "landlocked" (i.e., no direct access to a sewer main) are assumed to be able to be served through adjacent properties where there is a common owner unless this would be unlikely due to site constraints.
- Several parcels are either actively being marketed together or are owned by the same entity. These parcels have been consolidated for the purpose of this analysis. These include parcels 12, 13, and 17; parcels 19, 28, and 49; parcels 26, 29, 57, and 58; parcels 30, 61, 62, and 63; and parcels 51 and 52. In addition, parcel 10 has been consolidated with parcel 11 for this analysis even though the two parcels have different owners. Parcel 10 is too small to support development on its own and would likely only be developed in association with parcel 11.

Figure 3.1-3 is a land use map of the project area. The vast majority of land is currently developed with commercial, multifamily, and single-family residential uses. The Mansfield POCD and zoning regulations determine the types of development that can occur in any location in town. Much of the proposed sewer service area is planned (per the zoning regulations) for a mixture of business, office, and residential uses; however, actual uses allowed under current zoning have been limited due to the lack of sewer and water infrastructure. The town is presently updating its POCD through the *Mansfield Tomorrow* initiative while concurrently updating its zoning regulations. These updates will provide further guidance on the types of uses that will be allowed as well as the scale of development based on community input.



Legend

Proposed Sewer Network

Current Land Use

- Commercial
- Residential (Multi-Family)
- Residential
- Institutional
- Unimproved or Vacant Land

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SOURCE(S):
 Current aerial photo from Bing via ESRI
 2015 Mansfield Accessor's Database

Current Land Use
Mansfield Corners Sewer Project EIE
Mansfield, Connecticut

Parcel Number	Current Occupant	Parcel Number	Current Occupant
2	St. Paul's Church / Crossfit Storrs	27	Tree Farm
5	Ferrigno Realtors	30	Reanimate / Yukon Jacks
6	Fire Department	31	Mansfield Professional Park
8	Holiday Mall	33	Mansfield Professional Park
9	Willard's	35	Charter Communications
11	Commercial (Closed)	36	Strip Mall
16	Commercial (Closed)	37	Gulf Station, Hair Trendz III
18	Cumberland Farms	45	First Niagara Bank
21	Rosal Apartments	47	Public Archaeology Survey Team Inc.
22	Commercial (Closed)	48	Bank of America
23	Public America	56	Wave / Marty's Service Center
24	Commercial (Closed)	59	CVS/pharmacy
25	Dick's Auto Care	60	Jensen's Rolling Hills Community
26	Four Corners Jewelry		

Analysis of Development and Redevelopment Potential

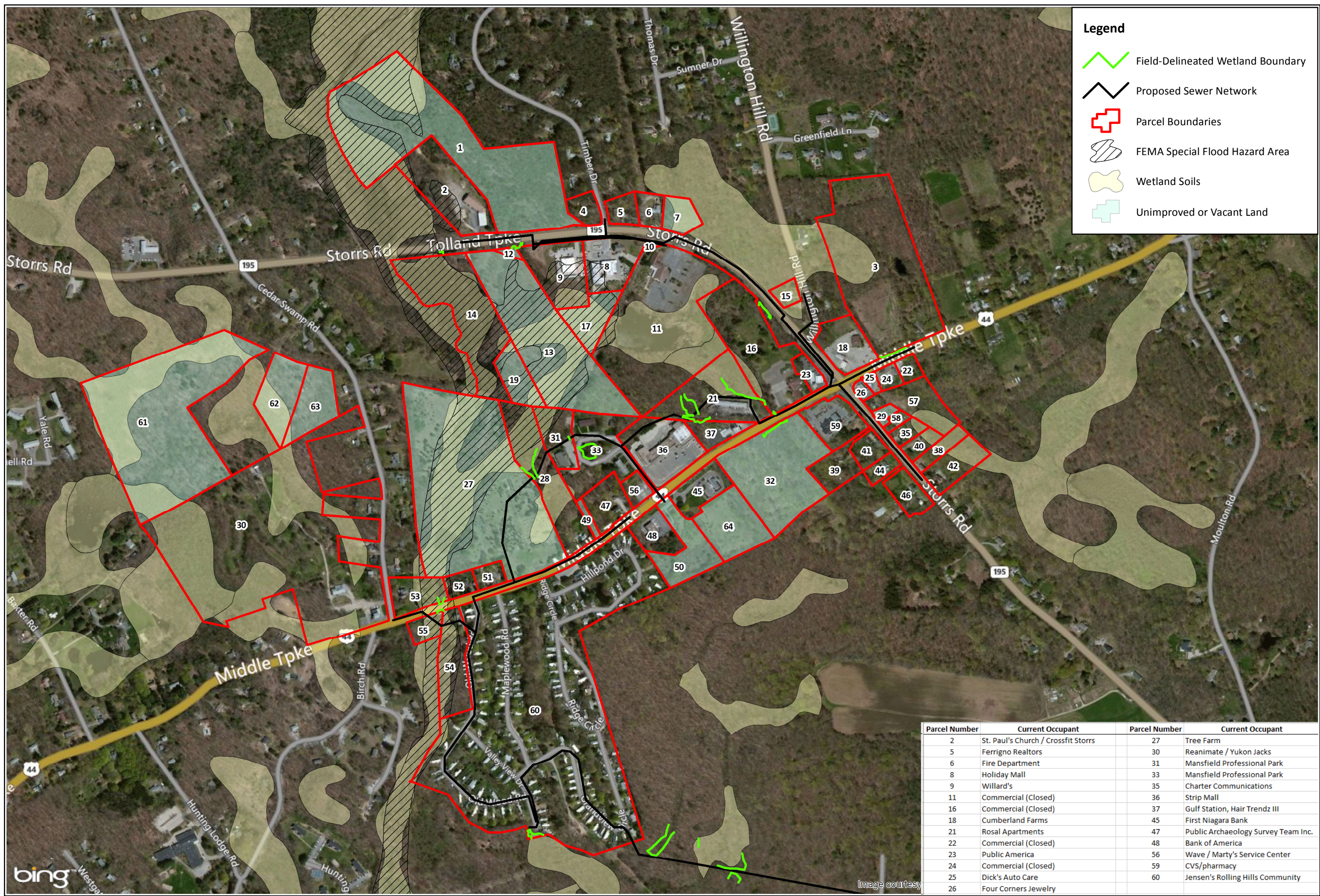
An analysis of development and redevelopment potential has been undertaken to facilitate the evaluation of potential secondary growth associated with the proposed sewer project. Parcels have been ranked as having a "high," "moderate," or "low" development and/or redevelopment potential based on site criteria. Criteria that support or inhibit development potential include parcel size and configuration (ability to meet setbacks), zoning, future land use planning, and site constraints (i.e., presence of wetlands, floodplains, easements, etc.). Site constraints are presented on Figure 3.1-4. A discussion of the rankings follows:

- Parcels considered to have a *high* development or redevelopment potential meet most or all of the development criteria and have a significant developable area such that development or redevelopment is likely to occur. Site constraints are minimal or do not interrupt a large contiguous developable area.
- Parcels considered to have a *moderate* development potential meet several of the criteria such that redevelopment could occur but may have site constraints or other factors that limit the overall potential.
- Parcels considered to have a *low* development potential meet very few criteria and could have several site constraints that make new development or redevelopment unlikely within the current configuration. Such parcels are reasonably likely to retain their current use into the near future.

The following represents a forecast of development and redevelopment potential based on existing conditions as of the time of this publication. Note that even if a parcel is determined to have a low development or redevelopment potential, redevelopment of some type could occur someday due to decisions by the property owner. A discussion of development potential by parcel follows. The reader is directed to Figure 3.1-4 for a visual reference to the parcel descriptions.

Parcel 1 – Parcel 1 is located immediately east of the St. Paul's Church parcel along Route 195. The front portion of the lot is zoned PO-1, with the majority of the parcel being zoned R-90 or FH. The total lot size is 21.5 acres. Approximately one quarter of the site in the rearmost portion contains both wetland soils (white shading) and floodplain (hatch). The 2006 POCD planned for office/mixed use and low-density residential on this property. The frontage portion of the parcel (zoned PO-1) has development potential for mixed use while the rear portion of the lot could support associated residential uses. Overall, this parcel is believed to have a high development potential.

Parcel 2 – Parcel 2 is a 5.47-acre site occupied by Saint Paul's Church and Crossfit Storrs on Route 195. The church is not a historic structure. The front portion of the parcel is zoned PO-1, and the rear of the parcel is zoned R-90. The western side of the parcel is partially constrained by wetlands and floodplain (2.23 acres). The 2006 POCD identified this parcel for planned office/mixed use and low-density residential. Similar to parcel 1, the front of this parcel has potential for mixed use while the rear of the parcel could support associated residential uses. The parcel is believed to have a high redevelopment potential.



Legend

- Field-Delineated Wetland Boundary
- Proposed Sewer Network
- Parcel Boundaries
- FEMA Special Flood Hazard Area
- Wetland Soils
- Unimproved or Vacant Land

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SOURCE(S):
 Field Wetland Delineation digitized from Weston & Sampson Project Plans
 Current aerial photo from Bing via ESRI
 2015 Mansfield Accessor's Database
 Soils from CT DEEP
 Floodplain digitized from 1981 FIRM

Currently Vacant or Undeveloped Land and Site Constraints
Mansfield Corners Sewer Project EIE
Mansfield, Connecticut

Parcel Number	Current Occupant	Parcel Number	Current Occupant
2	St. Paul's Church / Crossfit Storrs	27	Tree Farm
5	Ferrigno Realtors	30	Reanimate / Yukon Jacks
6	Fire Department	31	Mansfield Professional Park
8	Holiday Mall	33	Mansfield Professional Park
9	Willard's	35	Charter Communications
11	Commercial (Closed)	36	Strip Mall
16	Commercial (Closed)	37	Gulf Station, Hair Trendz III
18	Cumberland Farms	45	First Niagara Bank
21	Rosal Apartments	47	Public Archaeology Survey Team Inc.
22	Commercial (Closed)	48	Bank of America
23	Public America	56	Wave / Marty's Service Center
24	Commercial (Closed)	59	CVS/pharmacy
25	Dick's Auto Care	60	Jensen's Rolling Hills Community
26	Four Corners Jewelry		

Map By: scottb
 MM#: 2111-11
 MXD: V:\2111-11\GIS\Maps\Figures_1-4\vacantConstraints.mxd
 1st Version: 6/08/2015
 Revision: 1/28/2016
 Scale: 1 in = 600 ft

Figure 3.1-4

Parcel 3 – Parcel 3 is a 16.01-acre site on Route 44 occupied by a single-family home with some of the parcel appearing to have been recently used for agriculture. The home was built sometime in the 19th century and likely has local historic significance within the Mansfield Four Corners historic village. Approximately 4.08 acres of the parcel appear to be constrained by wetlands. The front portion of the parcel is zoned PO-1, and the southwestern portion of the property could likely support a professional office use consistent with land uses across the street on the south side of Route 44. The majority of the parcel is zoned RAR-90 and could support residential uses including possibly special permit uses such as a residential treatment facility, special care residences, or group day care homes. This parcel is believed to have a high redevelopment potential.

Parcel 4 – Parcel 4 is a 0.99-acre site on Route 195 west of Timber Drive and is zoned PO-1. Although no site constraints exist, this parcel is dominated by a single-family home consistent with adjacent lots to the north. This parcel is believed to have a low redevelopment potential.

Parcel 5 – Parcel 5 is a 0.98-acre site on Route 195 east of Timber Drive and is zoned PO-1. The site is currently occupied by a realtor. The 2006 POCD identified this parcel for planned office/mixed use. Although no site constraints exist, this parcel is surrounded by single-family homes and a fire station. This parcel is believed to have a low redevelopment potential.

Parcel 6 – Parcel 6 is a 1.01-acre site on Route 195 east of Timber Drive and is zoned PO-1. The site is currently occupied by the municipal fire department. The 2006 POCD identified this parcel for planned office/mixed use. Although no site constraints exist, this parcel is town owned with no plans for a change in use and, therefore, believed to have a low redevelopment potential.

Parcel 7 – Parcel 7 is located immediately east of the fire station along Route 195 and is zoned R-90. The parcel size is 1.33 acres, approximately three-quarters of which is covered by wetland soils (white shading). The 2006 POCD planned for office/mixed use on this parcel. Given the potential site constraints, this site is believed to have low development potential.

Parcel 8 – Parcel 8 is a 3.10-acre site on Route 195 currently occupied by the Holiday Mall. The parcel is zoned PB-3 and is partially constrained by floodplain (0.66 acres). The 2006 POCD identified this parcel for planned business/mixed use. The parcel is considered to have a high redevelopment potential.

Parcel 9 – Parcel 9 is a 3.87-acre site on Route 195 currently occupied by Willard's Home Improvement Center. The parcel is zoned PB-3 and is significantly constrained by floodplain (2.07 acres). The 2006 POCD identified this parcel for planned business/mixed use. An additional 5,000 square feet of building footprint could likely be realized on the northwestern portion of the parcel. This parcel is considered to have a moderate redevelopment potential since half of the existing use is in the floodplain.

Parcels 10 and 11 – Parcel 10 occupies 0.12 acres along Route 195. It is too small to support development on its own; however, the parcel has the potential to be consolidated with Parcel 11, a 16.62-acre parcel that has sat vacant for many years. The combined parcel is zoned PB-3. It is significantly constrained by wetlands that prevent access to the southern portion of the site. As such, the existing developed area (3.39 acres) is likely to be consistent with the limits of the redeveloped area. The 2006 POCD identified this parcel for planned business/mixed use. This parcel could support a variety of commercial or mixed uses and is considered to have a high redevelopment potential.

Parcels 12, 13, and 17 – Parcel 12, located along Route 195 within the PB-3 zone, covers 0.20 acres. It is too small to support a development on its own, and at least 0.06 acres of the parcel are constrained by wetlands. This parcel has the potential to be consolidated with parcels 13 and 17 as all three are owned by the same entity. Parcel 17 is a 2.22-acre site without road frontage that is located primarily within the FEMA-mapped floodplain. As such, this portion of the consolidated parcel is unlikely to be developed. Parcel 13 is a 12.55-acre site located along Route 195 and zoned PB-3. Per the State POCD, 10.75 acres of this parcel are classified as Protected Land (i.e., lands that have some form of restriction on development, such as permanently protected open space or property in which the development rights have been acquired). The 2006 Mansfield POCD indicates that this area of the parcel is subject to a town conservation easement, but the remaining area is planned for business or mixed use. Large areas within the consolidated parcel are covered by wetlands and floodplain (white shading and hatch, respectively). After considering the site constraints, only approximately 0.95 acres of developable area remain. Given these restrictions, the combined parcel is believed to have moderate development potential.

Parcel 14 – Parcel 14 is an 8.32-acre site on Route 195 that is zoned RAR-90. The entire parcel has a town conservation easement, and much of the parcel is located in wetlands or floodplain although a residential dwelling currently occupies the property. Although the 2006 POCD identified planned business and mixed use for this site, given the conservation easement it is believed to have low redevelopment potential.

Parcel 15 – Parcel 15 is a 0.62-acre lot on Route 320 that is zoned R-90. A single-family home is located on the property. The 2006 POCD identified this parcel for low-density residential. This parcel is believed to have low redevelopment potential.

Parcel 16 – Parcel 16 is a 7.78-acre site that was formerly Zenny's restaurant and banquet facility. The parcel is zoned PB-3, and the rear of the lot appears to have wetlands (at least 0.66 acres) even though they are not mapped by soil type. The parcel has an extensive amount of unutilized space. Much of the rear portion of the lot is reportedly fill per comments received at the scoping meeting. The 2006 POCD identified this parcel for planned business/mixed use. The property is located in the Mansfield Four Corners historic village boundary. Given that access to the lot is possible from both Route 195 and Route 44, the parcel is believed to have high redevelopment potential.

Parcel 18 – Parcel 18 is a 2.66-acre site at the intersection of Route 195 and Route 44 that is zoned PB-3. The entire parcel was recently redeveloped by Cumberland Farms from two parcels consisting of a former restaurant and a gas station. The 2006 POCD identified this parcel for planned business/mixed use. The parcel is located in the Mansfield Four Corners historic village boundary. It is believed to have low redevelopment potential due to the recent redevelopment.

Parcels 19, 28, and 49 – These three lots have the same owner and, therefore, have the potential to be consolidated for development. Parcel 19 is a 1.95-acre lot that is located primarily within the FEMA-mapped floodplain and does not have road access. It is zoned RAR-90 and FH. Access to the small developable portion of this site would need to occur through the floodplain. Development on this portion of the consolidated parcel is unlikely. Parcel 49 is a 0.32-acre site on Route 44 that is zoned PB-3 but is only 47 feet wide and likely could not be developed without being combined with parcel 28. Parcel 28 is a 5.64-acre site on Route 44 that currently supports a single-family home. The parcel is zoned PB-3. The consolidated parcel would be 7.91 acres in size but would be significantly constrained by the presence of floodplain and wetlands (approximately 5.46 acres) in the rear portion of the lot. The front portion of the lot along Route 44 is suitable for redevelopment, and therefore, this parcel has a high redevelopment potential.

Parcel 21 – Parcel 21 is a 5.64-acre site on Route 44 that is home to Rosal's Apartments. The parcel is zoned PB-3. Much of the unutilized portion of the lot includes wetlands (2.40 acres). The 2006 POCD identified this parcel for planned business/mixed use. It is considered to have a moderate redevelopment potential with expansion of the facility being a likely possibility.

Parcel 22 – Parcel 22 is a 0.61-acre lot on Route 44 that is zoned PB-3. The parcel is currently vacant and does not appear to have any site constraints. The 2006 POCD identified this parcel for planned office/mixed use. It is located in the Mansfield Four Corners historic village boundary. This parcel is believed to have moderate redevelopment potential.

Parcel 23 – Parcel 23 is a 0.77-acre site at the intersection of Route 44 and Route 195 that is zoned PB-3. The parcel is currently developed with a gas station and a convenience store and does not appear to have any site constraints. The 2006 POCD identified this parcel for planned business/mixed use. The parcel is located in the Mansfield Four Corners historic village boundary. This parcel is believed to have high redevelopment potential.

Parcel 24 – Parcel 24 is a 0.60-acre site on Route 44 that is zoned PB-3. The parcel is currently occupied by a commercial use and does not appear to have any site constraints. The 2006 POCD identified this parcel for planned office/mixed use. It is located in the Mansfield Four Corners historic village boundary. This parcel is believed to have high redevelopment potential.

Parcel 25 – Parcel 25 is a 0.28-acre lot on Route 44 that is zoned PB-3. The parcel is currently an auto repair facility and does not appear to have any site constraints. The 2006 POCD identified this parcel for planned business/mixed use. The parcel is located in the Mansfield Four Corners historic village boundary. It is believed to have high redevelopment potential.

Parcels 26, 29, 57, and 58 – Parcels 26, 29, 57, and 58 are located on Route 195 south of Route 44 and are owned by the same entity; therefore, the parcels have potential to be consolidated for a redevelopment project. A combined parcel would be 3.94 acres in size, with multiple zoning designations (PB-3 in the case of parcel 26 and RAR-90 for parcels 29, 57, and 58). The consolidated parcel would be entirely within the Mansfield Four Corners historic village boundary. Current uses include commercial (parcel 26), vacant land (parcel 29), and residential. A total of 1.09 acres are mapped as wetlands, and access to the rear of the consolidated parcel appears to be inhibited by Mason Brook. The 2006 POCD identified parcel 26 for planned business and mixed use and identified the remaining parcels to be low-density residential. The consolidated parcel is considered to have moderate redevelopment potential.

Parcel 27 – Parcel 27 is a 24.85-acre lot on Route 44 that is zoned RAR-90. Approximately half of the site is mapped as wetland and/or FEMA floodplain, leaving a triangle of land to the rear of the site that is disconnected from the front and bisected by Cedar Swamp Brook, a tributary to Cedar Swamp Brook, and a pond. A large diversity of high-quality ecological habitat exists at this site based on recent field visits. The 2006 POCD planned for medium- to high-density residential or medium- to high-density age-restricted residential although these are not permitted uses under existing zoning and would require a zone change. Nevertheless, the parcel is believed to have high development potential. The highest density development would likely front Route 44 while lower density uses could potentially occur in the northwestern portion of the site and connect to Cedar Swamp Road. This parcel is also designated as PA-490 land. The PA-490 designation enables landowners to pay tax on the land at its current use value rather than its highest value. The critical component of PA-490 prevents the forced conversion of farm,

forest, and open space lands to more intensive uses as a result of property taxation that is incompatible with current land uses. However, PA 490 does not *prevent* the development of land and therefore is not considered an encumbrance relative to future potential land use.

Parcels 30, 61, 62, and 63 – According to the Town of Mansfield, as of August 2014² parcels 61, 62, and 63 (located west of Cedar Swamp Road) are being marketed by the owner in association with parcel 30 (located at the intersection of Route 44 and Cedar Swamp Road). As such, a sewer main extension to parcels 61, 62, and 63 is considered feasible, and these parcels were included in the proposed sewer service area. Parcel 30 is a large lot that formerly supported several buildings and uses, including Art Guys Unlimited, Yukon Jack's restaurant, and a golf course. A communications tower is also located on the site. The remaining parcels are currently vacant with limited access off Cedar Swamp Road. The consolidated parcel would have access from Route 44 as well as Cedar Swamp Road. A consolidated parcel would be 61.01 acres, all zoned RAR-90. A significant amount of wetlands (±26 acres) are present on the site. The 2006 POCD identified parcel 30 for medium- to high-density age-restricted residential or low-density residential use while the remaining parcels were identified for low-density residential use. The consolidated parcel has a high potential for redevelopment such as for multifamily use.

Parcel 31 – Parcel 31 is a 2.22-acre site on Professional Park Road that is zoned PB-3. The parcel is currently home to the Mansfield Family Practice building. The rear of the parcel (0.72 acres) is mapped as wetland soils. The 2006 POCD identified this parcel for planned office/mixed use. This parcel is believed to have moderate redevelopment potential.

Parcel 32 – Parcel 32 is a 9.11-acre lot on Route 44 located just west of the intersection of Route 195 and Route 44. The parcel is zoned PB-3, is located outside of any floodplain, and has no mapped wetlands based on the underlying soil type; however, wetlands have been delineated on this site based on the plans developed by Weston & Sampson and have been independently verified by Milone & MacBroom, Inc. A low-lying, wet area is clearly visible on the aerial photograph of this site. The 2006 POCD identified planned business and mixed use for this parcel. There is likely sufficient space available on this site to support development on the west side, but development on the eastern portion of the site would likely be limited. This parcel is believed to have a high potential for development as it is the largest unencumbered vacant site within the study area and, therefore, a logical location for a higher intensity development, such as a restaurant, retail use(s), or mixed residential/commercial use.

Parcel 33 – Parcel 33 is a 5.02-acre site that currently supports professional office use within the Mansfield Professional Park on Professional Park Road. This parcel is zoned PB-3. It has associated wetlands (0.32 acres) and is also constrained by the ROW for the professional park. The 2006 POCD identified this parcel for planned business/mixed use. Given the site constraints, this parcel is believed to have moderate redevelopment potential.

Parcel 35 – Parcel 35 is a 0.68-acre lot on Route 195 south of Route 44 that is zoned RAR-90. This land is owned by Charter Communications and is used for cable utility purposes. This parcel is believed to have low redevelopment potential.

Parcel 36 – Parcel 36 is a 4.42-acre site on Route 44 at the intersection of Professional Park Road that is currently developed as a strip mall housing Dollar General and several other commercial businesses. The lot is zoned PB-3. It does not have any wetland or floodplain constraints. The current building size

² Town of Mansfield, August 27, 2014, "Four Corners Sanitary Sewer Project – Questions & Answer Summary."

is slightly greater than 20% of the total parcel area such that any redevelopment would likely include a building with additional stories. The 2006 POCD identified this parcel for planned business/mixed use. This site is believed to have a high redevelopment potential.

Parcel 37 – Parcel 37 is a 1.31-acre site on Route 44 that is zoned PB-3. The parcel currently supports multiple commercial uses, including a gas station, a convenience store, and hair stylist. It appears to have minimal site constraints (0.02 acres of wetlands). The 2006 POCD identified this parcel for planned office/mixed use. The parcel is believed to have high redevelopment potential.

Parcel 38 – Parcel 38 is a 1.0-acre lot on Route 195 south of Route 44 that is zoned RAR-90. There is an existing residential use on the property. Much of the parcel (0.38 acres) is mapped as wetlands. The parcel is also located in the Mansfield Four Corners historic village boundary. The 2006 POCD identified this parcel as low-density residential. It is believed to have low redevelopment potential.

Parcel 39 – Parcel 39 is a 1.80-acre site on Route 195 south of Route 44 that is zoned RAR-90. There is an existing residential use on the property. Much of the parcel (0.47 acres) is mapped as wetlands. The parcel is located in the Mansfield Four Corners historic village boundary. The 2006 POCD identified this parcel as low-density residential. It is believed to have low redevelopment potential.

Parcel 40 – Parcel 40 is a 0.81-acre lot on Route 195 south of Route 44 that is zoned RAR-90. There is an existing residential use on the property. A portion of the property (0.13 acres) is mapped as wetlands. The parcel is located in the Mansfield Four Corners historic village boundary. The 2006 POCD identified this site as low-density residential. It is believed to have low redevelopment potential.

Parcel 41 – Parcel 41 is a 1.08-acre site on Route 195 south of Route 44 that is zoned RAR-90. There is an existing residential use on the property; however, no site constraints have been identified. The parcel is located in the Mansfield Four Corners historic village boundary. The 2006 POCD identified this site as low-density residential. It is believed to have low redevelopment potential.

Parcel 42 – Parcel 42 is a 2.14-acre site on Route 195 south of Route 44 that is zoned RAR-90. There is an existing residential use on the property, and the rear of the site (0.37 acres) is mapped as wetlands. The parcel is located in the Mansfield Four Corners historic village boundary. The 2006 POCD identified this site as low-density residential. It is believed to have low redevelopment potential.

Parcel 44 – Parcel 44 is a 0.69-acre site on Route 195 south of Route 44 that is zoned RAR-90. There is an existing residential use on the property, but no site constraints have been identified. The parcel is located in the Mansfield Four Corners historic village boundary. The 2006 POCD identified this parcel as low-density residential. This parcel is believed to have low redevelopment potential.

Parcel 45 – Parcel 45 is a 2.21-acre parcel on Route 44 across from the terminus of Professional Park Road that houses First Niagara bank. The lot is zoned PB-3. It does not appear to have any wetland or floodplain constraints. The 2006 POCD identifies this parcel for planned business/mixed use. Given the location of the parcel at the corner of Discovery Drive, it is believed to have a high redevelopment potential.

Parcel 46 – Parcel 46 is a 1.47-acre site on Route 195 south of Route 44 that is zoned RAR-90. There is an existing residential use on the property, but no site constraints have been identified. The parcel is located in the Mansfield Four Corners historic village boundary. The 2006 POCD identified this parcel as low density residential. It is believed to have low redevelopment potential.

Parcel 47 – Parcel 47 is a 2.02-acre site on Route 44 that is zoned PB-3. There is currently a commercial use on the property, and no site constraints appear to be present. The 2006 POCD identified this parcel for planned business/mixed use. It is believed to have high redevelopment potential.

Parcel 48 – Parcel 48 is a 1.87-acre lot on Route 44 across from the terminus of Professional Park Road that is zoned PB-3. The site is currently occupied by Bank of America, and no site constraints appear to be present. The 2006 POCD identified this parcel for planned business/mixed use. This parcel is believed to have high redevelopment potential.

Parcels 50 and 64 – Parcels 50 and 64 were formerly part of parcels 48 and 45, respectively, but were recently purchased by UConn to facilitate the construction of Discovery Drive. Clearing has begun for the roadway. Both parcels are zoned PB-3. The 2006 POCD identified planned business or mixed use on these parcels. Given that Discovery Drive will be a new gateway to UConn, it is anticipated that these parcels could be developed at some point in the future by UConn though there are currently no plans to do so. These parcels are considered to have moderate development potential.

Parcels 51 and 52 – Parcel 51 is a 0.78-acre lot, and parcel 52 is a 0.81-acre lot. Both are zoned RAR-90, and both are located on Route 44 to the east of Cedar Swamp Brook. These parcels have the potential to be consolidated as they are owned by the same family. A consolidated parcel would have a small area (0.15 acres) of wetlands and floodplain associated with Cedar Swamp Brook. The 2006 POCD identified medium- to high-density residential or age-restricted residential for these properties although parcel 52 was partially identified as low-density residential. The consolidated parcel is believed to have low redevelopment potential.

Parcel 53 – Parcel 53 is a 2.06-acre site at the intersection of Route 44 and Cedar Swamp Road that is zoned RAR-90. The parcel is owned by the State of Connecticut and used to house a group home. It is believed to have a low redevelopment potential.

Parcel 54 – Parcel 54 is a 3.42-acre site on Route 44 immediately west of Jensen's that is zoned RAR-90. There is an existing residential use on the property, with 2.13 acres of the parcel mapped as wetlands or floodplain. Much of the rear portion of the property would be difficult to access without passing through the floodplain. The 2006 POCD identified this parcel as medium- to high-density residential. However, given the site constraints, this parcel is believed to have low redevelopment potential.

Parcel 55 – Parcel 55 is a 0.90-acre site on Route 44 west of Cedar Swamp Brook that is zoned RAR-90. There is an existing residential use on the property. Approximately 0.50 acres of the site are mapped as wetlands or floodplain. The 2006 POCD identified this parcel as medium- to high-density residential. However, given the site constraints, this parcel is believed to have low redevelopment potential.

Parcel 56 – Parcel 56 is a 0.78-acre site on Route 44 at the intersection of Professional Park Road that is zoned PB-3. There is an existing auto repair facility located on the property. No site constraints appear to be present. The 2006 POCD identified this parcel for planned business/mixed use. This parcel is believed to have high redevelopment potential.

Parcel 59 – Parcel 59 is a 2.50-acre site at the intersection of Route 195 and Route 44 that is zoned PO-1 and PB-3. This property is currently a CVS Pharmacy. The site does not appear to have any site constraints. The 2006 POCD identified this parcel for planned business/planned office/mixed use. This parcel is believed to have low redevelopment potential due to the relatively recent redevelopment.

Parcel 60 – Parcel 60 is a 50.95-acre site on Route 44 east of Cedar Swamp Brook that is the home to Jensen's Rolling Hills Community (an age-restricted mobile home park). The lot is zoned RAR-90, and the current use is grandfathered under existing zoning. Site constraints include wetlands and floodplains (1.03 acres) associated with Cedar Swamp Brook and an on-site pond. The 2006 POCD identified this parcel for medium- to high-density residential. It is believed that the current use will continue into the near future. However, it is possible that an additional 20 mobile home units could be located on the site³. Therefore, this parcel is believed to have moderate development/redevelopment potential.

Table 3.1-8 presents a summary of each parcel and its potential for development or redevelopment based on the rationale in the preceding discussion. Development potential is illustrated on Figure 3.1-5. Although 61 individual parcels are located in the project area, as presented in Section 3.1.6, several have been consolidated for the purposes of evaluating development potential. A total of 49 parcels or consolidated parcels have been analyzed herein, as summarized in Table 3.1-8. A total of 19 of the parcels and potential consolidated parcels in the project area have a high potential for development, expansion, or redevelopment in association with the proposed sewer project. A total of 10 parcels and potential consolidated parcels have a moderate development or redevelopment potential. The remaining 20 parcels are believed to have a low development or redevelopment potential.

It is possible that future developers may, over time, purchase and consolidate multiple parcels such that a larger development or developments could occur that were not considered in the above analysis. For example, the current Cumberland Farms parcel (18) was formerly two parcels containing the former Kathy John's restaurant and a former gas station. It is not possible to speculate on such developments at this time as there are no proposed consolidations currently known to the Town of Mansfield that were not listed or hypothesized above. Nevertheless, if such consolidations do occur, the combined parcel usage will continue to be constrained by floodplains, wetlands, setbacks, and other zoning requirements.

3.1.7 Analysis of Direct and Indirect Impacts on Land Use and Zoning

Provision of public sewer in the Four Corners area is believed to be consistent with statewide, regional, and local land use plans and zoning regulations, and the potential for development and redevelopment in the proposed sewer service area is also consistent with the stated goals and objectives. Consistent with *Mansfield Tomorrow*, concentrating development within certain planned development areas reduces overall sprawl in the community. A total of 29 (59%) of the 49 parcels (including consolidated parcels) within the proposed sewer service area are considered to have a high or moderate development or redevelopment potential, consistent with this policy.

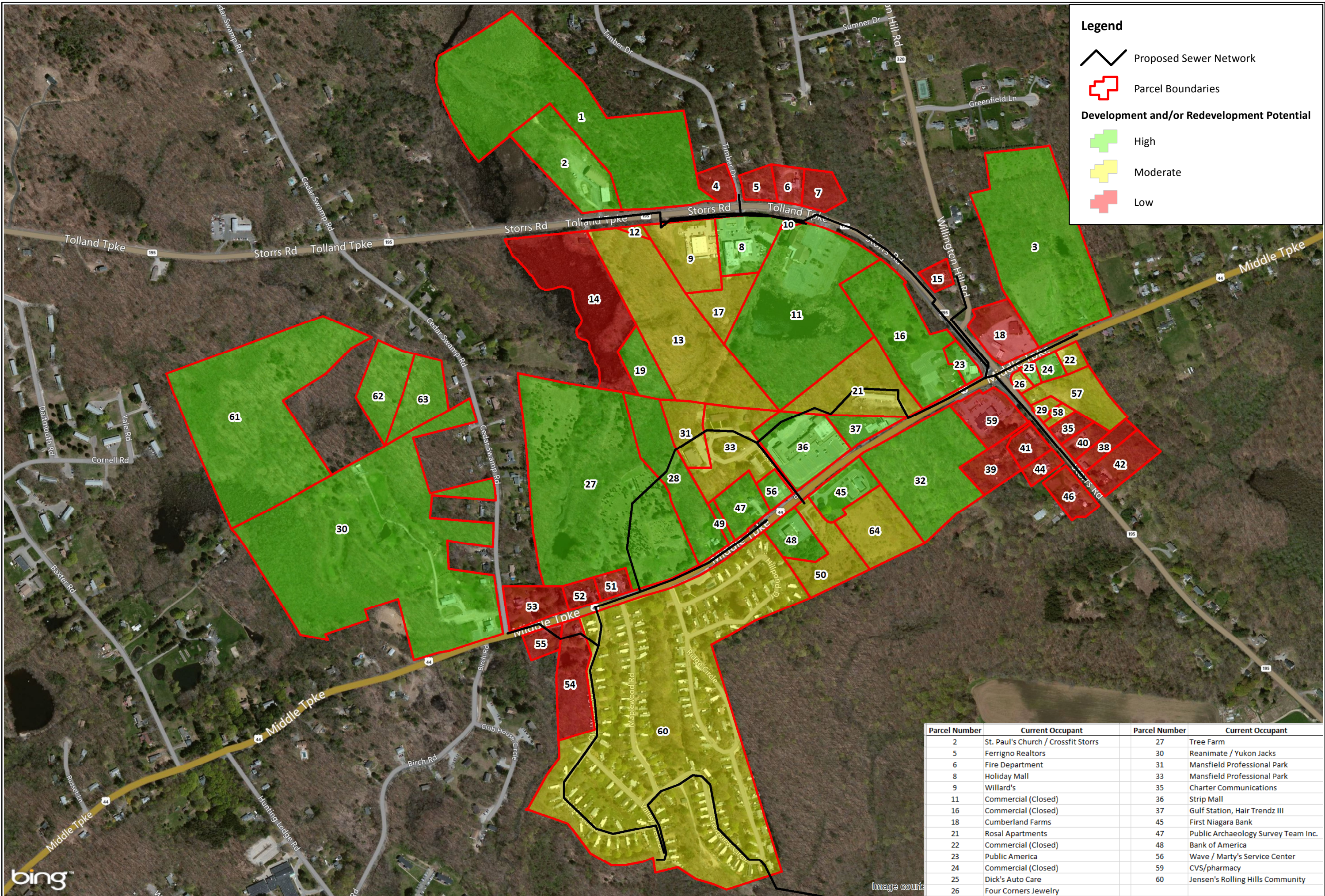
Development and redevelopment is significantly regulated by the town through the Planning and Zoning Commission, particularly for PB-3 zones. It is anticipated that the majority of site-specific issues related to development and redevelopment will be addressed through the zoning and special permit requirements as site plans are submitted to the Planning and Zoning Commission and Inland Wetland Agency, with additional review provided by the Conservation Commission. Through the local permitting process, direct impacts can be avoided and indirect impacts mitigated.

³ Town of Mansfield, August 27, 2014, "Four Corners Sanitary Sewer Project – Questions & Answer Summary."

**TABLE 3.1-8
Development and/or Redevelopment Potential for Parcels in Proposed Sewer Service Area**

Parcel ID	Map/Block/Lot	Address	Zoning	Current Use	Current Commercial Occupant	2006 POCD	Draft 2015 POCD	Parcel Size (acres)	Existing Developed Area (acres)	Constraints	Unconstrained Area (acres)	Development / Redevelopment Potential
1	2-5-22	STORRS RD	PO-1 & R-90	Unimproved Land	N/A	Planned Office/Mixed Use, Low-Density Res.	Mixed-use Center	21.53	0.00	10.08 acres wetlands and floodplain, 3.83 acres additional wetlands	7.62	High
2	2-5-21	1768 STORRS RD	PO-1 & R-90	Commercial	St. Paul's Church / Crossfit Storrs	Planned Office/Mixed Use, Low-Density Res.	Mixed-use Center	5.47	0.73	2.23 acres wetlands and floodplain	3.24	High
3	2-8-14	661 MIDDLE TPKE	PO-1 & RAR-90	Residential	N/A	Planned Office/Mixed Use, Low-Density Residential	Mixed-use Center	16.01	0.17	Wetlands (2.07 acres)	13.94	High
4	2-5-23	9 TIMBER DR	PO-1	Residential	N/A	Planned Office/Mixed Use	Mixed-use Center	0.99	0.17	None	0.99	Low
5	2-6-15	1734 STORRS RD	PO-1	Commercial - Realty	Ferrigno Realtors	Planned Office/Mixed Use	Mixed-use Center	0.98	0.35	None	0.98	Low
6	2-6-14	1722 STORRS RD	PO-1	Public - Fire Station	Town of Mansfield	Planned Office/Mixed Use	Mixed-use Center	1.01	0.46	None	1.01	Low
7	2-6-13	STORRS RD	RAR-90	Unimproved Land	Vacant Land	Planned Office/Mixed Use	Mixed-use Center	1.33	0.00	Wetland soil (0.93 acres)	0.40	Low
8	8-15-9	1733 STORRS RD	PB-3	Commercial - Mall	Holiday Mall	Planned Business/Mixed Use	Mixed-use Center	3.10	2.06	Floodplain (0.66 acres)	2.44	High
9	8-15-8	1753 STORRS RD	PB-3	Commercial - Hardware	Willard's	Planned Business/Mixed Use	Mixed-use Center	3.87	1.14	Floodplain (2.07 acres)	1.80	Moderate
10, 11	8-15-9 1, 8-15-10	1717 STORRS RD	PB-3	Commercial	Closed	Planned Business/Mixed Use	Mixed-use Center	16.74	3.39	Wetlands and floodplain (11.71 acres)	5.03	High
12, 13, 17	8-15-6, 8-15-7, 8-15-9 2	STORRS RD	PB-3	Unimproved Land	N/A	Planned Business/Mixed Use	Mixed-use Center, Conservation / Recreation land, Flood zone	14.96	0.00	Wetlands (13.35 acres), Conservation easement (10.75 acres), access	0.95	Moderate
14	8-15-4	1775 STORRS RD	RAR-90	Residential	N/A	Planned Business/Mixed Use	Flood zone	8.32	0.10	Conservation easement (all), Wetlands 7.70 ac	0.00	Low
15	2-6-32	15 WILLINGTON HILL RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential / agricultural / forestry	0.62	0.14	Wetlands soils (all mapped, but unlikely)	0.00	Low
16	8-15-11	625 MIDDLE TPKE	PB-3	Commercial - Restaurant	Former Zenny's Restaurant	Planned Business / Mixed Use	Mixed-use Center	7.78	1.67	Wetlands (0.66 acres)	7.12	High
18	2-8-13	1660 STORRS RD	PB-3	Commercial	Cumberland Farms	Planned Business / Mixed Use	Mixed-use Center	2.66	1.01	None	2.66	Low
19, 28, 49	8-15-5, 8-15-21 1, 8-15-22	555 MIDDLE TPKE	PB-3 & RAR-90	Residential	N/A	Planned Business / Mixed Use, Low-Density Residential	Mixed-use Center, Flood zone	7.90	0.10	Wetlands and floodplain (5.46 acres)	2.44	High
21	8-15-13	611 MIDDLE TPKE	PB-3	Multi-Family	N/A	Planned Business / Mixed Use	Mixed-use Center	5.64	0.97	Wetlands (2.40 acres)	3.24	Moderate
22	9-24-22	656 MIDDLE TPKE	PB-3	Commercial	Closed	Planned Office / Mixed Use	Rural residential village	0.61	0.23	None	0.61	Moderate
23	8-15-12	1659 STORRS RD	PB-3	Commercial - Gas Station	Sunoco	Planned Business / Mixed Use	Mixed-use Center	0.77	0.67	None	0.77	High
24	9-24-21	650 MIDDLE TPKE	PB-3	Commercial - Salon	Reflectionz	Planned Office / Mixed Use	Mixed-use Center	0.60	0.46	None	0.60	High
25	9-24-20	644 MIDDLE TPKE	PB-3	Commercial - Auto Shop	Dick's Auto Care	Planned Business/Mixed Use	Mixed-use Center	0.28	0.28	None	0.28	High
26, 29, 57, 58	9-25-16, 9-24-17, 9-24-18, 9-24-19	1640-1650 STORRS RD	PB-3 & RAR-90	Commercial, Residential	Jewelry	Planned Business/Mixed Use, Low-Density Residential	Mixed-use Center, Rural residential village	3.94	0.62	Wetlands (1.09 acres)	2.85	Moderate
27	8-15-23	541 MIDDLE TPKE	RAR-90	Unimproved Land	N/A	M-H Dens. Res. or M-H Dens. Age-Restricted Res.	Compact residential	24.85	0.06	11.50 acres wetlands and floodplain, rear access	13.35	High

Parcel ID	Map/Block/Lot	Address	Zoning	Current Use	Current Commercial Occupant	2006 POCD	Draft 2015 POCD	Parcel Size (acres)	Existing Developed Area (acres)	Constraints	Unconstrained Area (acres)	Development / Redevelopment Potential
30, 61, 62, 63	8-14-14 2, 8-14-14 3, 8-14-14 4, 8-14-19	497 MIDDLE TPKE / CEDAR SWAMP ROAD	RAR-90	Commercial	Art Guys Unlimited, Yukon Jacks	M-H Density Age-Restricted Res., Low-Dens. Res.	Compact residential, Rural residential / agricultural / forestry	61.01	2.30	Wetlands (25.93 acres)	35.08	High
31	8-15-18	34 PROFESSIONAL PARK RD	PB-3	Commercial	Mansfield Family Practice, LLC, etc.	Planned Business/Mixed Use	Mixed-use Center	2.22	1.79	Wetlands and floodplain (0.72 acres)	1.50	Moderate
32	9-23-1	MIDDLE TPKE	PB-3	Unimproved Land	N/A	Planned Business/Mixed Use	Mixed-use Center	9.11	0.00	Wetlands (1.28 acres) dividing site	7.83	High
33	8-15-19	11-28 PROF. PARK ROAD	PB-3	Commercial	Mansfield Professional Park	Planned Business/Mixed Use	Mixed-use Center	5.02	1.79	Wetlands and floodplain (0.32 acres)	4.70	Moderate
35	9-24-15	1636 STORRS RD	RAR-90	Telecommunications	Charter Communications	Low-Density Residential	Rural residential village	0.68	0.14	Wetlands (0.17 acres)	0.51	Low
36	8-15-15	591 MIDDLE TPKE	PB-3	Commercial - Mall	Dollar General etc.	Planned Business/Mixed Use	Mixed-use Center	4.42	3.74	None	4.42	High
37	8-15-14	603 MIDDLE TPKE	PB-3	Commercial	Gulf Station, etc.	Planned Business/Mixed Use	Mixed-use Center	1.31	0.56	Wetlands (0.02 acres)	1.29	High
38	9-24-13	1630 STORRS RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential village	1.00	0.09	Wetlands (0.38 acres)	0.62	Low
39	9-23-4	1641 STORRS RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential village	1.80	0.30	Wetlands (0.47 acres)	1.33	Low
40	9-24-14	1632 STORRS RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential village	0.81	0.17	Wetlands (0.13 acres)	0.68	Low
41	9-23-5	1637 STORRS RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential village	1.08	0.17	None	1.08	Low
42	9-24-12	1620 STORRS RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential village	2.14	0.26	Wetlands (0.37 acres)	1.77	Low
44	9-23-6	1631 STORRS RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential village	0.69	0.09	None	0.69	Low
45	8-23-1	596 MIDDLE TPKE	PB-3	Commercial - Bank	First Niagara	Planned Business/Mixed Use	Mixed-use Center	2.21	0.89	None	2.21	High
46	9-23-8	1621 STORRS RD	RAR-90	Residential	N/A	Low-Density Residential	Rural residential village	1.47	0.21	None	1.47	Low
47	8-15-21	569 MIDDLE TPKE	PB-3	Commercial	Public Archaeology Survey Team, Inc.	Planned Business/Mixed Use	Mixed-use Center	2.02	0.34	None	2.02	High
48	8-23-2	574 MIDDLE TPKE	PB-3	Commercial - Bank	Bank of America	Planned Business/Mixed Use	Mixed-use Center	1.87	0.99	None	1.87	High
50	8-23-2.3	MIDDLE TPKE	PB-3	Unimproved Land	N/A	Planned Business/Mixed Use	Mixed-use Center	3.35	0.00	Discovery Drive ROW (1.5 acres)	1.85	Moderate
51, 52	8-15-24, 8-15-25	521-527 MIDDLE TPKE	RAR-90	Residential	N/A	M-H Dens. Res. or M-H Dens. Age Restricted Res., Low-Density Residential	Compact residential	1.59	0.33	Wetlands and floodplain (0.15 acres)	1.44	Low
53	8-15-26	505 MIDDLE TPKE	RAR-90	Public	State of Connecticut	Low-Density Residential	Rural residential / agricultural / forestry	2.06	0.21	Wetlands and floodplain (0.79 acres)	1.27	Low
54	8-23-4	520 MIDDLE TPKE	RAR-90	Residential	N/A	Medium- to High-Density Residential	Flood zone	3.42	0.21	Wetlands and floodplain (2.13 acres)	1.29	Low
55	8-23-5	504 MIDDLE TPKE	RAR-90	Residential	N/A	Medium- to High-Density Residential	Compact residential	0.90	0.10	Wetlands and floodplain (0.50 acres)	0.40	Low
56	8-15-20	575 MIDDLE TPKE	PB-3	Commercial - Gas Station	Wave / Marty's Service Center	Planned Business/Mixed Use	Mixed-use Center	0.78	0.37	None	0.78	High
59	9-23-2 3	632 MIDDLE TPKE	PO-1	Commercial	CVS/pharmacy	Planned Business/Mixed Use, Planned Office/Mixed Use	Mixed-use Center	2.50	1.12	None	2.50	Low
60	8-23-3	MIDDLE TPKE	RAR-90	Multi-Family	Jensen's Rolling Hills Community	Medium- to High-Density Residential	Compact residential	50.95	0.00	Wetlands and floodplain (1.12 acres)	49.83	Moderate
64	8-23-1.4	MIDDLE TPKE	PB-3	Unimproved Land	N/A	Planned Business/Mixed Use	Mixed-use Center	3.94	0.00	Discovery Drive ROW (0.36 acres)	3.58	Moderate



Legend

- Proposed Sewer Network
- Parcel Boundaries

Development and/or Redevelopment Potential

- High
- Moderate
- Low

MILONE & MACBROOM
 99 Realty Drive
 Cheshire, Connecticut 06410
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 www.miloneandmacbroom.com

SOURCE(S):
 Current aerial photo from Bing via ESRI
 2015 Mansfield Accessor's Database

Development and/or Redevelopment Potential
Mansfield Corners Sewer Project EIE
Mansfield, Connecticut

Parcel Number	Current Occupant	Parcel Number	Current Occupant
2	St. Paul's Church / Crossfit Storrs	27	Tree Farm
5	Ferrigno Realtors	30	Reanimate / Yukon Jacks
6	Fire Department	31	Mansfield Professional Park
8	Holiday Mall	33	Mansfield Professional Park
9	Willard's	35	Charter Communications
11	Commercial (Closed)	36	Strip Mall
16	Commercial (Closed)	37	Gulf Station, Hair Trendz III
18	Cumberland Farms	45	First Niagara Bank
21	Rosal Apartments	47	Public Archaeology Survey Team Inc.
22	Commercial (Closed)	48	Bank of America
23	Public America	56	Wave / Marty's Service Center
24	Commercial (Closed)	59	CVS/pharmacy
25	Dick's Auto Care	60	Jensen's Rolling Hills Community
26	Four Corners Jewelry		

Map By: scottb
 MM#: 2111-11
 MXD: V:\2111-11\GIS\Maps\Figures\1-5DevPotential.mxd
 1st Version: 6/25/2015
 Revision: 1/28/2016
 Scale: 1 in = 552 ft

Figure 3.1-5

3.2 Socioeconomics

The following information regarding demographics, employment, and tax base has been obtained from GIS, assessors' data, the 2006 Mansfield POCD, the U.S. Census, and the former WinCOG. The following discussion is intended to provide an overall background of the demographic makeup of the study area.

3.2.1 Demographics

The total population of Mansfield generally increased from 2000 to 2010. In particular, Mansfield grew by 6,000 people over the last decade (Table 3.2-1). Table 3.2-2 presents Census 2000 and 2010 household size averages. Household sizes generally decreased slightly statewide from 2000 to 2010; however, in Mansfield household size actually slightly increased.

TABLE 3.2-1
Historic Population in Mansfield (1950 – 2010)

Year	Population	% Change
1950	10,008	---
1960	14,638	+46.3%
1970	19,994	+36.5%
1980	20,634	+3.2%
1990	21,103	+2.3%
2000	20,720	-1.8%
2010	26,543	+28.1%

Sources: U.S. Census Bureau, Mansfield POCD, Connecticut State Register and Manual

TABLE 3.2-2
Average Household Size

Location	2000	2010
State of Connecticut	2.53	2.52
Mansfield	2.40	2.44

Sources: 2000 Census Summary File 4; 2010 Census Summary File 2

The United States Environmental Protection Agency (EPA) defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. No group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. The EPA program "EJView" provides demographic information by census block group based on 2010 census data. This viewer is located on the EPA website⁴. This information includes potential low-income or minority populations. Demographic information from this viewer is described below.

- The census blocks making up the majority of the project area have a moderate population density of approximately 300 to 700 persons per square mile. The census blocks associated with the Jensen's Rolling Hills Community have a high population density, with approximately 3,000 persons per

⁴ <http://epamap14.epa.gov/ejmap/entry.html>

square mile. The majority of the elderly (age 65 and older) population in the proposed sewer service area reside in the census blocks associated with Jensen's Rolling Hills Community.

- The percentage of minority population in the project area ranges from 0% to 30% per block. The lowest densities are found in the census blocks comprising Jensen's Rolling Hills Community (0-10%). The highest density (27.8% minority) is found in the block bounded by Cedar Swamp Road, Route 44, and Route 195. The blocks east of Route 195 and Route 320 also have a high-density minority population, between 20% and 30%: the census block north of Middle Turnpike is 23.8% minority, and the block south of the turnpike is 20.4% minority. Intermediate percentages (10-20%) are found in the remaining areas: north of Storrs Road is between 12.5% and 16% minority, and the census block southwest of the intersection of Route 44 and Route 195 is 18.8% minority.

Much of the project area is occupied by renters. The census blocks associated with Jensen's Rolling Hills Community and the area north of Route 195 and west of Route 320 have the lowest percentage of renters (0% to 11.5%). The census block between Route 320 and Route 44 and east of Route 195 is 25% renter. The census block south of Route 44 and east of Route 195 is 48.4% renter. All other areas west of Route 195 are greater than 50% renter occupied. The census block south of Route 44 and west of Route 195 is 78% renter occupied; the block bounded by Cedar Swamp Road, Route 44, and Route 195 is 63.2% renter occupied; and the census block west of Cedar Swamp Road is 68.75% renter occupied.

In general, proposed sewer mains will pass through areas where between 30% and 40% of the population are considered below the poverty line. The census block group north of Route 44 and east of Route 195 has an average per-capita income of \$30,856. The census block group south of Route 44 and west of Route 195 has an average per-capita income of only \$11,156. The latter value is likely influenced by students in apartments near UConn and retired residents at Jensen's Rolling Hills Community.

The proposed sewer project is not expected to displace or significantly impact minority or low-income residents in the proposed sewer district. Rather, the project will provide additional services to the population served and expand the potential for additional housing opportunities.

Estimated Population Growth

In 2014, Weston & Sampson estimated that future growth on 11 parcels in the Four Corners area could include 90 new multifamily residential units and 40 age-restricted units in the 10 years following construction of the sewer. The projected maximum buildout for sewer demand purposes conducted by Weston & Sampson in 2011 indicated that more units were possible over a 20-year post-construction period although due to the nature of the analysis (conducted for design purposes) the projected units and square footage are conservatively high as they did not account for underlying zoning. The previous analysis conducted by Weston & Sampson has been adjusted to account for the parcel-by-parcel analysis presented in Section 3.1.6. Table 3.2-3 presents the projected buildout for the parcels denoted as having a high or moderate development potential in Section 3.1.6 with regard for current zoning.

Based on the information in Table 3.2-3, the potential increase in residential units could include four single-family homes, 14 two-family homes, 217 two-bedroom units, and 20 two-bedroom age-restricted mobile homes. Applying the average household size of 2.44 people to the potential 235 units that are not age restricted suggests that a population increase of 573 people could be possible in the sewer service area related to secondary growth. An additional 40 people (two per unit) is possible in the age-restricted mobile home park, bringing the population growth estimate to 613 people.

TABLE 3.2-3
Projected Maximum Buildout for Parcels with High or Moderate Development or Redevelopment Potential

Parcel ID	Current Use	Development or Redevelopment Potential ¹	Projected Increased Residential Use	Projected Commercial Use ²
1	Vacant	High	4 single-family homes	50,000 sf mixed use
2	16,730 sf mixed use	High	2 single-family homes	16,730 sf mixed use
3	Single-family home	High	14 two-family homes	20,000 sf mixed use
8	23,096 sf mixed use	High	N/A	23,096 sf mixed use
9	7,000 sf retail	Moderate	N/A	12,000 sf mixed use
10, 11	14,928 sf commercial	High	N/A	14,928 sf mixed use
12, 13, 17	Vacant	Moderate	N/A	20,000 sf mixed use
16	8,302 sf commercial	High	40 2-bedroom units	25,000 sf mixed use
19, 28, 49	Single-family home	High	8 2-bedroom units	N/A
21	20 2-bedroom units	Moderate	Additional 20 2-bedroom units	N/A
22	2,606 sf commercial	Moderate	N/A	2,606 sf mixed use
23	3,600 sf mixed use	High	N/A	3,600 sf mixed use
24	1,032 sf commercial	High	N/A	1,032 sf mixed use
25	1,588 sf repair	High	N/A	1,588 sf mixed use
26, 29, 57, 58	2,380 sf commercial and two single-family homes	Moderate	Two single-family homes	6,000 sf mixed use
27	Vacant (tree farm)	High	152 2-bedroom units	N/A
30, 61, 62, 63	6,328 sf commercial and golf course	High	24 2-bedroom units	6,328 sf mixed use
31	7,888 sf commercial	Moderate	N/A	7,888 sf mixed use
32	Vacant	High	N/A	40,000 sf mixed use
33	20,136 sf commercial	Moderate	N/A	20,136 sf mixed use
36	25,200 sf commercial	High	N/A	37,800 sf mixed use
37	4,432 sf commercial	High	N/A	4,432 sf mixed use
45	2,852 sf commercial	High	4 2-bedroom units	20,000 sf retail
47	2,352 sf commercial	High	3 2-bedroom units	N/A
48	3,750 sf commercial	High	4 2-bedroom units	5,000 sf retail
50	Vacant	Moderate	N/A	N/A
56	1,953 sf commercial	High	N/A	1,953 sf mixed use
60	181 2-bedroom age-restricted mobile home units	Moderate	Additional 20 2-bedroom age-restricted mobile home units	N/A
64	Vacant	Moderate	N/A	N/A

- Notes: 1. From Section 3.1.6.
2. Weston & Sampson analysis assumed that mixed use included 60% office space, 30% retail space, and 10% restaurant space.

3.2.2 Employment

As of March 2015, the Town of Mansfield had a labor force of 12,405 people according to the Connecticut Department of Labor. The local unemployment rate was 5.1%, significantly lower than the Hartford Labor Market Area unemployment rate of 6.5%. The major employers listed for Mansfield (greater than 100 employees) are UConn, Natchaug Hospital, Regional School District #19, the Town of Mansfield, Big Y World Class Supermarkets, Hospice of Eastern Connecticut, Mansfield Nursing & Rehab Center, and Price Chopper. Although the Bergin Correctional Institution was also listed, it closed as of August 12, 2011. It formerly employed 218 persons.

The October 2014 Mansfield town profile prepared by the Connecticut Economic Resource Center, Inc. lists 63% of the employment in Mansfield in the Government sector, 11% in the Accommodation and Food Services sector, 10% in the Health Care and Social Assistance sector, 5% in the trade sector, and 1% in the Construction and Manufacturing sectors. All other sectors comprise approximately 10%. The influence of UConn on the local economy is significant as 56% of all jobs in Mansfield are related to state government.

Recent Town of Mansfield Development

According to the *Regional Economic Development Implementation Plan* prepared by WinCOG in 2010, economic development efforts by the Town of Mansfield are focused on Storrs Center and a few other commercial nodes. The Storrs Center development is a mixed-use town center and main street corridor at the south end of the Main Campus on Route 195. This development is expected to create 174 jobs through Phase 1A and Phase 1B of construction, with additional job opportunities created by full buildout in 2030⁵.

Recent UConn Development

As stated in the Final Environmental Impact Statement (FEIS) for the North Hillside Road Extension (now Discovery Drive) at UConn, the proposed UConn Technology Park development on North Campus is expected to provide many high-technology employment opportunities. This development is anticipated to generate approximately 2,800 new jobs over a 20-year period based on a calculation of one employee per 300 square feet of research or technology space. These jobs would primarily fall within the North American Industry Classification System (NAICS) sector of professional, scientific, and technical services, the sector that has the highest average annual wage of all NAICS sectors represented in Mansfield. This estimate does not include construction jobs related to the construction of the UConn Technology Park.

According to 2009 demographic data compiled by UConn and reported in the FEIS, approximately 25% of university employees reside in the town of Mansfield while approximately 85% of all university employees reside within a 30- to 40-mile radius of the Main Campus. As such, these new jobs are expected to attract workers who will live in reasonably close proximity to the Main Campus. The new jobs created by the North Campus development are expected to increase demand for existing and new housing that could be partially met by mixed-use development within the Four Corners area.

The construction of research and technology facilities on the North Campus site is expected to benefit the overall amount and quality of research performed at the university. This benefit, in turn, is expected

⁵ <http://www.storrscenter.com/news/wp-content/uploads/2012/04/FAQWebsiteApr2012.pdf>

to increase research grant funding; help to attract and retain high-quality faculty, staff, and graduate students; strengthen the university's position as a research and technology center; and provide a productive research hub for the Governor's Bioscience Connecticut initiative. Secondary benefits are also expected in the region through companies that provide supplies to support research activities.

Longer term, the university is planning to potentially redevelop its Depot Campus on Route 44 to the west of the proposed sewer district with a mixed-use residential village⁶. No information is currently available regarding specific projects, but the 2015 UConn *Campus Master Plan* suggests that redevelopment could include additional graduate and faculty housing, laboratory and office space, retail and community amenities, and recreational opportunities.

Estimated Four Corners Employment and Employment Projections

Based on the existing square footage and types of currently active commercial buildings within the proposed sewer service area (approximately 165,000 square feet), existing employment in the proposed sewer service area is estimated to be approximately 270 people. The largest concentrations of jobs are projected in the Mansfield Professional Park and the Holiday Mall. Current employment estimates are presented in Table 3.2-4. Note that these estimates are not based on site-specific data and may differ for existing businesses than those presented in the table.

In 2014, Weston & Sampson projected potential land uses on the 11 parcels with the highest redevelopment potential in the proposed sewer service area as part of an analysis to determine potential tax revenues. Their prediction was that 187,000 square feet of commercial, retail, and office space was possible for the 11 existing parcels (consolidated into seven parcels for the analysis) over the next 10 years following construction of the sewer system. This analysis was separate from an earlier 2011 analysis that considered potential development by parcel to consider maximum potential sewer flow for design purposes. Table 3.2-4 updates the 2011 Weston & Sampson parcel analysis to account for the parcel-by-parcel analysis presented in Section 3.1.6. Additional analysis was performed for those parcels with high or moderate development or redevelopment potential in Section 3.2.1.

Based on the estimate in Table 3.2-4, approximately 183,694 square feet of new commercial space could be developed in the proposed sewer district as a result of the potential sewer project. Approximately 698 new jobs are expected to be created in the proposed sewer service area as a result of secondary growth related to the proposed water and sewer infrastructure. Note that projected commercial floor space is expected to span multiple floors and is not reflective of the potential building footprint.

⁶ http://paes.uconn.edu/MasterPlan/022515_Draft_Campus_MasterPlan_web.pdf

TABLE 3.2-4
Existing and Estimated Employment in Potential Sewer Service Area

Parcel ID	Development or Redevelopment Potential	Current Floor Space (square feet) ¹	Current Employment Estimate ²	Projected Commercial Floor Space (square feet)	Projected Total Employment Estimate ³
1	High	0	0	50,000	138
2	High	16,730	6	16,730	46
3	High	0	0	20,000	55
5	Low	1,656	6	1,656	6
8	High	23,096	50	23,096	64
9	Moderate	7,000	12	12,000	33
10 & 11	High	14,928	0	14,928	41
12, 13, & 17	Moderate	0	0	20,000	55
16	High	8,302	0	25,000	69
18	Low	3,696	6	3,696	6
21	Moderate	0	1	0	1
22	Moderate	2,606	0	2,606	7
23	High	3,600	10	3,600	10
24	High	1,032	3	1,032	2
25	High	1,588	4	1,588	4
26, 29, 57, & 58	Moderate	2,380	4	6,000	16
27	High	0	1	0	0
30, 61, 62, & 63	High	6,328	12	6,328	17
31	Moderate	7,888	18	7,888	21
32	High	0	0	40,000	111
33	Moderate	20,136	45	20,136	55
36	High	25,200	43	37,800	105
37	High	4,432	8	4,432	12
45	High	2,852	6	20,000	55
47	High	2,352	4	0	0
48	High	3,750	6	5,000	13
56	High	1,953	4	1,953	5
59	Low	10,125	14	10,125	14
60	Moderate	N/A	1	N/A	1
Totals		171,630	264	355,594	962

1. Based on Town of Mansfield Assessor Data

2. Based on the 1982 DeChiara Urban Planning & Design Criteria guidebook estimates for various employment types and/or the 2006 Fiscal Impact Analysis Model⁷

3. Assuming an average of 360 square feet per employee for mixed use based on the 2011 Weston & Sampson assumption of 60% office space, 30% retail, and 10% restaurant and the guidebook estimates for employment per square foot in notes #1 and #2

⁷ <http://www.sfrpc.com/fiam.htm>

3.2.3 Project Costs, Sewer Assessment, and Tax Base

Project Costs and Sewer Assessment

Weston & Sampson⁸ estimated in 2014 that the total project cost for the proposed sewer project will be \$9 million as indicated in Table 3.2-5.

**TABLE 3.2-5
Project Cost Estimate**

Item	Estimated Cost
Sanitary Sewer Infrastructure	\$1,620,000
Earthwork	\$1,110,000
Pavement Replacement	\$1,800,000
Pumping Stations and Pressurized Piping	\$2,260,000
Environmental, Traffic Control, & Restoration	\$280,000
Engineering & Mobilization	\$990,000
Contingency (~11%)	\$940,000
Total Construction Cost	\$9,000,000

The Town of Mansfield plans to finance the sewer project through a \$9.0 million construction bond, with \$3 million of the bond repayable immediately upon receipt of a state grant. In the event that project costs exceed \$9 million, the project could either be downsized to remain within budget, or an additional appropriation could be pursued.

Chapter 159 of the Mansfield Town Code provides the town regulations pertaining to sewers and water. Per Chapter 159-20, approximately one-half of the cost of local sewers must be divided between properties in the sewer service area (through an assessment) with the remainder provided by the general tax base. As such, the estimated assessment for the properties⁹ in the proposed sewer service area would be \$3 million plus financing costs. Provisions exist in the ordinance to allow for additional charges to be levied against properties that seek a more intensive use than that at the time of the original assessment. The Town of Mansfield is authorized by the sewer ordinance to place a lien on properties that do not pay any assessment or installment thereof.

The Town of Mansfield released preliminary assessment data based on the town regulations in August 2014¹⁰. The assessment data includes financing costs associated with the \$9.0 million construction bond. Observations regarding this assessment are detailed below:

- The preliminary assessment for existing residential properties ranges from \$9,900 to \$66,000. The highest assessments for this category include parcel 3 (high development potential), parcel 14 (protected by conservation easement), and parcel 46 (low development potential). The majority of residential parcels have assessments in the range of \$20,000 to \$30,000.

⁸ Town of Mansfield, August 27, 2014, "Four Corners Sanitary Sewer Project – Questions & Answer Summary."

⁹ Parcels 17 and 19 were omitted from the preliminary assessment dated August 2014 because these parcels are landlocked and unlikely to receive a benefit from the proposed sewer installation.

¹⁰ http://www.mansfieldct.gov/filestorage/1904/5366/5402/20140814_pre_four_corners_sewer_asses.pdf

- The preliminary assessment for the two existing multifamily properties includes \$169,000 for Rosal's Apartments (parcel 21) and \$895,000 for Jensen's Rolling Hills Community (parcel 60).
- The preliminary assessments for commercial properties range from \$16,000 to \$200,000. The highest assessments for this category include parcel 33 (Mansfield Professional Park), the combination of parcels 30, 61, 62, and 63 (high development potential); parcel 16 (former Zenny's, high redevelopment potential); parcels 10 and 11 (high redevelopment potential); and parcel 36 (high redevelopment potential). Much of the remaining assessments are in the \$50,000 to \$60,000 range.
- The preliminary assessment for the two existing public authority properties includes \$45,000 for the state-owned property (parcel 53) and \$44,000 for the fire house (parcel 6).
- The preliminary assessment for currently vacant parcels ranges from \$13,000 to \$150,000. The highest assessments for this category include parcel 1 (high development potential), parcel 27 (high development potential), and parcel 32 (high development potential).

Based on the preliminary assessment, the commercial and multifamily properties will be responsible for 72.5% of the sewer assessment, with vacant properties (12.7%) and residential properties (12.6%) responsible for paying 25.3% of the assessment. The remaining 2.2% of the assessment would be paid from public authority properties.

The Town of Mansfield estimated that based on interest rates in 2014 a 20-year bond at 3% interest would result in a finance cost of \$1.97 million in addition to the \$9 million project cost. This would be paid in annual debt service installments each year from the town's annual debt service budget. Funding for the debt service payments is included in the assessments as well as the estimated tax increase for general taxpayers.

Once the sewer system is constructed, the cost of sewer service will vary by property and unit based on water usage. Based on information presented in the November 2012 UConn EIE *Potential Sources of Water Supply*, the Connecticut Public Utilities Regulatory Authority (PURA) standard value for annual household consumption value is 72,000 gallons. The annual water service rate for a UConn water customer is \$350 to \$450 based on the PURA standard. UConn currently charges a service rate of 105% of its rate for water use to treat sewage, or \$3.2025 per cubic foot (refer to Section 3.5.2 for a discussion of how sewer use could be metered). As such, the annual sewer cost for a residential unit would be \$370 to \$470 per year, and commercial uses could be higher or lower depending on the amount of water used. UConn may revise its water and sewer charges in the future as they have done so several times since the 1980s.¹¹

In addition to the above charges, private property owners would need to hire a contractor to connect to the sewer main and abandon individual septic system components. Weston & Sampson estimates that this could cost from \$1,000 to \$5,000 per property for residential properties and likely a greater amount for commercial properties. These costs depend on individual site configurations.

¹¹ Milone & MacBroom, Inc., May 2011, *Water Supply Plan*, University of Connecticut.

Effect on Tax Base

Weston & Sampson¹² conducted a tax analysis for the proposed sewer project published on August 22, 2014. The analysis concluded that growth related to the proposed sewer project over the next 10 years could total 187,000 square feet of commercial, retail, and office space; 90 new multifamily residential units, and 40 age-restricted residential units on the 11 most developable and redevelopable parcels. The total new net revenue to the town (minus municipal service costs including schools) was estimated to be \$255,000 in 2014 dollars from these 11 parcels, and the current assessment for the developable and redevelopable parcels was expected to increase by 66%.

The analysis herein identifies the potential for 183,694 square feet of additional mixed-use commercial space for the entire sewer district, slightly less than the Weston & Sampson analysis. Thus, net revenue is expected to be similar to the previous analysis conducted by Weston & Sampson.

The estimated benefit to the value of existing properties with low or no development potential that connect to the sewer system is likely 10% of the property value or less. For those properties that do not connect to the sewer system, the estimated benefit of having frontage on a proposed sewer main is likely smaller (5% of the property value or less).

Weston & Sampson also estimated that the increase in taxes for the median household in town would be \$47 during the first year of the \$3 million in debt service that was not directly assessed to individual properties. This amount is expected to decrease in subsequent years as the cost of debt service decreases.

3.2.4 Property Relocation or Taking

Relocation impacts can occur when existing homes, businesses, or agricultural activities overlap with potential project areas. Most of the proposed sewer main is located within paved roadways, and in no case will the project require taking of property. As such, the project will not cause relocation impacts. The acquisition of property through eminent domain is not proposed.

Easement acquisitions are often necessary in utility projects. The Town of Mansfield plans to acquire easements with each property owner where the sewer main and pumping stations will be installed. This will be a precursor to project implementation. This process will include acquiring the necessary utility easement from UConn and DEEP to install the force main between the Jensen's pumping station and Discovery Drive.

3.2.5 Analysis of Direct and Indirect Impacts on Socioeconomics

Demographics

Based on the previous buildout analysis and analysis of development potential, the population in the sewer service area could increase by 613 people through secondary growth associated with the proposed sewer project. The range in age of this population is likely to vary by housing type. For example:

¹² Town of Mansfield, August 27, 2014, "Four Corners Sanitary Sewer Project – Questions & Answer Summary."

- The potential 20 two-bedroom age-restricted units that could be developed at Jensen's Rolling Hills Community will have a minimum of one-half of the population aged 55 or older, with the majority of the population being near or at retirement.
- The potential four single-family and 14 two-family homes could have populations with children and have the potential to be representative of townwide demographics for age.
- The potential 217 two-bedroom apartment units are likely to be mostly filled by UConn students or young professionals although some of the units (perhaps 25%) could support families that are more representative of townwide demographics for age.

According to the percentages for age categories from the 2010 U.S. Census¹³, 30.6% of the townwide population is school aged (5 to 19 years), 33.9% is generally college aged (20-24 years), and 14.0% would qualify for age-restricted housing (age 55 or above). Based on these percentages:

- The potential 20 two-bedroom age-restricted units would be filled by 40 persons aged 55 or older.
- The potential four single-family and 14 two-family homes would have a total population of 44 people (based on the census population of 2.44 persons per unit), with 13 school-aged children, 15 college-aged children, and six persons over age 55.
- The potential 217 two-bedroom apartment units would hold 529 people. The vast majority (442) will be college aged, with 40 school-aged children and 18 who would qualify for age-restricted housing.

This could increase enrollment in local schools by up to 53 students, potentially support enrollment at UConn and other regional colleges by 457, and result in 64 people who would qualify for age-restricted housing and may also draw on senior services. Such increases would be anticipated to occur over years or potentially decades.

Only a minimal increase in residential population density in the project area would be expected (approximately two people per acre of sewer service area). The proposed sewer project is not expected to adversely affect minority populations as it does not specifically target such populations. The majority of residents currently in the proposed sewer service area are renters who will be indirectly affected by assessments.

Employment

Employment associated with the proposed action includes construction-related employment for the piping and pump stations and potential economic development that results from the provision of public sewers. The proposed project will support existing jobs throughout the construction period. A potential 698 new jobs are anticipated from expanded commercial uses within the project area as discussed in Section 3.2.2.

The construction phasing will be designed to minimize disruption to existing businesses although some disruption will be unavoidable. For example, trenching across the only access to a property will only cover one-half of the access at any one time, and trenching at properties with two access driveways will not have construction at both locations at the same time.

¹³ <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

Tax Base and Sewer Assessment

The Town of Mansfield would benefit from the increased tax income resulting from private developments within the Four Corners area. This has been previously estimated as a net tax benefit of up to approximately \$255,000 per year (after increased municipal expenses). Newly developed and redeveloped properties will have a higher assessed value (approximately 66% higher overall) than undeveloped, vacant, or abandoned properties. In addition, the sewer project is expected to slightly raise the value of existing properties that are unlikely to be redeveloped by up to 10%.

In some cases, the benefit to an individual property may not keep pace with the final assessment. Section 7-249 of the CGS states that "*the sum of initial and subsequent assessments shall not exceed the special benefit accruing to the property...no assessment shall be made against any property in excess of the special benefit to accrue to such property.*" Prior to the levying of assessments, the Town of Mansfield will conduct a benefit-cost analysis to determine the maximum assessment that could be applied to each property such that the property may still receive a benefit from sewer service in accordance with Section 7-249 of the CGS and Section 159-12(E) of the Mansfield Town Code.

The estimated tax increase for the general taxpayer in Mansfield is estimated to be \$47 for the first year of debt service and will decrease each subsequent year. This increase is expected to have a minimal impact.

Property Relocation or Taking

Construction of the proposed sewer system will not require changes to property ownership. The use of eminent domain to acquire properties is not proposed. The construction of sewer mains and pumping stations will require ROW to be obtained by the Town of Mansfield. Parcels where easements are necessary under the current design include 8, 9, 10, 11, 21, 27, 28, 31, 33, 36, 50, 52, 54, 55, and 60. Easements would need to be acquired before those sections of the project could be completed. The cost of such easements is expected to provide some financial benefit to each property owner.

3.3 Community Facilities and Services

The following information relative to education, health care, public safety, emergency services, and parks and recreation was taken in part from the Town of Mansfield POCD. Personal telephone interviews and on-line research have been conducted to update and verify this information.

3.3.1 Education

The Town of Mansfield's school system is comprised of three elementary schools and one middle school. Additionally, the town is home to the E.O. Smith Regional High School. Table 3.3-1 presents Mansfield school district information.

Based on the analysis in Section 3.2.5, secondary growth related to the proposed sewer project could increase enrollment in the Mansfield school system by up to 53 students over the buildout period. This assumes that residential development in the Four Corners area is reflective of the townwide average demographic in Mansfield, a conservatively high estimate, given the likely makeup of the Four Corners area. This translates to approximately five students per grade if distributed evenly over grades K through 12. The current school population drawn from Mansfield is approximately 1,840 students. The

potential increase could require the school district to retain additional staff at various levels to maintain existing class sizes; however, given the overall trend of declining enrollment in Mansfield¹⁴, the increase may simply offset a future decline.

TABLE 3.3-1
Public Schools in the Town of Mansfield

School	Address	Grade	Approximate Enrollment
Dorothy C. Goodwin Elementary School	321 Hunting Lodge Rd., Storrs	K-4	220
Southeast Elementary School	134 Warrenville Rd., Mansfield	K-4	250
Annie E. Vinton Elementary School	306 Stafford Rd., Mansfield	K-4	270
Mansfield Middle School	205 Spring Hill Rd., Storrs	5-8	550
E.O. Smith High School*	1235 Storrs Rd., Storrs	9-12	1,200

Source: www.mansfieldct.gov, www.eosmith.org

*This is a regional high school. Approximately 550 Mansfield students attend E.O. Smith.

Mansfield is also home to the main campus of UConn, the state's flagship school. Total enrollment for 2014 -2015 was 24,894.

3.3.2 Public Safety and Emergency Services

Mansfield residents have been served since 2005 by a combined career and volunteer fire department that provides fire and emergency medical services. The Fire and Emergency Services Department is led by a career fire chief and staffed by 13 full-time firefighters and 11 part-time firefighters. Additional support is provided by the Mansfield Firefighters Association, which had 40 volunteers as of 2013. The department also provides fire prevention and emergency management services. One of the town fire departments is located within the proposed sewer service area on parcel 6.

Cooperative assistance agreements are in place with fire departments in neighboring towns and the university's fire and police departments. In addition, UConn maintains a separate fire department with dedicated firefighters, equipment, and vehicles. The potential development and redevelopment of Mansfield Four Corners as a secondary effect of the proposed sewer project is not expected to have a significant impact on the fire and emergency services within the community.

Eight resident state troopers currently serve the town of Mansfield. The university police department employs its own police officers; 48 of these officers are located in Storrs. Based on the 2010 census population of 26,543, each police officer serves approximately 474 people. The projected population increase of 613 people is not expected to significantly impact police services in the community.

3.3.3 Parks and Recreation

Mansfield operates an extensive parks, open space, and recreational program that provides active as well as passive recreational opportunities for all age groups. Additional recreational opportunities are available at the federally owned and state-managed Mansfield Hollow State Park. A majority of Mansfield's managed indoor recreational activities and programs take place in the town's 37,500-

¹⁴ http://www.mansfieldct.gov/filestorage/1904/5366/5208/enrollment_projections_2021.pdf

square-foot Community Center. Town-sponsored outdoor activities take place at numerous ball fields and parks. The town maintains an extensive hiking trail network.

No direct impacts on park facilities will occur as a result of the proposed action. To the extent that new development and redevelopment will occur in the Mansfield Four Corners area, the demand on parks and recreational facilities in Mansfield will not be substantial.

3.3.4 Public Transportation

Public transportation in the vicinity of the proposed sewer service area is provided by UConn and the Windham Region Transit District (WRTD). The WRTD Storrs-Willimantic Bus serves Mansfield, Storrs, and Willimantic Monday through Saturday. This service operates primarily in the Route 195 corridor. UConn Transportation Services operates a network of shuttle buses, accessible vans, and small vehicles for university students, employees, and visitors. The buses primarily travel in the immediate vicinity of campus. The 2006 POCD for the Town of Mansfield calls for expansion of both the WRTD and the university shuttle service to more areas of Mansfield.

3.3.5 Analysis of Direct and Indirect Impacts on Community Facilities and Services

The proposed action is not anticipated to significantly impact education in the town of Mansfield. The projected increases in students are modest and the secondary growth associated with full buildout will not be immediately realized. These will phase in over time such that the local school district will have the ability to supply appropriate staff and facilities and maintain appropriate class sizes. Mitigation of the potential population increase is not warranted.

Health care services will continue to be offered through the Windham Hospital. Public safety and emergency services will also continue to be provided through the town. The development and redevelopment potential within the Mansfield Four Corners area will not necessitate significant expansion of public safety or emergency services in Mansfield. Similarly, the proposed project is not anticipated to negatively impact the town's recreational resources.

Transportation services will continue to serve the Mansfield Four Corners area, and it is possible that additional bus stops could be added to support the Four Corners area if demand were to occur. This will have an overall positive benefit on transportation services in the region. During the construction period, WRTD may temporarily need to alter service schedules as a result of traffic conditions as is being currently done to accommodate construction of the CWC water main extension project.

3.4 Aesthetic/Visual Resources

3.4.1 Existing Aesthetics

The Four Corners area in Mansfield is characterized by mixed land uses, with a predominance of commercial uses along Route 195 to the south of its intersection with Route 44, transitioning to residential to the north of the intersection. Similarly, Route 44 to the east and west of its intersection with Route 195 is predominantly commercial uses, transitioning to residential further west. While much of Mansfield has a distinctly rural character, Four Corners has long been considered a commercial hub. Many of the buildings in the area are vacant, with several having sat vacant for several years.

3.4.2 Future Aesthetics

Except for the proposed pumping stations, this project will be constructed entirely below grade and will not be visible except for manhole frames and covers. The pumping stations are expected to include the construction of a small building at each location to house electrical equipment and controls. In areas where the proposed sewers are located off road, the ground surface will be restored as much as possible to preconstruction conditions.

The aesthetic of future development or redevelopment in the Four Corners area will be regulated, reviewed, and approved through the local Planning & Zoning process. Many parcels will require special permit approval for development and redevelopment plans, and properties within design development districts (PO-1 and PB-3) and the Mansfield Four Corners Historic Village are required to meet additional design standards to ensure that aesthetics are consistent with adjacent areas and community values. In addition, there are additional design guidelines specific to Mansfield Four Corners outlined in the Zoning Regulations.

Future design standards in the mixed-use development zones anticipated as part of the zoning regulation update are expected to result in land uses that mimic or improve the existing commercial aesthetic of Four Corners. Proposed developments on outlying properties in the R-90 and RAR-90 zones are expected to maintain the more rural aesthetic of existing development in these zones.

The potential exists for currently undeveloped properties to be developed once water and sewer service is available. New development will be subject to the requirements contained in Mansfield's zoning regulations and local review of specific project aesthetics. Large expanses of views and vistas are largely absent from the Mansfield Four Corners area. Therefore, future development is not anticipated to negatively impact such resources. It is important to note that many of these properties could be presently developed if the owners were inclined. The Town of Mansfield cannot forbid development on properties that have reasonable development potential, short of purchasing properties and designating them as open space.

Mansfield Tomorrow attempts to correct discrepancies by encouraging a transition to mixed uses from adjacent residential areas. In the project area, parcels 1, 2, and 3 are identified as transitional areas, intended for a lower-intensity mixture of uses and pattern of development. The portions of these properties that were identified as low-density residential in the previous POCD will be subject to additional restrictions on public water system connections to comply with the CWC water diversion permit. The preferred scale of development in the Mansfield Four Corners area will be between one and three stories, with two stories likely being the maximum in the historic village area adjacent to existing historic uses.

3.4.3 Analysis of Direct and Indirect Impacts on Aesthetic and Visual Resources

Projected impacts on aesthetics related to the proposed sewer main will be minimal. Most visual impacts will occur during the construction period when clearing and trenching are ongoing. Such impacts will be temporary. Once constructed, only two types of sewer infrastructure components will be visible from the surface (pump stations and manholes). The design of pump station buildings will respect the residential or commercial nature of the surroundings. Longer term, aesthetics in the area are expected to generally improve. Existing buildings, particularly currently vacant buildings, are expected to be redeveloped into sustainable businesses. Various provisions and requirements within

the Zoning Regulations will ensure that aesthetics are considered for each project with the surrounding area and the remaining structures in the historic village in mind. No significant negative impact on aesthetic and visual resources is anticipated as a result of the proposed action.

3.5 Public Utilities and Services

3.5.1 Water Supply

Existing water supply in the study area is from individual wells and public water system wells. Individual private wells are discussed in Section 3.8.4. Public water system wells are discussed herein.

Existing Public Water Service

Ten public water systems exist within the proposed sewer service area. These are listed in Table 3.5-1.

**TABLE 3.5-1
Public Water Systems in Proposed Sewer Service Area**

Parcel ID	Public Water System	PWS ID	Type*	Population Served	Number of Service Connections
2	1768 Storrs Road (St. Paul's Church)	CT0787054	TNC	42	1
8	Holiday Mall	CT0780034	TNC	45	3
18	Cumberland Farms	CT0780164	TNC	33	1
21	S&P Properties (Rosal Apartments)	CT0780271	C	42	21
23	Sunoco	CT0780424	TNC	Not Listed	Not Listed
30	Yukon Jack's	CT0780347	TNC	25	1
31 & 33	Mansfield Professional Park	CT0780752	NTNC	100	4
36	Mansfield Shopping Center	CT0781202	NTNC	30	9
37	603 Middle Turnpike (Hair Trendz)	CT0780464	TNC	25	3
60	Jensen's, Inc. Rolling Hills Residential	CT0780141	C	Not Listed	187

Sources: DPH Public Water System Lists as updated through June 2, 2014; DPH scoping comments; 2002 Town of Mansfield *Water Supply Plan*

*Note: C = Community water system; NTNC = Non-Transient Non-Community water system; TNC = Transient Non-Community water system

Two of the public systems listed in Table 3.5-1 are regulated by DPH as Community (C) water systems. This designation is used when a sufficient number of the same people (e.g., residents) are served by the public water system the majority of the year.

- According to the 2002 Town of Mansfield *Water Supply Plan*, the Jensen's Rolling Hills Community is served by three wells with good water quality. The document also indicates that the Jensen's property has documentation of releases from leaking heating fuel tanks. The well locations are not shown on the project plans but are believed to be located on the eastern side of the property based on information in the 2002 *Water Supply Plan*. Two wells (#s 4 and 5) are believed to be located east of Grandview Court near Ridge Circle, and Well 3 is believed to be located south of Hillpond Drive off the southern intersection with Ridge Circle. These locations are more than 200 feet away from the proposed sewer project.

- According to the 2002 Town of Mansfield *Water Supply Plan*, the Rosal Apartments public water system (parcel 21) has one active well and one inactive well. The supply source is impacted by contaminants from nearby gasoline leaks (Section 3.14.1), and a carbon filtration system is in place. Well 1 (inactive) is visible from Route 44 and is shown on page C-13 of the review plans. It is believed that Well 2 (active) is located inside of a shed to the west of Well 1 that is also shown on the project plans. Well 1 and Well 2 are located 60 feet and 54 feet, respectively, from the proposed 10-inch-diameter polyvinyl chloride (PVC) gravity sewer main proposed to run northwest from Route 44 through parcel 21.

Non-Transient Non-Community (NTNC) water systems are typically utilized at schools or large businesses where a significant number of the same people are served each day but who do not live on site. The 2002 Town of Mansfield *Water Supply Plan* indicates that both the Mansfield Shopping Center and the Mansfield Professional Park are each served by a single bedrock well.

- The well that serves Mansfield Professional Park (parcels 31 and 33) is not visible from the street and is not indicated on the project plans. The well could be buried or located behind one of the buildings.
- The well on parcel 36 (Mansfield Shopping Center) is located at the rear of the building. The well is 146 feet from the proposed 10-inch-diameter PVC gravity sewer main running generally southwest behind the property. It is shown on project plan C-12.

Transient Non-Community (TNC) water systems are typically smaller businesses where the population served is primarily transient customers, but there are not a sufficient number of employees to require regulation as NTNC.

- The well on parcel 2 is visible from the street on the east side of the front building. It is located approximately 168 feet from the location of the proposed 8-inch-diameter PVC gravity sewer main but is not shown on project plan C-18.
- The well on parcel 8 is not visible from the street and is not indicated on the project plans. The well could be buried or located behind the building. However, it does not appear to be located within 75 feet of the proposed pumping station or the proposed 6-inch-diameter PVC force main.
- The well serving parcel 18 (Cumberland Farms) was not visible from the street or shown on the project plans. It is believed that the well is located behind the building.
- The well serving parcel 23 (Public America) is visible from Route 44 and shown on project plan C-13. The well is located 33 feet from the proposed 10-inch-diameter gravity sewer main in Route 44.
- The well serving parcel 30 (Yukon Jack's) is visible from Cedar Swamp Road. The well is located approximately 190 feet from the terminus of the proposed sewer main on Route 44 but is not shown on project plan C-19.
- The well on parcel 37 (603 Middle Turnpike) is located more than 200 feet from any proposed sewer infrastructure. It is shown on project plan C-12.

Several of the public water systems in the proposed sewer service area have had compliance issues. According to the "Local Health Department Public Water System Compliance Report" issued by the DPH on June 12, 2015, the majority of these were related to monitoring or reporting violations. Jensen's had an exceedance of total coliform in 2009 that was corrected and a recent cross-connection violation that was corrected in March 2015.

Future Public Water Service

CWC has received a Water Diversion Permit from CTDEEP to supply water to UConn through Mansfield, with the potential to service the majority of properties in the Mansfield Four Corners area. Final issuance of the Diversion Permit occurred on June 2, 2015. The permit contains a condition that limits CWC to serving uses of an intensity that are consistent with Mansfield's 2006 POCD unless a determination is made by state agencies that such a connection is necessary to address a demonstrated environmental, public health, public safety, economic, social, or general welfare concern. This condition is consistent with the service agreement ratified between CWC and the Town of Mansfield on January 21, 2014. The service agreement specifies under what circumstances CWC can approve a connection to the water system in Mansfield:

- Connections for properties that do not require a main extension, where such uses are consistent with zoning regulations in effect at the time of the request and the intensity of land use as specified by the 2006 POCD, may be approved by CWC after providing notice to the Director of Planning and Development and the applicant has demonstrated that any required local approvals have been secured.
- Connections for properties that do not require a main extension and are to serve existing uses are allowed after providing notice to the Director of Planning and Development.
- No connections will be approved for projects requiring a change in zoning or approval by the Planning & Zoning Commission until those approvals have been received. The applicant for such projects must provide notice to the Director of Planning and Development, allow for review by the Advisory Committee (see below), and demonstrate that all required approvals are secured prior to CWC allowing water service.
- Extensions of the CWC water system after the completion date shall be undertaken in consultation with the Advisory Committee and only permitted if the applicant has demonstrated to CWC that all required approvals have been secured and such extension complies with the terms of a water main extension agreement.

The agreement also commits to the establishment of a water system advisory committee to provide local input on operation of the system in Mansfield, including discussion of issues including proposed system expansions, best management practices, and water conservation programs. Once construction is completed, CWC will serve off-campus areas currently served by UConn.

In its scoping comments, DPH was concerned that the proposed sewer infrastructure within Jensen's Rolling Hills Community would be located in close proximity to the public water supply wells for that public water system. CWC has indicated that Jensen's Rolling Hills Community (a system CWC operates) and UConn (co-permittee for the water diversion permit) will be connecting to the water main, but other properties adjacent to the water main are not required to connect. If other properties choose to connect,

applicants will need to follow the connection process outlined above. As of June 22, 2015, CWC had not received any indications that other properties or public water systems wished to connect to the proposed water main.

As required by DPH, the sewer extension design will incorporate measures to protect public water supply, including separation from the proposed water supply main. The Town of Mansfield has been coordinating with CWC regarding the sewer main as required under the water supply agreement. In its scoping comments, DPH indicated that the easternmost part of the project area is located in the public water supply watershed of the Willimantic Reservoir, the drinking water supply source for Windham Water Works. DPH recommended protection measures for this public drinking water supply watershed as discussed in Section 3.5.5.

Potential water demands for the Mansfield Four Corners area have been evaluated in several planning documents over the past decade. The UConn EIE *Potential New Sources of Water Supply* identified the need for 0.17 mgd of water to supply Mansfield Four Corners based on the 20-year projection for sewer service developed by Earth Tech in 2008. Weston & Sampson updated the Earth Tech estimate in 2011 and concluded that 0.187 mgd of sewer demand (and therefore water demand) could be realized under an intensive buildout scenario for the 20-year planning period. The eventual demand for public water supply will ultimately depend on the types of uses realized as a result of the two infrastructure projects.

The proposed sewer project will not impact the proposed water mains. The Town of Mansfield has been coordinating with CWC on design, and all proposed water mains are sited at least the minimum lateral separation distance (10 feet) from the proposed sewer mains. Where proposed water mains are required to cross the proposed sewer main, a minimum vertical separation distance of 12 inches will be maintained in accordance with DPH standards. The provision of public water and public wastewater service is complementary in that a development or redevelopment project that draws upon public water will benefit from public sewer service.

3.5.2 Sanitary Sewer

UConn Water Pollution Control Facility

UConn's wastewater collection and treatment system has evolved over the years as the university has grown from a small agricultural school into the institution that it is today. A small portion of the collection system currently in service is known to date back to the early 1900s. In the mid-1940s, the first pump station was constructed to convey wastewater generated along Route 195 across the campus for treatment and disposal. The collection system continued to expand as the university grew and other areas were developed. In addition to the core campus areas, this included Mansfield and Northwood Apartments in the 1950s and the Eastwood/Westwood Road residential areas in the 1960s.

UConn operates a WPCF on LeDoyt Road in the Storrs area of Mansfield. The service area includes the Main Campus, Depot Campus, and non-university properties surrounding the campuses, including privately owned apartment complexes, commercial properties, Town of Mansfield-owned properties, and the former Bergin Correctional Facility. Flow is directed by gravity and force main to the WPCF, which was last upgraded in 1995. The wastewater collection system is served by a number of pump stations, including 22 stations that serve the main and Depot campuses. A gravity pipeline conveys the treated wastewater to the Willimantic River. The design capacity of the WPCF is 3.0 mgd for an average daily flow and 300,000 gallons for peak hourly flow.

Monthly average flows (expressed in mgd) at the UConn WPCF over the last 3 years have averaged 20% to 51% (0.59 mgd to 1.54 mgd) of the average day capacity, with the lowest values typically occurring during the summer months and the highest values occurring in April 2014. The annual averaged flow in 2012 was 0.83 mgd, the annual averaged flow in 2013 was 1.00 mgd, and the annual averaged flow in 2014 was 1.05 mgd. Discharge from the treatment plant is directed to the Willimantic River downstream of Eagleville Lake.

The WPCF staff manages the challenges presented by the sharp changes in the amount of influent when students leave and return from breaks. Adding new sources of wastewater that are expected to be more consistent throughout the year, like that of the Four Corners area, presents some operational benefit to the treatment plant.

The Town of Mansfield has an agreement with the university to direct municipal sewer flows into the university system dating back several decades. UConn charges for sewer service at 105% of the current UConn water rate. It is anticipated that this agreement will be updated based on the proposed sewer project.

A conservatively intensive "buildout" analysis of the Four Corners area was conducted by Weston & Sampson in 2011. Its analysis estimated sewage flows as a result of the development of all currently undeveloped land with moderate to high development potential as well as redevelopment of existing land uses with the potential for a higher density of use resulting in greater wastewater discharges. Its analysis projected that an additional 0.187 mgd of sewage flows (average daily rate) from existing and future potential land uses within the Four Corners area was possible in the 20-year planning period. Even when factoring in future projected discharges, this is well within the capacity of UConn's current sewage treatment plant.

Planned development at the UConn Technology Park is projected at 423,500 gpd (89,600 gpd + 333,900 gpd). On-campus expansion associated with NextGenCT is projected at 138,500 gpd. Storrs Center is partially developed, with a current demand near 50,000 gpd. This leaves 119,300 gpd of potential future demand (169,300 gpd total allocation). The projected Depot Campus demand is 93,800 gpd, and the King Hill business area projection is 5,000 gpd. The sum of these uses is expected to add 0.78 mgd of sewage to the UConn system. An additional allocation of 453,500 gpd of water has been attributed to the Town of Mansfield, including development associated with Mansfield Four Corners. Subtracting out the projected Four Corners development at 187,000 gpd (0.19 mgd) leaves 266,500 mgd (0.27 mgd) of remaining Mansfield allocation. The sum of these projected demands, some of which are not anticipated to occur for another 10, 20, or more years, leaves UConn's treatment plant with adequate capacity as demonstrated below.

Total WPCF Capacity:	3.00 mgd
2014 Average Daily Flow:	-1.05 mgd
Committed to Other Areas:	-0.78 mgd
Allocated to Mansfield	-0.27 mgd
<u>Buildout at Four Corners:</u>	<u>-0.19 mgd</u>
Remaining for Other Uses:	0.71 mgd

Proposed Town of Mansfield Sewer Project

The Town of Mansfield intends for the proposed sewer project to accommodate growth in the vicinity of Mansfield Four Corners for the next 50 years. The town will own all infrastructure related to the proposed project. Sewage leaving the town-owned sewer system will be conveyed into the UConn-owned sewer system on Discovery Drive. UConn will continue to own its own infrastructure and the WPCF. Other information regarding the project includes:

- The proposed sewer mains have been sized to provide adequate capacity to collect and convey sewage throughout the project area. Trunk mains and manholes are proposed to ensure that all properties have a convenient lateral to connect to the sewer system. For example, the Town of Mansfield is proposing to install a manhole and trunk main at the bottom of Timber Drive to allow sewer laterals from parcels 4 and 5 to connect without future excavation of Route 195.
- The capacity of the downstream sewer main has been evaluated by Weston & Sampson Engineers, Inc. in 2015 using a hydraulic flow model based on current water and sewer usage estimates under maximum peak flow conditions (the Four Corners, Technology Park, and Charter Oak Apartments subsystems all peaking at the same time). Although the modeling demonstrated that the downstream sewer hydraulic capacity was sufficient to accommodate proposed flows from Mansfield Four Corners, Weston & Sampson concluded that it may be necessary for UConn to increase capacity in two sections of the downstream sewer system (at Reach D on Discovery Drive in front of the existing tennis courts, and at Reach K south of the junction of Discovery Drive and the entrance to Charter Oak Apartments) as projects are completed in the future. It is the Town of Mansfield's understanding that UConn will continue to evaluate downstream sewage flow conditions as new projects are proposed in Mansfield Four Corners and the Technology Park and upgrade the sewer main at such time that it is prudent to do so.
- Pump stations are sized to meet peak hourly flow requirements. Given that projected sewer demand is roughly 0.187 mgd through the 20-year planning period, the pump stations must be able to provide upwards of 0.80 mgd (or 4.3 times average projected demands) to meet peak hour flows. Accordingly, the Jensen's pump station will be designed to meet peak hourly capacity. Its capacity will be 1.0 mgd.
- The town's existing sewer ordinance (Chapter 159-3D of the Town Code) states that *"The owner(s) of all houses, buildings or properties...is hereby required at the owner's (or owners') expense to install suitable toilet facilities therein and to connect such facilities directly with the proper public sewer in accordance with the provisions of this chapter, within 90 days after date of official notice to do so, provided that any part of said public sewer is within 100 feet of any part of said frontage line."* This requirement applies to nearly all of the parcels within the Four Corners area. The WPCA may enforce an Order to Connect per Chapter 159-15 of the Town Code, which requires a hearing process and allows for appeal to the Superior Court for Tolland County. Historically, the WPCA has not enforced immediate connections to the public sanitary sewer. The Eastern Highlands Health District maintains authority to require mitigation of nuisances or conditions that are contrary to the interest of public health.
- Jensen's will need to install an on-site collection system separate from the proposed sewer project to collect wastewater from properties that are not located adjacent to the town's gravity sewer main. This will be separate from the proposed project and will be paid for by Jensen's.

- The potential for main breaks will be minimized through the use of PVC and high density polyethylene (HDPE) materials and installation of trunk mains at sufficient depth below the frost line and away from significant trees. The HDPE force main running from Jensen's to the terminus of the project at Discovery Drive will be located within a larger ductile iron pipe, further protecting it from encroachment by tree roots.
- Clogs are possible in sewer systems depending on the types of materials that are flushed. The Town of Mansfield, in association with UConn, will provide residents with information regarding the types of materials that are acceptable to flush down the drain to mitigate the potential for clogged pipes and pumping stations.
- The proposed sewer project is well within the current capacity of the UConn WPCF and does not require any plant upgrades or upgrades to the effluent pipe that discharges to the Willimantic River.

Based on the agreements between CWC and UConn, and CWC and the Town of Mansfield, it is expected that CWC will share water usage information with UConn for the purposes of calculating sewer discharges. This will allow for accurate billing of sewer customers. UConn is expected to bill the town for sewer usage, with the town billing individual users. It is possible that a three-way agreement between the Town of Mansfield, UConn, and CWC could be realized to facilitate billing. For residential properties that have sewer service but not public water service, it is likely that charges would be calculated either by a meter on the well, by metering the sewer lateral, or by a flat annual fee. This will likely be finalized in the updated agreement with UConn related to the proposed sewer project.

3.5.3 Storm Sewer

Stormwater runoff is comprised of excess precipitation that flows over the ground surface and that falls upon impervious areas. Stormwater runoff is directed to storm drains and watercourses. Its quality is reflective of the land uses and surfaces with which it comes in contact. The federal Clean Water Act prohibits storm sewer discharges to sanitary sewer. The *Conservation & Development Policies: The Plan for Connecticut 2013-2018* encourages state agencies to:

- Encourage multidisciplinary approaches to infrastructure planning and design, including designing projects that enhance the infiltration of stormwater generated by the existing street network and through other impermeable surfaces through "green infrastructure" measures such as pervious pavement material and the incorporation of urban green spaces.
- Utilize the landscape to the extent practical and incorporate sound stormwater management design, such as low impact development techniques, in existing and new development to maintain or restore natural hydrologic processes and to help meet or exceed state and federal water quality standards so that the state's waters can support their myriad functions and uses.

The proposed project will avoid impacts to existing storm sewers. Storm sewers are typically installed at a relatively shallow depth (2 to 4 feet) below the surface whereas sewer mains are installed a minimum of 4.5 feet below grade. Many parcels in the proposed sewer service area have private storm drainage systems, such as Professional Park Road. The proposed sewer project will be designed to avoid these systems. Any proposal for new or expanded development in areas with private storm sewer systems would be reviewed by the Planning and Zoning Commission.

Storm drainage systems along Route 195 and Route 44 are owned and maintained by the State of Connecticut Department of Transportation. Developers of abutting properties are required to demonstrate that peak runoff into those drainage systems is no greater than existing peak runoff. If there were to be an impact due to proposed development or redevelopment of a site, the developer would be responsible for paying for the needed upgrades. Any proposal for new or expanded development within the town of Mansfield would also require review and approval from the Mansfield Planning & Zoning Commission and would be subject to local regulations as well. Through these existing mechanisms, flooding caused by new impervious surfaces will not be allowed to occur.

The proposed sewer service area is situated along the drainage divide between the Willimantic River subregional drainage basin (No. 3100) and the Fenton River subregional drainage basin (No. 3207) of the Willimantic and Natchaug regional drainage basins, respectively. Refer to Section 3.8.2 for a discussion on stormwater management as it can impact water resources.

3.5.4 Electric, Gas, Telephone, and Cable Service

Electrical service is provided to the Mansfield Four Corners area by Eversource. Although most electrical lines are overhead in the project area, some may be underground. Coordination with the electric utility will be required in locations where tall heavy equipment may be operated near overhead wires and to ensure proper access for the project through any electrical utility easements. The proposed project is expected to result in increased electrical usage by the town related to the proposed pump stations as well as potential incremental electrical costs related to processing billing.

Connecticut Natural Gas provides natural gas service in Mansfield. Gas pipelines are located along portions of the Route 44 and Route 195 corridors but are not presently located in the proposed sewer district.

Telephone service in the project area is primarily provided by Frontier Communications via overhead lines. Underground wires may serve some areas, such as along Route 44. Digital telephone services are also offered by Charter Communications and Comcast. Cellular services are also available through a variety of providers.

Cable television service in the Mansfield Four Corners area is provided by Charter Communications. These services are provided via both overhead and underground telecommunication lines. In addition to these services, satellite television providers also provide service to the area.

As part of the design process, Eversource and other utilities were contacted to provide updated information on the location of underground utility lines. The project will also require "Call Before You Dig" to be contacted and potentially a private utility markout contractor to be retained in order to confirm the location of all underground utilities in the field prior to beginning excavation.

3.5.5 Analysis of Direct and Indirect Impacts on Public Utilities and Services

Water Supply

No significant impacts on water supply are expected as a result of the proposed sewer project. The proposed sewer collection system will be designed and constructed in accordance with the "*Water Main Design and Construction Guidelines*" (as appended to the DPH scoping comments) to determine the

separating distances between sanitary sewers and public water supply mains. In general, a 10-foot horizontal separation is required from all water mains. The Town of Mansfield will continue to coordinate with CWC regarding the installation of the proposed sewer system.

Numerous public water systems are located along the proposed route of the sewer system. As required by DPH, proper protection measures will be incorporated in order to protect sources of public drinking water supply. Pump stations, grinder pumps, sanitary sewer manholes, and cleanouts will be located outside of the required sanitary radius of public water supply wells. The required separating distance (75, 150, or 200 feet) is determined by the withdrawal rate of each public water supply well. The withdrawal rate of each public water supply well will be determined by contacting the public water systems prior to final design. Piping and joints may be allowed closer to public water supply wells if it is demonstrated to DPH that the piping and joint are sound enough to prevent leakage.

As indicated above, Jensen's Rolling Hills Community will be served with public water from CWC once the water main is completed. Although project components are located more than 200 feet from any of the existing wells, the property owner plans to install a private sewer collection system to service the remainder of the property. The Town of Mansfield will request Eastern Highlands Health District to ensure that construction of the private sewer system will meet regulatory guidelines for private wells unless it can be confirmed that the private system will not be operational until after the supply wells have been disconnected. CWC anticipates that the Jensen's public supply wells will be formally abandoned once public water service is available.

The easternmost portion of the project area is located within the public water supply watershed of the Willimantic Reservoir, which provides public drinking water for the customers of Windham Water Works. Section 3.8.1 further discusses the protection and management of surface water resources. As requested by DPH, the project plans will show the limits of the public drinking water supply watershed, and the practices outlined in the "*General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area*" (appended to the DPH scoping comments) will be incorporated into the construction documents.

Sanitary Sewer

The proposed action will result in an expansion of the existing sanitary sewer system in Mansfield. This project is expected to provide a variety of environmental and redevelopment benefits to the Four Corners area. The existing UConn WPCF and sewer system will not be adversely affected by the project as sufficient capacity currently exists to accommodate flows from Mansfield Four Corners. As development occurs in Mansfield Four Corners and the Technology Park, UConn may need to upgrade portions of the downstream sewer main on Discovery Drive.

Storm Sewer

The proposed action will not result in direct impacts on existing storm sewers. All public and private storm drainage systems have been accounted for in the project design. Secondary growth related to the project may result in modifications to existing storm sewer systems, which will be determined on a case-by-case basis. (See also discussion under Section 3.8 relative to stormwater quality.)

Electric, Gas, and Telephone

The proposed action will not result in significant impacts on existing utility lines. The project has been designed to avoid these elements. Secondary growth related to the project will likely result in increased demands for electrical, gas, and telephone service in the area related to the expanded population and commercial uses. Each utility is a major provider with the resources to meet the needs anticipated by this project.

3.6 Cultural Resources

A portion of the proposed sewer service area lies within the Mansfield Four Corners Historic Village. The boundaries of this village include properties on both sides of Old Turnpike Road, both sides of Route 44 from Old Turnpike Road west to Route 195, and along Route 195 from Route 320 to the vicinity of the UConn property north of Moulton Road. Although several 18th century and 19th century homes are located in the village to the south and east of the intersection of Route 195 and Route 44, the majority of the homes that once occupied the vicinity of the intersection are gone. The 2006 POCD indicates that the remaining houses along Route 195 and Route 44 are threatened by heavy traffic and by being close to the road such that road widening or realignment could be detrimental to the continued viability of the structures. The Plan identifies the following historic structures and sites in the projected sewer service area:

- The home on parcel 3 was built prior to 1800.
- Parcel 16 is the site of the 18th century Fuller Tavern.
- Parcels 25 and 26 are the site of the former tollhouse for Boston Turnpike.
- One of the structures on parcel 41 was built between 1800 and 1870 (assessor's database lists 1800).
- The structure on parcel 47 was built between 1800 and 1870 (assessor's database lists 1930).
- The structure on parcel 51 was built between 1800 and 1870 (assessor's database lists 1915).

The 2006 POCD further identifies two areas within the proposed sewer service area that are considered to be prehistoric site areas. One is located on Route 195, including part or all of parcels 1, 2, 8, 9, 12, 13, 14, and 17. The second area is located at the intersection of Route 195 and Route 44 and includes parts or all of parcels 3, 15, 16, 18, 22, 23, 24, 25, 26, 29, 32, 35, 38, 39, 42, 44, 46, 57, 58, and 59. Saint Paul's Church, located on parcel 2, is a modern cultural resource. This is not a historic structure although it has cultural sensitivity as a place of worship.

The proposed sewer collection system will occur in areas that have been previously disturbed within the historical village and prehistoric site areas and that therefore have a low potential for remnant cultural resources. No scoping comments were received from the State Historic Preservation Office that would indicate the presence of sensitive cultural resources within the study area. Impacts on cultural resources due to construction of the proposed project are therefore considered to be minimal.

Secondary impacts on cultural resources will need to be evaluated on a case-by-case basis as particular projects come before the Planning and Zoning Commission. It is expected that the Planning and Zoning Commission will request assistance from state and local historic commissions when these concerns arise. Goal 3.4, Strategy B4 of *Mansfield Tomorrow* indicates that the Planning Department and the Planning and Zoning Commission will "provide easy access to information and resources that highlight Town priorities for protection of natural, cultural, and scenic resources for use by developers in the beginning stages of project design."

3.7 Traffic and Parking

3.7.1 Existing Roadway Network

Figure 3.7-1 presents the transportation network in the Four Corners area. Two primary state routes intersect at the center of the project area: Route 195 and Route 44 form what is known as the Four Corners area. Route 195 is a state highway that runs from Windham to the south to Tolland town center to the north. The route cuts through the project area in a generally north-south direction. This segment of Route 195 is the primary travel route to the UConn campus from Interstate 84. Route 44 is a US Highway that runs from the New York state line at Salisbury to the Rhode Island state line at Putnam. Route 44 runs through the project area in an east-west direction.

Willington Hill Road (Route 320) is a smaller residential road connected to the east side of Route 195 north of the Four Corners intersection. Two parcels within the proposed sewer service area are located adjacent to Willington Hill Road. Cedar Swamp Road runs north-south, connecting Route 195 to Route 44 approximately 4,000 feet west of their intersection. There is also an existing roadway network within the Jensen's Rolling Hills Community.

As noted in Section 3.1.3, the future land use plan for Mansfield Four Corners includes pedestrian-friendly developments that include suitable access for walking and bicycling. Parking areas are expected to be located to the sides or rear of buildings with well-spaced access points to the adjacent roads.

Most individual development and redevelopment projects within the Mansfield Four Corners area will likely be below 100,000 square feet of gross floor area or 200 parking spaces. Therefore, individual development and redevelopment projects are unlikely to be regulated by the Connecticut Department of Transportation (DOT) Office of the State Traffic Administration (OSTA) as a major traffic generator except for potentially large residential and mixed-use projects. Nearly all site work conducted on the various parcels within the sewer service area will require an encroachment permit from the DOT district office, including installation of the sewer main, installation of sewer laterals, and any redevelopment (modifications to access, curb cuts, paving, drainage, etc.) within the roadway ROW of Route 195, Route 44, and Route 320.

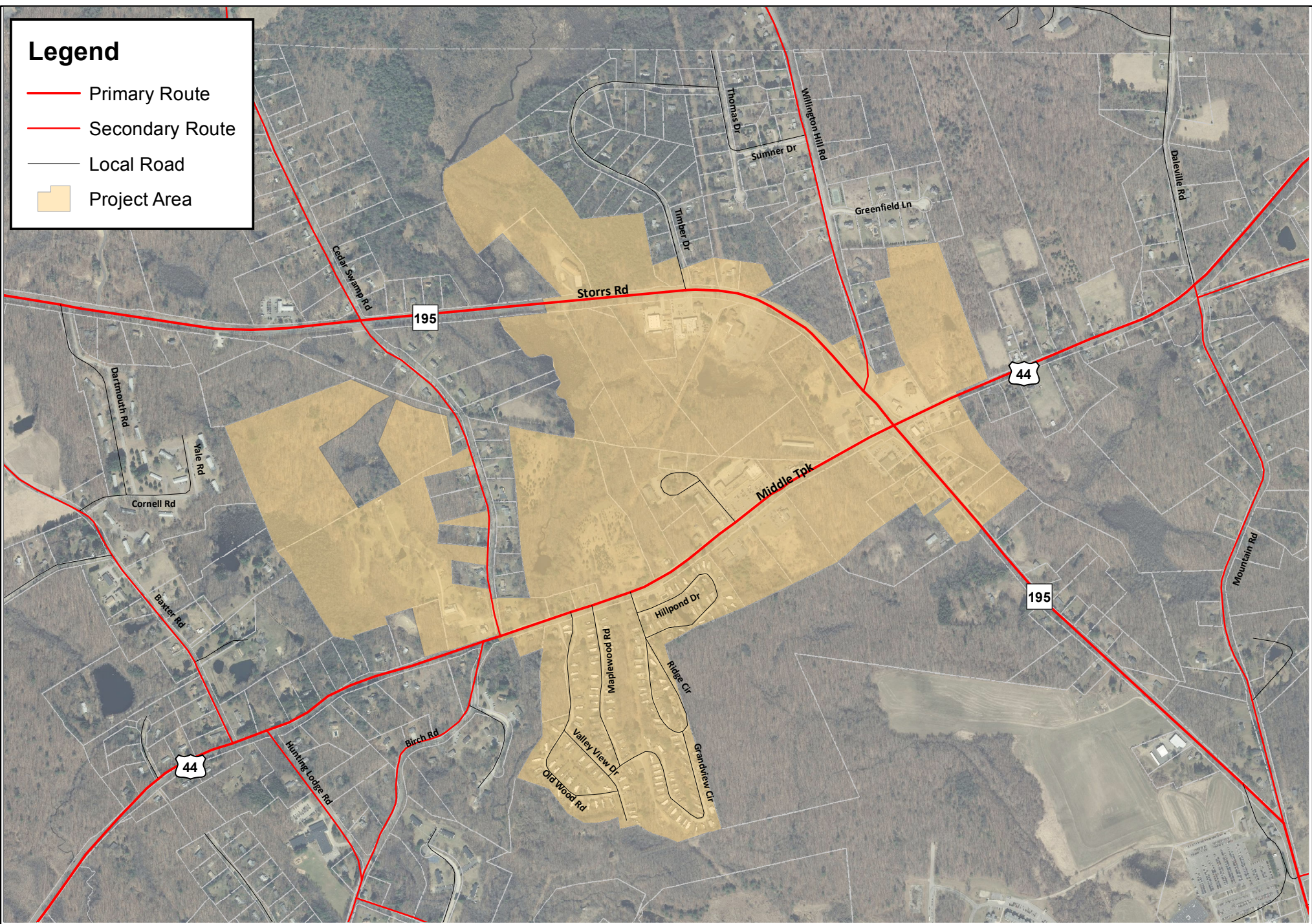
The local traffic authority in Mansfield is the Town Manager. The Mansfield Traffic Authority makes recommendations to the DOT for traffic controls on state highways. This would be conducted as part of local review of any development or redevelopment project in the proposed sewer service area.

3.7.2 Analysis of Direct and Indirect Impacts on Traffic and Parking

Minor and temporary traffic disruption is expected in the project area due to lane closures associated with construction of the sewer collection system. Traffic disruption can be mitigated through the use of well-planned vehicle rerouting, proper construction zone traffic patterns, and public notification of construction periods and locations. Access for emergency vehicles and school buses will be maintained at all times. Traffic issues will be closely coordinated with public safety and education department officials.

Legend

- Primary Route
- Secondary Route
- Local Road
- Project Area



SOURCE(S):
 CT ECO 2012 Orthoimagery
 CT DEEP: Drainage Basin layers,
 Parcels, and Roads



Figure 3.7-1: Transportation Network

MXD: V:\2111-11\GIS\Maps\Transportation Network.mxd

Mansfield Four Corners Sanitary Sewer EIE

LOCATION: Mansfield, CT

Map By: CMP
 MMI#: 2111-11
 Original: 6/30/2015
 Revision: XX/XX/201X
 Scale: 1 in = 1,000 ft



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In the long term, traffic is expected to increase in the proposed sewer service area as a result of secondary growth related to the availability of water and sewer infrastructure. Any increase in traffic will likely be attributable to both residential and commercial uses. The exact amount of growth cannot be predicted at this time as specific projects are not available for consideration. As such, conducting intersection "level of service" analyses would be unreliable. Evaluation of incremental impacts on traffic will need to be addressed by the Planning and Zoning Commission, the Mansfield Traffic Authority, and potentially OSTA on a case-by-case basis as development or redevelopment projects are proposed. The Mansfield Zoning Regulations require that adequate parking be provided for each development such that secondary impacts on parking should not be a concern. Large traffic uses, if they are proposed, will require evaluation of impacts specific to the proposed development, including the incremental impact of existing and proposed traffic.

3.8 Water Resources and Water Quality

The State of Connecticut has set forth a policy for the management of water quality through the Water Quality Standards (most recently updated February 2011), wherein criteria and a classification system are applied to all surface water and groundwater resources in the state. These standards act in concert with the principles of Connecticut's Clean Water Act. These classifications establish designated uses for surface and groundwater resources and identify the criteria necessary to support those uses. Criteria have been established with respect to desirable use, antidegradation, allowable types of discharges, waste assimilation, and a variety of physical and chemical constituents. Figure 3.8-1 presents Water Classifications for Class A and AA surface water and groundwater.

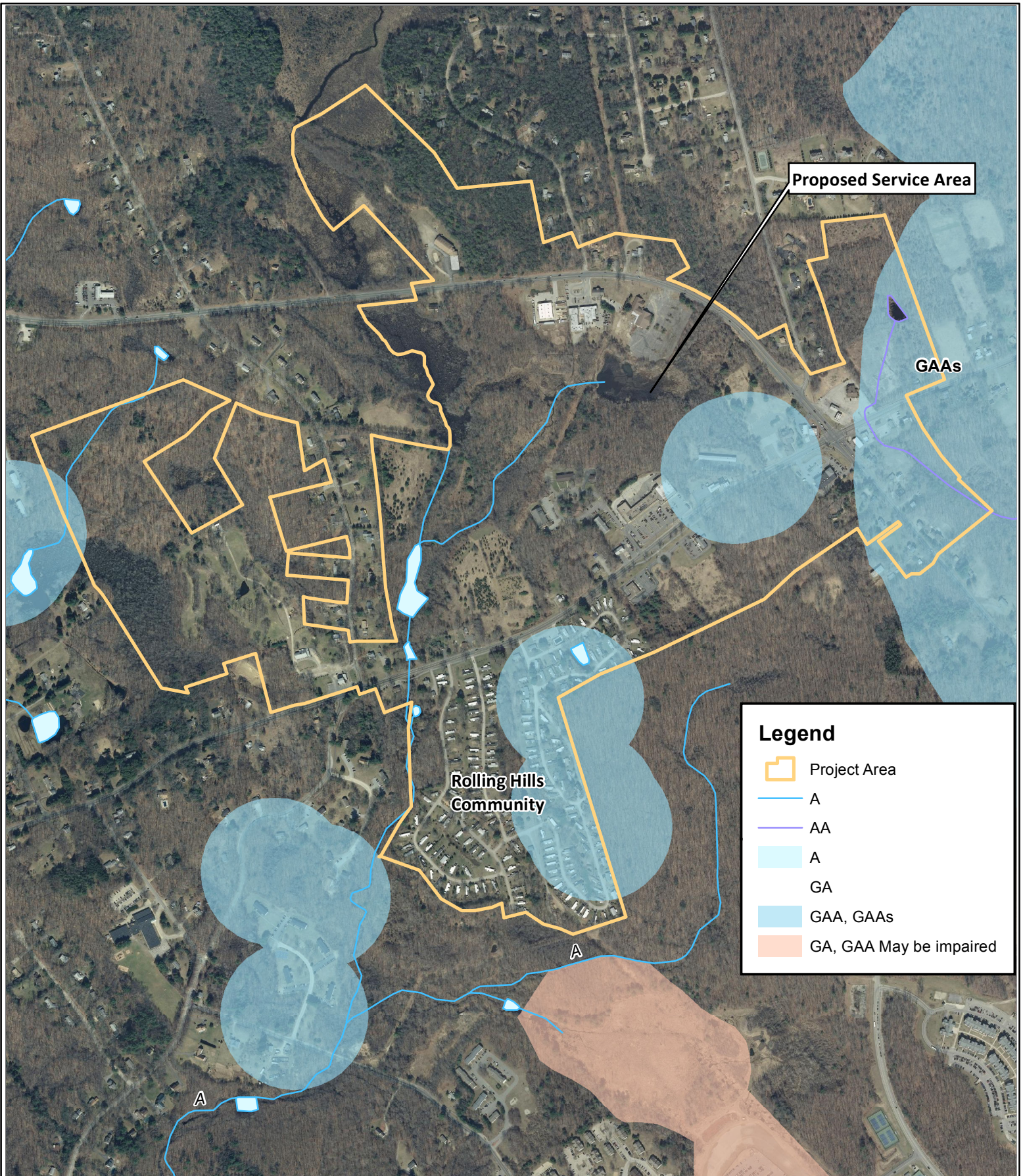
Federal law prohibits a state from diminishing surface water quality classifications or standards in order to accommodate new or increased wastewater discharges or land use practices that impact a particular watercourse. Therefore, the state must attain and maintain the most sensitive existing and potential use for a respective water body.

3.8.1 Surface Water Resources

Land within the proposed sewer service area drains to one of three local drainage basins. The portion of the project area west of Cedar Swamp Road drains west through an unnamed tributary toward Nelson Brook, which is a tributary to Cedar Swamp Brook. The majority of the project area drains either to the main stem of Cedar Swamp Brook or one of its unnamed tributaries. In turn, Cedar Swamp Brook is a tributary of the Willimantic River. The easternmost portion of the project area drains to Mason Brook, a tributary to the Fenton River. Drainage basins are presented on Figure 3.8-2.

Surface water quality may be influenced by both point and nonpoint sources of pollution. Point sources are well-defined, discrete locations such as sewage treatment plant discharges or combined sewer overflows. Nonpoint sources of pollution include storm drainage, surface runoff, erosion, and leachate from broader areas and human activities.

All streams within the proposed sewer service area have been classified as Class A per the CTDEEP, with the exception of the farm pond on parcel 3. The pond is the headwaters of Mason Brook and is classified as Class AA. Class AA surface waters are acceptable for use as existing or potential drinking water supply, fish and wildlife habitat, recreational use, and agricultural and industrial use. Class A surface waters are similar except they are classified as potential drinking water supplies.



SOURCE(S):
 CT ECO 2012 Orthoimagery
 Water Quality from CT DEEP, 2014

Figure 3.8-1: Class A and AA Water Quality Designations

LOCATION:
 Mansfield, CT

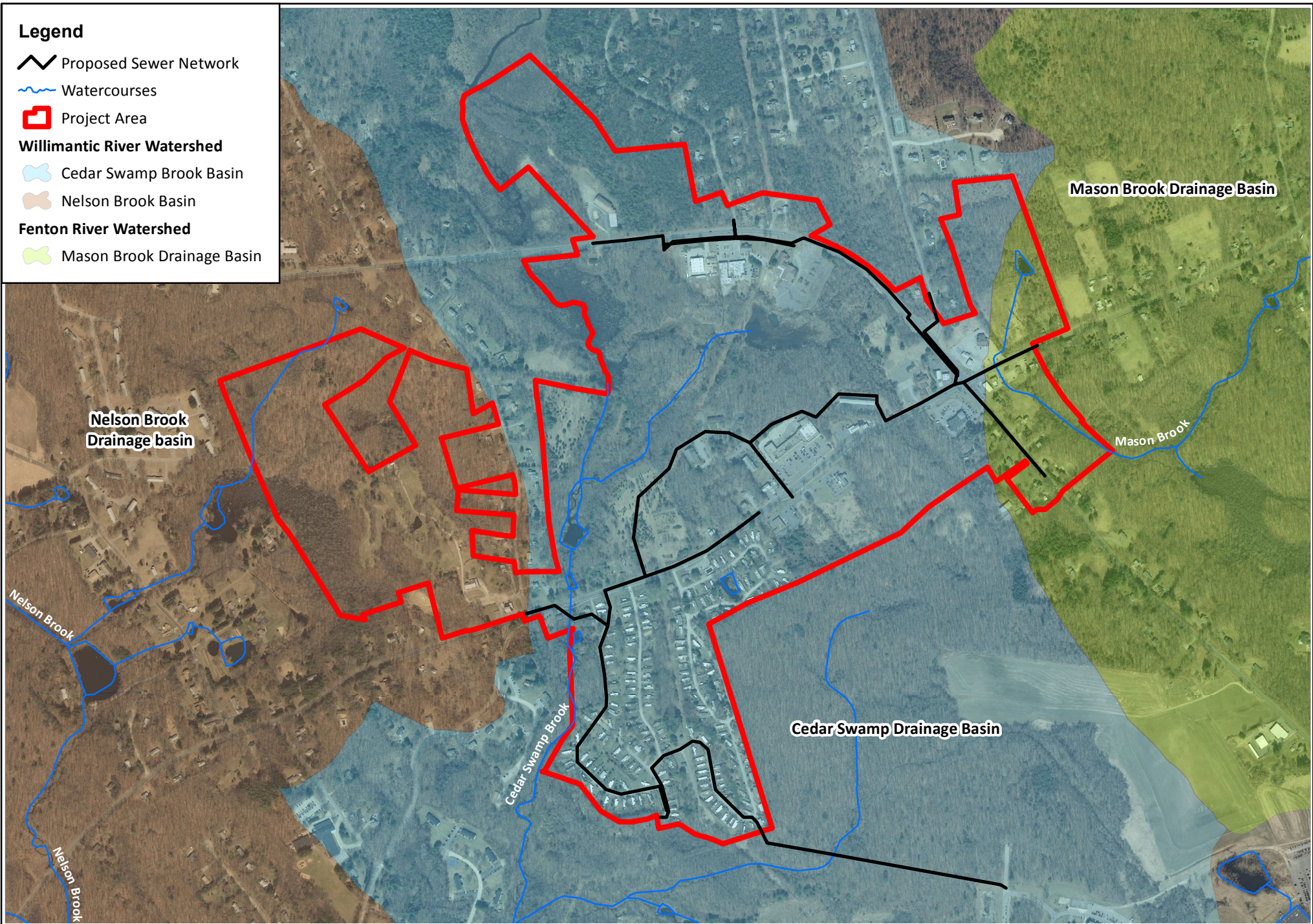


Mansfield Four Corners Sewer Project

MXD: V:\2111-11\GIS\Maps\WQ.mxd

Map By: SJB
 MMI#: 2111-11
 Original: 6/30/2015
 Revision: 3/3/2015
 Scale: 1 inch = 850 feet

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Legend

- Proposed Sewer Network
- Watercourses
- Project Area
- Willimantic River Watershed**
- Cedar Swamp Brook Basin
- Nelson Brook Basin
- Fenton River Watershed**
- Mason Brook Drainage Basin

SOURCE(S):
 CT ECO 2012 Orthoimagery
 CT DEEP Drainage Basins
 CT Hydrography Layer

Figure 3.8-2: Watershed Boundaries

MXD: Y:\2111-11\GIS\Maps\Figure3.8-2Watershed.mxd

**Mansfield Four Corners
 Sanitary Sewer Project EIE**

LOCATION: Mansfield, CT

Map By: scottb
 MMI#: 2111-11
 Original: 6/25/2015
 Revision: 1/28/2016
 Scale: 1 in = 900 ft

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The Connecticut DPH identified the Mason Brook watershed as being within the reservoir watershed of the Willimantic Reservoir. The Willimantic Reservoir on the Natchaug River is used by Windham Water Works to provide public water supply as discussed in Section 3.5.1.

The Willimantic River is located west of the project area and has been classified as a Class B surface water resource. Class B surface waters are acceptable for use as fish and wildlife habitat, recreational use, agricultural and industrial use, and navigation but not for drinking water supply. The Willimantic River is a Class B watercourse as it receives treated effluent from several WPCFs, including UConn's. The potential flow increase to the Willimantic River based on development projections performed by Weston & Sampson could be as high as 0.187 mgd in the 20-year planning period.

In the 2012 "Willimantic River Watershed Summary," the Connecticut DEEP¹⁵ indicates that Cedar Swamp Brook is considered to be impaired for recreation due to elevated bacteria levels. Water quality sampling for *E. Coli* bacteria on Cedar Swamp Brook upstream of Hunting Lodge Road indicated that individual samples exceeded the water quality standard multiple times during 2010, resulting in the issuance of a Total Maximum Daily Load (TMDL) for the brook in 2012. Potential bacteria sources in the Cedar Swamp Brook watershed include failing septic systems, stormwater runoff, and nuisance wildlife/pets.

The CTDEEP recommended that the Town of Mansfield should identify areas along Cedar Swamp Brook to install best management practices that encourage stormwater to infiltrate the ground before entering the brook. Such best management practices would disconnect impervious areas and reduce pollutant loads. Beyond the potential impacts of stormwater, impairment due to *E. coli* may be exacerbated by failing or underfunctioning septic systems. In those instances, provision of public sewer service will have a positive benefit.

The 2014 *State of Connecticut Integrated Water Quality Report* published by the Connecticut DEEP¹⁶ indicates that Cedar Swamp Brook is "fully supporting" of recreation from the Willimantic River upstream to the confluence of Nelson Brook. This reach was "not assessed" for support of aquatic life. The brook is considered to be "fully supporting" of aquatic life from the confluence of Nelson Brook upstream to Hunting Lodge Road. This second reach was "not assessed" for recreation. The reach of Cedar Swamp Brook from Hunting Lodge Road upstream to the impoundment on parcel 27 was considered "not supporting" of recreation and was "not assessed" for aquatic life. This information indicates that the presence of bacteria in Cedar Swamp Brook between Route 44 and Hunting Lodge Road is generally unchanged since 2010.

The Town of Mansfield has long been concerned about impacts on water quality in the Four Corners area as a result of sewer overflows and septic system failures, with analyses performed as early as the 1970s. A review of the Eastern Highlands Health District's files was undertaken to ascertain data on septic system failures and overflows. Table 3.8-1 presents a summary of system failures/overflows and system repairs or replacements. In total, failures or overflows occurred on eight parcels, and 28 repairs or replacements occurred from 1990 to 2014.

The specific causes of individual septic system failure are not typically tracked by the health department; however, groundwater infiltration and poorly drained soils are common causes of failure and limit

¹⁵ <http://www.ct.gov/deep/lib/deep/water/tmdl/statewidebacteria/willimanticriver3100.pdf>

¹⁶ http://www.ct.gov/deep/lib/deep/water/water_quality_management/305b/2014_iwqr_305b_303d_final.pdf

options for installing code-compliant systems. However, in several cases sewer overflows were repeatedly documented running directly into storm drainage systems.

Continued reliance upon on-site subsurface wastewater disposal systems in the Four Corners area will result in continued exposure of the public to the health hazards associated with exposure to untreated wastewater, degradation of surface waters, severe limitations for potential development, and a failure to provide for tax base growth due to the inability to capitalize on potential commercial and higher-density residential economic development opportunities in areas that are supported by local planning and zoning regulations and local, regional, and state planning documents.

TABLE 3.8-1
Septic System Failures and Repairs in the Four Corners Area

Issue	Location within Four Corners	Parcel M/B/L	Parcel #	Year
Repair/Replacement	661 Middle Turnpike	2/8/14	3	1991, 1999
Repair/Replacement	1722 Storrs Road	2/6/14	6	NA
Repair/Replacement	1733 Storrs Road	8/15/9	8	2003
Failure/Overflow	1660 Storrs Road	2/8/13	18	1975
Repair/Replacement	1660 Storrs Road	2/8/13	18	NA
Failure/Overflow	1659 Storrs Road (3 failures)	8/15/12	23	2002-2014
Repair/Replacement	1659 Storrs Road	8/15/12	23	2002
Failure/Overflow	1650 Storrs Road	9/24/19	26	NA
Repair/Replacement	11 Professional Park Road	8/15/18	33	NA
Failure/Overflow	591 Middle Turnpike	8/15/15	36	1973, 1986, 2012
Failure/Overflow	603-607 Middle Turnpike	8/15/14	37	1994
Failure/Overflow	1632 Storrs Road	9/24/14	40	2000
Failure/Overflow	1631 Storrs Road	9/23/6	44	1975
Repair/Replacement	505 Middle Turnpike	8/15/26	53	1990
Repair/Replacement	575 Middle Turnpike	8/15/20	56	2003
Failure/Overflow	1646 Storrs Road	9/24/18	57	2003
Repair/Replacement	1645 Storrs Road	9/24/16	58	1992
Repair/Replacement	632 Middle Turnpike	9/23/2-03	59	1991
Repair/Replacement	536 Middle Tpke (15 repairs, 3 replacements)	8/23/3	60	NA

Note: NA = Not Available
M/B/L = Map/Block/Lot

3.8.2 Stormwater Management

Stormwater runoff is comprised of excess precipitation that flows over the ground surface and impervious areas to storm drains or watercourses. Its quality will reflect the land uses and surfaces it contacts. State goals related to stormwater runoff as enumerated in the *Conservation & Development Policies: The Plan for Connecticut 2013-2018* state plan are presented in Section 3.5.3.

According to the UConn Center for Land Use Education and Research (CLEAR), the greater the amount of total impervious surface in a watershed, the greater the concern regarding the quality of stormwater runoff. When the percentage of total impervious surface in a watershed is greater than 10%, the water

quality is impacted. When the percentage of total impervious surface in a watershed is greater than 25%, the water quality is degraded¹⁷.

According to Roy and Shuster (2009)¹⁸, while the total impervious area is relatively easy to calculate, the amount of directly connected impervious area (DCIA) is more highly correlated with aspects of water quality and algal, macroinvertebrate, and fish assemblage integrity. DCIA represents the subset of impervious surfaces that route stormwater runoff directly to streams via stormwater pipes without interruption by swales, detention basins, or non-impervious areas. This study reports that other researchers have found that the percentage of directly connected impervious area is correlated with water quality impacts, including greatly reduced macroinvertebrate assemblages (6-14% DCIA), fish assemblages (8-10% DCIA), water quality (1-5% DCIA), algae (2-5% DCIA), and sensitive fish species (2-4% DCIA). The level of detail required to properly calculate directly connected impervious areas requires field assessments and aerial photograph analysis of individual properties. EPA has developed equations to estimate the amount of DCIA in a watershed¹⁹ and indicates that a variety of mitigation measures can be implemented to reduce DCIA and improve water quality within a watershed.

According to mapping prepared by CLEAR, the Cedar Swamp Brook watershed has between 5% and 10% total impervious surface. The Cedar Swamp Brook watershed drains a total area of 3,212 acres such that 10% impervious surface would be equivalent to 321.2 acres of impervious area. Based on the Sutherland Equations used by the EPA to estimate DCIA, the amount of DCIA in the Cedar Swamp Brook watershed is estimated at up to 3.2%. The estimated DCIA percentage suggests that slight impairment of water quality could be occurring (consistent with past water quality results).

The CTDEEP has prepared several documents related to reducing construction impact on nearby wetlands, watercourses, and water bodies. The 2002 *Guidelines for Soil Erosion and Sediment Control* can be used as either a primary guiding document or to set the minimum requirements for best management practices during construction activities. The primary focus of the guidelines is to prevent and control water-based erosion and associated sedimentation. The 2004 *Connecticut Stormwater Quality Manual* provides guidance on the measures necessary to protect these resources during new development, redevelopment, and upgrades to existing development. These measures include site planning, source control and pollution prevention, and stormwater treatment practices. The 2011 supplement to the 2004 manual provides information on the implementation of low-impact development technologies.

Stormwater Management Associated with Construction Activities

The proposed sewer project is expected to slightly increase the amount of impervious surfaces in the area due to such surfaces being part of pump stations and manholes. However, this direct impact (increase in impervious surface) will be minimal. These facilities will not be directly connected to storm sewer pipes; runoff from these facilities will instead discharge over grassed surfaces prior to discharge to a wetland.

Significant impacts on stormwater quality due to construction are not expected. Construction of the sewer main will require preparation of a Stormwater Pollution Control Plan and registration under the

¹⁷ <http://clear.uconn.edu/projects/landscape/v1/analysis/calcap/images/threshold.pdf>

¹⁸ http://clear.uconn.edu/projects/tmdl/library/papers/royshuster_2009.pdf

¹⁹ <http://www.epa.gov/region1/npdes/stormwater/nh/NHDCIA.pdf>

DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activity. Construction-phase erosion and sediment controls will include antitracking pads, silt fences, silt sacks, hay bales, mulch, and soil stabilization measures such as temporary seeding that are installed and maintained in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*. These measures will ensure that construction debris and sediment are not directly released to stormwater systems. Best management practices will be incorporated into the required Stormwater Pollution Control Plan under the General Permit. These include provisions for emergency spill response, hazardous material storage and disposal, construction vehicle fueling and maintenance procedures, and notification procedures in the event of chemical or fuel spills at the construction site.

Preparation and submittal of a Stormwater Pollution Prevention Plan will be necessary prior to construction as a requirement of the Construction Stormwater general permit. Additionally, zoning permit applications for areas greater than one-half acre are required to submit an erosion and sediment control plan that includes construction details for proposed soil erosion and sediment control measures and stormwater management facilities.

Stormwater Management Associated with New Development

The Town of Mansfield has taken a progressive stance relative to stormwater management and low impact development throughout the town. New development and redevelopment projects within the study area will be subject to modern-day stormwater management requirements through the local review process, which includes review through the planning and zoning process as well as through the inland wetlands and watercourse process, including a 150-foot upland review area adjacent to wetlands. Redevelopment projects have the potential to improve stormwater hydraulics (i.e., peak runoff rates) as well as stormwater water quality in comparison to the development standards of 40 or more years ago when these sites were initially developed.

It is particularly noteworthy that 48 of the 61 parcels in the Four Corners study area are currently developed. Of the remaining 13 vacant parcels, several are dominated by protected floodplain and/or wetlands, and others are too small to support development on their own. This leaves a modest amount of potentially developable vacant parcels within the approximately 500 acres that comprise the Four Corners study area. Table 3.8.2 below presents total lot size and developable land area for all vacant parcels as well as vacant parcels in combination with adjacent underdeveloped land. The sum total is 73 acres of potentially developable vacant land. This represents approximately 15% of the Four Corners study area.

TABLE 3.8-2
Summary of Developable Land Area

Vacant Parcel Lot Reference	Lot Area (acres)	Unconstrained (developable) Area (acres)
1	21.53	7.62
7	1.33	0.40
12/13/17	14.96	0.95
19/28/49*	7.90	2.44
27	24.85	13.35
30/61/62/63*	61.01	35.05
32	9.11	7.83
50	3.35	1.85
64	3.94	3.58

*Vacant land in combination with adjacent developed land

Given the finite number of developable vacant parcels in combination with the rigorous local review process and requirements, significant impacts as a result of future increases in impervious area are not anticipated. Notwithstanding this conclusion, the town is currently in the process of rewriting its local land regulations in a thoughtful and comprehensive manner. As the comprehensive rewrite is anticipated to take significant time to complete, the Planning and Zoning Commission has identified several issues to be addressed in amendments to the current regulations in advance of the overall rewrite. This initial package of amendments will include detailed stormwater management regulations requiring predevelopment site hydrology to be maintained to the maximum extent feasible through the use of LID practices. As these regulations may not be adopted prior to the conclusion of the CEPA review for the Mansfield Four Corners project, the adoption of stormwater management regulations is included in the subject EIE as a mitigation measure. The most recent draft of the stormwater management regulations is included in Appendix F.

New development and redevelopment projects will be subject to modern-day stormwater management requirements. Redevelopment projects have the potential to improve stormwater hydraulics (i.e., peak runoff rates) as well as stormwater water quality in comparison to the development standards of 40 or more years ago when these sites were initially developed. For both development and redevelopment projects, use of LID techniques will be encouraged through the planning and zoning review process, and protection of wetlands from stormwater runoff will be managed through the wetland review process for those projects located within the 150-foot upland review area.

Many of the existing developed areas are unlikely to change the amount of impervious surface since much of the parcel is already impervious. The Town of Mansfield anticipates that most redevelopment projects will aim to increase floor space vertically as the vast majority of commercial uses in Mansfield Four Corners are currently one story. Increasing square footage vertically can provide several advantages during redevelopment, including allowing for additional square footage for commercial space or opening more area for parking and/or stormwater management facilities.

The Town of Mansfield has been working on LID regulations as part of its zoning regulations. Depending on the type and nature of the regulations that are eventually adopted, it is possible that existing properties could experience a reduction in impervious surfaces and/or have less-connected impervious

surfaces after undergoing redevelopment. This will help to minimize the potential overall increase in total impervious surface, reduce DCIA, and restore water quality.

Secondary impacts on stormwater systems and receiving waterbodies have the potential to occur during new development projects within the proposed sewer service area. These will be regulated through Mansfield's local review processes related to site plan approval and wetland permitting. It is anticipated that the LID regulations that are currently being developed by the Town of Mansfield could provide this additional level of mitigation to any future projects. The Town of Mansfield will strive to minimize total impervious cover and DCIA in the Cedar Swamp Brook watershed to minimize impacts on water quality with the goal of improving water quality in Cedar Swamp Brook.

3.8.3 Groundwater Resources

At the present time, all of the developed properties within the proposed sewer service area are believed to be served by bedrock wells. Properties with public water systems were discussed in Section 3.5.1. In its scoping comments, the DPH indicated that approximately 20 residential or multifamily properties that are not served by public water systems could have private wells within the vicinity of the project, and several other small commercial facilities are also believed to be served by private wells.

The CTDEEP maintains water quality classifications for groundwater in the state. These classifications have been applied based on criteria presented in the 2011 *Water Quality Standards*. Groundwater quality in the vicinity of the study area ranges from Class GA-Impaired to Class GAA as noted in the sections below. Designated uses of groundwater for the defined water quality classifications include the following:

- Class GAA groundwater is designated for existing or proposed public drinking water supplies without treatment, groundwater in the area that contributes to a public drinking water supply well, and groundwater in areas that have been designated as a future water supply area. A designation of "well impaired" or "impaired" is applied in areas where contamination is known to have occurred.
- Class GA groundwater is designated for existing private water supply wells or an area with the potential to provide water to public or private water supply wells. It is presumed that groundwater in such areas is, at a minimum, suitable for drinking or other domestic uses without treatment. A designation of "impaired" is applied in areas where contamination is known to have occurred.

Groundwater quality in the proposed sewer service area is classified as Class GA except for areas immediately around public water supply wells and the Mason Brook watershed, which are classified as GAA. One area of GAA-impaired is erroneously mapped to the east of Mansfield Four Corners at the junction of Moulton Road, Daleville Road, and Old Turnpike Road. The DEEP GIS shapefile for leachate and waste disposal sites associates this spill with an inactive petroleum leak, but the leaks occurred on parcels 18, 37, and 59 as noted in Section 3.14. Therefore, much of the area around the intersection of Route 195 and Route 44 should be mapped as GA-Impaired or GAA-Impaired consistent with the affected public water supply well and the water treatment system that was required to be installed at Rosal Apartments on parcel 21 (as discussed in Section 3.5.1).

The main concern relative to groundwater impacts is the potential to intercept groundwater and soil that may be polluted with leaded and unleaded gasoline. Numerous gas station sites are now or were formerly located in the area of the Four Corners. The release of gasoline (leaded and unleaded) has

been documented at each of the sites. There is a likelihood that the plume of gasoline also migrated off the site below Routes 44 and 195 and ROWs in the area, giving concern that dissolved and possibly free product may be encountered. The contractor installing the sewer line will be made aware of the condition as well as its obligations to report certain environmental conditions under CGS Section 22a-6u requiring notification to DEEP in the event oil, gasoline, or chemicals are encountered during the installation of the sewer line. In such cases, it is expected that DEEP would oversee the remediation process should a problem arise. Guidance for utility company excavation will be shared with the selected contractor.

Groundwater/Surface Water Balance

A question raised by CTDEEP in its scoping comments was the impact of the proposed water and sewer infrastructure projects on the overall water budget for each watershed. In general, there are four extremes associated with the water budget for these projects:

1. All groundwater wells directed to septic systems – This is the existing condition. Groundwater wells are generally assumed to withdraw water from wells and direct it to a nearby septic system within the same watershed. Exceptions could exist near watershed divides, but the exceptions are likely minimal or even such that they can be ignored.
2. All public water directed to septic systems – Absent the proposed sewer project, it is possible that all existing uses could connect to the CWC water main. This would mean that water from the Hockanum River watershed would be introduced into the three watersheds via septic system discharges while existing water withdrawals from wells in the Four Corners area would be discontinued. This would result in a net gain in groundwater to the three basins within the proposed sewer service area, minus any consumptive or evaporative losses.
3. All groundwater wells directed to sewer – Absent the proposed water project, it is possible that existing uses could connect to the town sewer main while still drawing water from local wells. This would mean that water from the three watersheds would be removed from the ground and directed, following use and treatment at the UConn WPCF, to the Willimantic River. This would result in a net loss in groundwater from the three basins.
4. All public water directed to sewer – If property owners connect to both public water and sewer, groundwater will no longer be withdrawn locally via individual wells from the three basins, and septic flows would no longer be discharged to the ground. Instead, water would be provided from the Hockanum River watershed via the CWC supply and then be directed to the Willimantic River following use and treatment at the UConn WPCF. This would be generally consistent with the existing condition except that groundwater depression and mounding related to pumping of wells and release to septic fields would no longer occur. Additional flow would be introduced to the Willimantic River via increased WPCF discharges. In this scenario, no net increase or decrease would occur in the Fenton River watershed.

Given that the two public utility projects (i.e., water and sewer) are expected to be completed in a similar time frame, it is anticipated that the groundwater/surface water balance will lie somewhere between condition #1 and condition #4. It is anticipated that some properties will continue to utilize on-site well and septic systems. For those that do not, it is likely that they will connect to both water and

sewer, rather than one or the other. As such, the groundwater/surface water balance is expected to remain close to the existing condition.

3.8.4 Analysis of Direct and Indirect Impacts on Water Resources

Surface Water Resources

The proposed sewer project is expected to have a long-term beneficial impact on local surface water quality through the reduction of untreated wastewater discharges from individual septic system failures and their associated bacterial and nutrient loadings. Connecting to the community sewer system would eliminate the risk of surface discharges due to septic system failures.

Installation of the proposed sewer collection system is not expected to impact water quality in the tributary to Nelson Brook, Cedar Swamp Brook or its tributaries, or in Mason Brook. No in-water work will be conducted, and best management practices will be utilized to prevent construction-related activities from impacting these watercourses. A construction stormwater general permit will be required from the CTDEEP, which will outline the specific best management practices to be utilized.

A small portion of the proposed sewer project will occur within the reservoir watershed of the Willimantic Reservoir. The reservoir watershed boundary will be shown on the construction project plans, and the practices outlined in "*General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area*" will be incorporated into the construction documents for the project.

Secondary impacts on water quality following construction are possible in association with development and redevelopment activities within the proposed sewer service area. The Town of Mansfield will continue to require that proper best management practices are utilized to ensure protection of surface water quality during the construction of private developments. Long-term impacts on water quality through proper stormwater management are discussed below.

Outflow from the UConn WPCF to the Willimantic River is regulated by the CTDEEP through its National Pollutant Discharge Elimination System (NPDES) permit. The permit conditions require UConn to provide sufficient treatment to lower the concentration of contaminants such that water quality in the Willimantic River is not impacted. According to the April 2014 water diversion permit application for the *Tolland-Mansfield Regional Pipeline and Interconnection*, UConn will continue to provide treatment in compliance with the NPDES permit and future NPDES permit requirements. Impacts on water quality in the Willimantic River are not expected.

Impacts on Groundwater Resources

Significant impacts on groundwater resources are not anticipated as a result of the construction of the proposed sewer project. Groundwater quality will be improved for those parcels that currently have failing or underperforming septic systems that connect to the sewer collection system. Potential direct impacts on groundwater levels will be mitigated through the use of trench drainage interrupters in areas where the sanitary sewer is proposed to be installed below the current groundwater table elevation, and the design also incorporates the use of bentonite clay dams to minimize the migration of groundwater along the sewer main route. No other potential impacts are anticipated.

Impacts on Private Wells

Adverse impacts on private wells are not anticipated. Many of the parcels that are currently served by on-site wells are expected to connect to public water service when it becomes available, thus abandoning their wells. The DPH offered comments during the scoping process to ensure compliance with state regulations regarding private wells:

"Private wells located within the proposed area should be located and identified on the proposed plans. Section 19-13-B51(d)(a)(2) of the Public Health Code states "No such well shall be located within seventy-five feet of a system for disposal of sewage or other source of pollution. Greater separation distance shall be required for certain industrial waste on certain rock formations. If a sewer lateral is constructed of extra heavy cast iron pipe with leaded joints or equally approve[d] type of tight joints, a minimum separating distance of twenty-five feet shall be maintained." Installation of any grinder pumps and sewer piping should be installed outside of the sanitary radius of the wells as outlined in EHS Circular Letter 2006-43 (http://www.ct.gov/dph/lib/dph/environmental_health/2006-43_Separation_Distances_for_Potable_Water_Wells.pdf)."

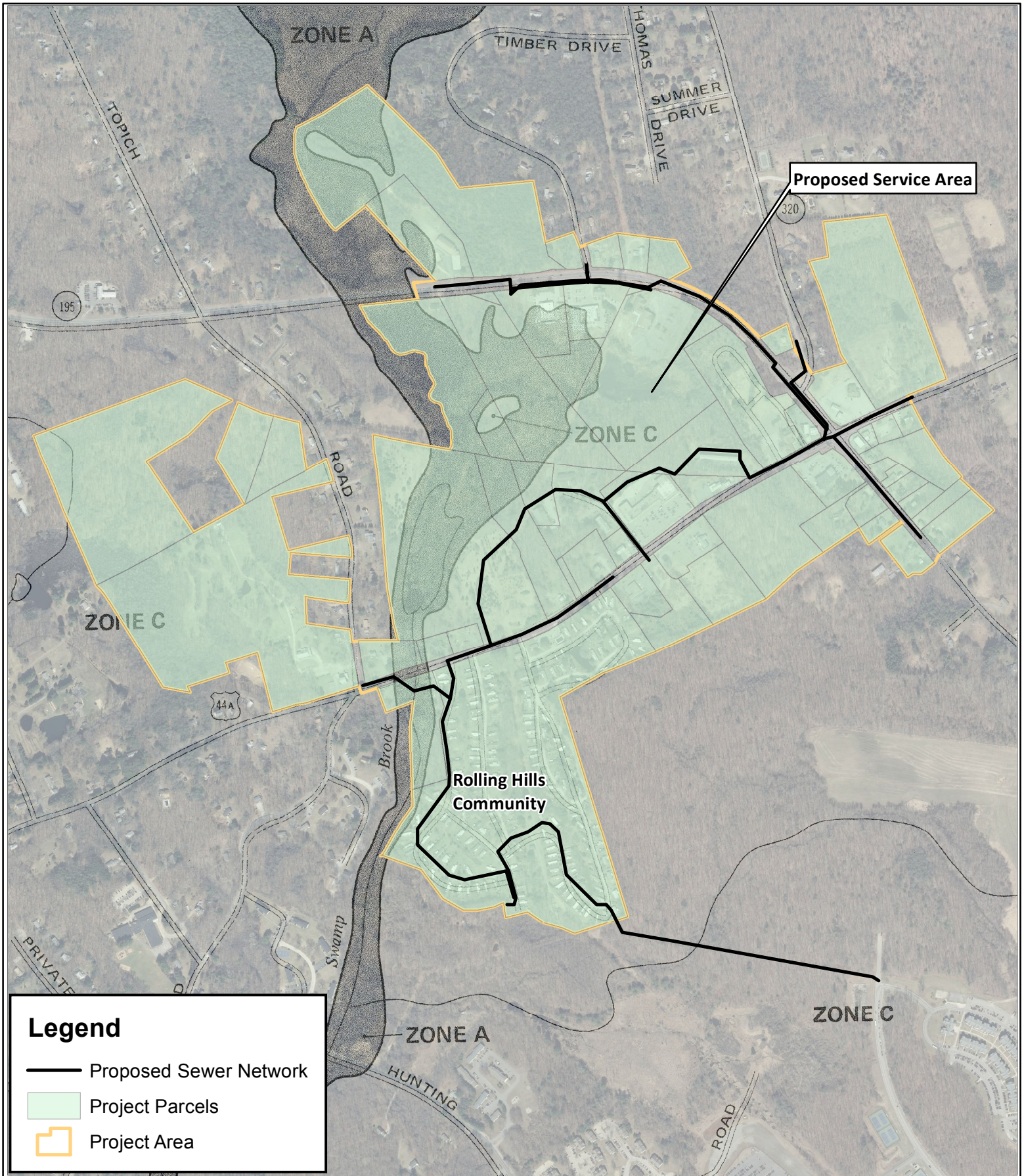
The connection of individual sewer laterals will meet setback requirements from the private wells as outlined by the DPH. This setback distance will be evaluated on a case-by-case basis with the local health department. EHS Circular Letter 2006-43 indicates that exceptions to this regulation are possible for existing development where a new sewer main is being installed, but exceptions are not permitted for new construction.

Based on the DPH comments, private wells located near the proposed sewer mains will be shown on the project construction plans. An information request was made to DPH to obtain yield information on existing supplies in the project area to ensure that adequate spacing occurs from drinking water wells. A minimum sanitary radius of 75 feet will be depicted around each private well on the project plans, with larger radii used for public water sources that can produce greater than 10 gallons per minute (gpm) or greater than 50 gpm (150-foot or 200-foot sanitary radius, respectively). The sanitary radii of any private well will not be allowed to intersect the location of the proposed sewer main or any pump station. Potential impacts due to the need for blasting are addressed in Section 3.11.

3.9 Flood Hazard Potential

3.9.1 Existing Conditions

Figure 3.9-1 depicts the FEMA-delineated floodplain within the project area. It intersects portions of parcels 1, 2, 8, 9, 11, 13, 14, 17, 19, 27, 28, 31, 52, 53, 54, 55, and 60. FEMA has delineated a Zone A floodplain along Cedar Swamp Brook based on the Flood Insurance Rate Map (FIRM) dated January 2, 1981. This SFHA maps the 1% annual chance flood area where the 1% annual chance flood elevation and flood hazard factors (such as elevation and discharge) have not been determined. The majority of the floodplain within the study area occurs to the southwest of Willard's and the Holiday Mall. While a portion of the sewer pipe will run beneath the FEMA-designated SFHA, the pipe will be underground (i.e., below grade) and will therefore pose no obstruction within the floodplain.



SOURCE(S):
 CT ECO 2012 Orthoimagery
 FEMA FIRM 1981

Figure 3.9-1: FEMA Delineated Floodplain

LOCATION:
 Mansfield, CT



Mansfield Four Corners Sewer Project

MXD: Y:\2111-11\GIS\Maps\FEMA.mxd

Map By: JEP
 MM# #: 2111-11
 Original: 1/28/2016
 Revision: 3/3/2015
 Scale: 1 inch = 850 feet

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Cedar Swamp Brook flows into the Willimantic River downstream of the project area. FEMA has delineated a Zone A13 (Zone AE) floodplain along the Willimantic River in Mansfield based on the January 2, 1981 FIRM. This SFHA maps the 1% annual chance flood area where the 1% annual chance flood elevation and discharge have been determined. According to the Town of Mansfield Flood Insurance Study (1980), the peak discharge for the 1% annual chance flood on the Willimantic River upstream of Cedar Swamp Brook is 14,000 cubic feet per second (cfs).

The United States Geological Survey (USGS) program *StreamStats* was utilized to estimate the peak flow for the 1% annual chance flood on Cedar Swamp Brook at the southern end of the project area. The program estimated that the 1% annual chance discharge is 324 cfs, or 2.3% of the 1% annual chance flood discharge in the Willimantic River.

Connecticut regulations for floodplain management for state agencies were established in April 1987. These regulations require that a state agency certify that the activity is consistent with all applicable standards. This process is completed through a Flood Management Certification process administered by CTDEEP. Section 25-68h-2 of the RCSA outlines the floodplain management standards. In general, these regulations require that new construction be performed to be free from flooding; that new buildings are elevated above the base flood elevation; that no fill be placed in the floodplain that would raise the base flood elevation by 1 foot; and that on-site stormwater management shall be prepared to minimize any adverse increases to the peak flow rate, the timing of runoff, and the volume of runoff. In addition, the CTDEEP and the Connecticut DPH administer other guidelines and regulations related to flood hazard potential.

State policy promotes long-term nonintensive uses for projects within flood hazard areas, with utilities located to discourage floodplain development. State policy regarding floodplain development is articulated in Section 25-68(b)(4) of the CGS, requiring that a proposed action promote long-term nonintensive floodplain uses and have its utilities located to discourage floodplain development. This policy invokes a higher standard than the engineering standards contained in either the federal or the municipal floodplain regulations.

In order to certify a state-funded project, it must be determined to be a nonintensive use of the floodplain. The determination of whether a specific proposal is considered nonintensive requires examination of numerous factors, including the existing state of the floodplain and its natural resources, the types of uses proposed for the floodplain area, the design of the entire proposal and the extent of encroachment into the floodplain, and the availability of alternatives to siting within the floodplain. In order to ensure compliance with state policy, any proposed development must not result in more intensive uses of the floodplain than presently exist.

Intensive floodplain uses have been interpreted by DEEP to include:

- New residential uses within the floodplain
- Any increase in the square footage of office, retail, industrial, or business uses
- Conversion of nonresidential use(s) to residential use

The installation of underground utilities is generally considered to be a nonintensive activity provided that additional development will not be spurred within the floodplain. The creation of new pump houses or treatment buildings would not be considered intensive since such structures would be elevated above the base flood elevation.

Mansfield's zoning regulations (Article VII, Section W) strictly limit the types of allowable uses within designated flood hazard areas. All such uses require a special permit from the Mansfield Planning & Zoning Commission. The only types of structures/improvements that are allowed within a flood hazard zone are agricultural, open space/recreation, parking, accessory buildings, hydropower, and swimming pools. Article X, Section E is the local floodplain management ordinance. Subpart 4(f) indicates that within Zone A all development is prohibited unless it has been demonstrated through hydrologic and hydraulic analysis that the proposed development would not result in any increase in flood levels within the community during the occurrence of the 1% annual chance flood discharge.

Article VI, Section B(4)(r) of the Mansfield zoning regulations states that the commission's goal is to attempt to reduce damages from soil erosion and sedimentation, reduce downstream flooding, and ensure proper storm drainage management. Subpart g of this section indicates that drainage provisions shall be made to effectively regulate any significant increased runoff caused by changed soil and surface conditions during and after development.

3.9.2 Analysis of Potential Direct and Indirect Impacts on Flooding

Direct impacts on flooding are not anticipated because, while a portion of the sewer pipe will run beneath the FEMA-designated SFHA, the pipe will be underground (i.e., below grade) and will therefore pose no obstruction within the floodplain. Secondary growth within the SFHA is also not expected because new development is restricted to agricultural, open space/recreation, parking, accessory buildings, hydropower, and swimming pools, provided that an applicant can demonstrate that the proposed development would not result in any increase in flood elevation during the 1% annual chance flood. Due to the nature of the project, a Flood Certification exemption may be required as provision of public utilities is often considered to promote development within a floodplain.

Several vacant lots in the Four Corners area lie within the FEMA-delineated SFHA. In many municipalities across the state, such parcels would have the potential to support intensive development; however, this is not the case in Mansfield. Local regulations in Mansfield are extremely restrictive relative to development in the floodplain. Per Article Seven, Section W. of Mansfield's zoning regulations, only parking lots, swimming pools, and accessory buildings may be located in the floodplain. Given the extent of existing development and restrictions on development contained in Mansfield's zoning regulations, an exemption is believed to be appropriate in this case.

Mansfield's zoning regulations do not specify that peak flows leaving a development site must be at or below levels of existing runoff. Therefore, increases to peak flows along Cedar Swamp Brook from secondary impacts associated with future development could be possible. The proposed zoning regulations incorporate a formal requirement that post-construction peak stormwater runoff shall be equal or less than existing site conditions. The 2004 Connecticut DOT *Stormwater Quality Manual* is referenced as a guidance document in the zoning regulations to maintain runoff within this requirement.

The contribution of peak discharge from Cedar Swamp Brook to the Willimantic River is approximately 2.3% of the flow in the river at the confluence. Increased runoff is likely to be minimal because peak flows would likely occur sooner on the smaller Cedar Swamp Brook watershed than the much larger Willimantic River watershed. Additionally, stormwater runoff from new development or redevelopment will undergo review and be regulated through the local Planning & Zoning approval process.

3.10 Biological Environment

3.10.1 Vegetation and Wildlife

The project area is located within the Northern Hills-Central Hardwoods-White Pine zone of the Northeast Hills ecoregion of Connecticut and exhibits a variety of vegetation types common in northeastern Connecticut. The predominant upland habitat type is paved roadway or development surrounded by mixed mesic and xeric hardwood forests. While much of the proposed sewer area is developed, a number of vacant parcels exist (Section 3.1.5), and many parcels also contain significant undeveloped areas due to wetlands, floodplains, or other site constraints. Dominant types of trees include mixed oaks, mixed hickories, mixed maples, white ash, and American beech. Invasive species such as multiflora rose are common along the disturbed periphery of Route 195. Shrubs and herbs are discussed associated with the identified wetlands in Section 3.10.2.

Wildlife in the vicinity of the proposed sewer area consists species common to forest and open habitats, including deer, woodchuck, squirrels, chipmunks, Eastern cottontail, redback salamander, spring peeper, green frog, and eastern garter snake. Residents have reportedly seen larger wild mammals such as bobcats and mountain lions in the area based on comments received at the scoping meeting. An active bird community also exists in the area, including Mourning Dove, Northern Flicker, Eastern Kingbird, Yellow-throated Vireo, American Robin, American Crow, Gray Catbird, Common Yellowthroat, Song Sparrow, Northern Cardinal, Rose-breasted Grosbeak, Baltimore Oriole, Indigo Bunting, and American Goldfinch²⁰.

The majority of the proposed sewer main will be installed within existing roadway or cleared ROWs with manicured lawns that offer relatively little habitat value. Exceptions are noted below:

- The Willard's pumping station is proposed in an upland area that is currently cleared of trees. A minimal amount of clearing is expected to be needed in this area. The pumping station will require approximately 250 square feet, and it is likely that the surrounding area and easement will become lawn.
- Approximately 610 feet of clearing will be necessary to install the proposed sewer main from the western side of Rosal's Apartments (parcel 21) and behind the former Grand Union plaza (parcel 36) to Professional Park Road. Approximately 73 feet of this distance will cross a delineated wetland. It is likely that this area will be maintained as brush or lawn in the future.
- Approximately 1,040 feet of sewer main will be installed across parcels 27 and 28. This area is already largely cleared due to the existing utility easement and tree farm use such that only approximately 250 linear feet of trees would need to be cleared. The remainder could be mowed to facilitate construction and would likely continue to be maintained as lawn or brush in the future provided the existing land use continues.

Fuss & O'Neill, October 2011, *Final Environmental Impact Statement – North Hillside Road Extension, Mansfield, Connecticut*, United States Department of Transportation, Federal Highway Administration, Connecticut Department of Transportation, and the University of Connecticut.²⁰

- The area proposed for the Jensen's pumping station would need to be cleared. The pumping station will likely require approximately 400 square feet, and it is likely that the surrounding area and easement will become lawn.
- Approximately 120 feet of clearing would be necessary to install the proposed force main between Grandview Circle in Jensen's Rolling Hills Community and the existing utility easement leading from Jensen's to the terminus of the project at Discovery Drive. This area would likely be maintained as lawn or brush.

3.10.2 Inland Wetlands and Watercourses

The CTDEEP has prepared general definitions of the types of wetland soils on its website. These are reprinted below:

- Alluvial and Floodplain soils occur along watercourses occupying nearly all level areas subject to periodic flooding. Such material can be composed of clay, silt, sand, or gravel. These soils range from being excessively drained to very poorly drained and, as such, some floodplain soils can be dry most of the year.
- Poorly drained soils occur where the water table is at or just below the ground surface usually during the late fall through early spring. The nearby landscape is typically nearly level or gently sloping.
- Very poorly drained soils generally occur on level land or in depressions. The water table lies at or above the surface during most of the growing season. Most marshes and bogs are located above these soils.

Soil/wetland scientists conducted field delineation of wetlands along the pipeline route. Wetlands were flagged by Weston & Sampson or its subconsultants between 2011 and 2014 to support preliminary project design.

Milone & MacBroom, Inc. conducted field reconnaissance of wetlands and watercourses in 2011 and 2014 associated with other projects and again in April 2015 in preparation of the subject EIE. The goal of the field reconnaissance was to evaluate the types of wetlands, dominant flora, and potential fauna present in the project area. Each wetland is numbered and described in the ensuing narrative.

- Wetland #1 – Cedar Swamp Brook (right) flows under Route 195 via a series of cross culverts. The road drainage supplies additional flow to the brook. Earlier work conducted by Milone & MacBroom, Inc. in



Wetland #1 – Cedar Swamp

2011 and 2014²¹ was confirmed during the field visit on April 16, 2015. The wetlands associated with Cedar Swamp consist mostly of open meadow with emergent vegetation that has a high water table or has standing water year-round. The wetlands can be classified as palustrine emergent, seasonally flooded or saturated wetlands. The shrub-dominated areas with some trees can be classified as palustrine scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated. Dominant tree species include American elm and gray birch. The shrub layer is dominated by winterberry and multiflora rose while the herbaceous layer is dominated by cattails and tussock sedge. This wetland has the potential to provide wood turtle habitat particularly along the woodland fringes of the emergent marsh and also has characteristics that may provide habitat for the Southern bog lemming. The principal functions and values of this wetland system include groundwater discharge, flood flow alteration, high-quality wildlife habitat, warm-water fish habitat, and nutrient removal and retention. The limiting factor of this wetland is the proximity of Route 195, which inhibits wildlife migration and access.

- **Wetland #2** – Parcel 12 contains an intermittent watercourse that was flagged in the field by Weston & Sampson. It appears to collect street drainage and drain toward Cedar Swamp. This area is primarily forested wetland. Similar street drainage wetlands occur farther south on Route 195. Based on previous work conducted by Milone & MacBroom, Inc. in 2011 and 2014, this wetland can be classified as palustrine forested, broad-leaved deciduous, seasonally flooded or saturated wetlands. Dominant tree species include red maple, the shrub layer is dominated by multiflora



Wetland #2 – Roadside wetlands at Parcel 12

rose, and the herbaceous layer is dominated by sensitive fern. The principal functions and values of this roadside wetland include groundwater discharge, local wildlife habitat, and possible toxicant retention of road sand and associated pollutants. The limiting factor of this wetland is the proximity of Route 195, which limits wildlife access and provides direct stormwater runoff.

- **Wetland #3** – The pond in the rear of parcel 11 (right) is a large, shallow, warm-water impoundment. Approximately half



Wetland #3 – Impoundment on Parcel 11

²¹ Milone & MacBroom, Inc., April 2014, *Water Diversion Permit Application – Tolland-Mansfield Regional Pipeline and Interconnection: Attachment J – Soil Scientist Report*, The Connecticut Water Company, http://www.ctwater.com/en/News/Service%20Updates/~/_media/Files/UConn/CTWaterDivPermpdf.pdf

of the surrounding area has been developed (parking lots, clearings, or power line easement). The remainder of the surrounding area is wooded but considered suburban. Wetland obligate species are dominant at this pond including cattail, tussock sedge, alder, silky dogwood, and red maple. The disturbed nature of the area has encouraged colonization by invasive species such as multiflora rose and purple loosestrife. Warm-water species of fish are expected to exist in this impoundment along with common snakes, turtles, amphibians, and mammals such as muskrat and perhaps beaver. Mallard ducks and spring peepers were noted during the field visit on April 16, 2015. This impoundment drains west to its confluence with Cedar Swamp Brook.

- **Wetland #4** – The rear portion of the former Zenny's lot (parcel 16) fronting Route 195 (right) is flagged as wetland by Weston and Sampson. This wetland area appears to have both forested and scrub shrub wetlands that drain toward the pond on parcel 11 and are an extension of that wetland system. The photo shows this area after it had been cleared in January 2014. The wetlands adjacent to the road have similar characteristics as those described for Wetland #2 above based on the previous fieldwork conducted by Milone & MacBroom, Inc. in 2011 and 2014.



Wetland #4 – Recently cleared wetland area fronting Route 195

- **Wetland #5** – Parcel 3 includes an open farm pond impounded by a berm and nearby forested wetlands to the north that are not near any proposed sewer main but could be affected by secondary impacts related to development. The pond (right) is shallow and supports common reptiles, amphibians, and insects as well as some warm-water species. There is a high concentration of invasive species including multiflora rose and Japanese barberry surrounding the pond and its wooded wetland based on the field visit on April 22, 2015. The southwestern portion of the parcel fronting Route 44 has a drainage ditch that captures water draining from Route 44 and the former agricultural field on parcel 3. Such water is conveyed through a culvert to the south of Route 44 and becomes Mason Brook.



Wetland #5 – Farm Pond on Parcel 3

- **Wetland #6** – The forested wetland behind Rosal's Apartments (right) backs up to the pond on parcel 11. Road drainage from Route 44 and a forested wetland to the south of Route 44 (on parcel 32) provide intermittent flow to this wetland. Previous work conducted by Milone & MacBroom, Inc. in 2011 and 2014 near Route 44 indicated that the wetland can be classified as palustrine forested, broad-leaved deciduous, seasonally flooded or saturated wetlands. The principal functions and values of this wetland include groundwater discharge and local wildlife habitat. The limiting factor of this wetland includes the proximity to Route 44, which limits wildlife connectivity and generates direct stormwater runoff. On parcel 21, the edges of the forested wetland appear to have been filled from the development as shown on the photo from April 16, 2015. Common native species in the wetland area include red maple, ash, high bush blueberry, spice bush, and skunk cabbage. Invasive species are common along the perimeter of the wetland area. This wetland appears to flow northwest toward the pond on parcel 11. A similar wetland is located to the west of the apartment building that also drains north toward parcel 11. The proposed sewer main will be installed beneath approximately 73 feet of this wetland.



Wetland #6 – Forested edge of Rosal's Apartments

- **Wetland #7** – The forested wetland system to the west of the professional park (right) on parcel 28 includes a perennial tributary to Cedar Swamp Brook that drains from the pond on parcel 11. The dominant species along this stream corridor and in the forested wetland system include red maple, Eastern hemlock, high bush blueberry, spicebush, and skunk cabbage. The area likely provides good habitat due to the moderate size and diversity of the wetland and upland habitat. The open field to the west (parcel 27) provides an additional habitat type. Invasive species are uncommon in this area based on the field investigation conducted on April 16, 2015. The proposed sewer main will be directed beneath approximately 30 feet of this wetland that is low lying but not directly associated with the perennial tributary.



Wetland #7 – Forested wetland west of Mansfield Professional Park

- **Wetland #8** – Cedar Swamp Brook is joined by the unnamed perennial tributary on parcel 27 to form a small impoundment (right). The cleared, upland ROW and evergreen tree farm on parcel 27 provide good open field habitat for the adjoining wetlands of Cedar Swamp Brook. Based on the field visit on April 16, 2015, the wetland area includes a variety of habitat types including forested, scrub-shrub, and open water. Based on previous work conducted by Milone & MacBroom, Inc. in 2011 and 2014, the wetland system can be classified as palustrine forested, broad-leaved deciduous, seasonally flooded or saturated wetlands, or palustrine emergent, seasonally flooded or saturated wetlands by impoundment of water. The principal functions and values of the wetland include groundwater discharge, flood flow alteration, production export, warm-water fish habitat, and local wildlife habitat. The limiting factor for this wetland is the proximity of Route 44, which limits wildlife access from the south and downstream connectivity. The upland riparian corridor provides good buffering for the wetland. This highly diverse setting has the potential to support listed species such as the Eastern box turtle, wood turtle, ribbon snake, and Southern bog lemming. Common species of flora include red maple, alder, silky dogwood, high bush blueberry, button bush, skunk cabbage, and a variety of sedges, ferns, and mosses. Likely fauna includes warm-water fish; common mammals; amphibians; turtles; snakes; birds; and insects such as dragonflies, damselflies, and butterflies.



Wetland #8 – Small impoundment of Cedar Swamp Brook on Parcel 27

- **Wetland #9** – A large, diverse forested wetland exists on the western edge of parcel 30 and parcel 61. This wetland has various wetland types including forested, scrub-shrub, emergent, open water, and perennial watercourse (right). The mix of habitat types provides very good wildlife habitat including listed species. (The spotted turtle, a species of special concern, was observed here on April 22, 2015.) The habitat here could also support the Eastern box turtle and wood turtle. Vernal pool obligate species are also possible although none were observed. Common plants noted include red maple, highbush blueberry, alder, spicebush, silky dogwood, winterberry, button bush, tussock sedge, skunk cabbage, and a variety of sedges, ferns, and mosses. Invasive species are low in concentration. This area is not near any proposed sewer mains but could be impacted by secondary impacts associated with future development.



Wetland #9 – Forested wetland west of Parcel 30 and Parcel 61

- **Wetland #10** – Weston & Sampson retained Connecticut Ecosystems, LLC to delineate state and federal wetlands in the vicinity of the proposed Jensen's pumping station in November 2011. According to Connecticut Ecosystems, LLC²², the wetland in this area is a deciduous wooded swamp that is seasonally saturated. Red maple was the dominant tree, and other trees included shagbark hickory and gray birch. Shrubs included winterberry, southern arrowwood (also found in the herb layer), yellow birch, American hazelnut, coastal sweet pepperbush, and blackgum. The only plant identified in the herb layer was southern arrowwood.
- **Wetland #11** – The Town of Mansfield flagged several watercourses along the utility easement associated with the former UConn 16-inch-diameter water main. Several of the culverts related to intermittent crossings are badly eroded, overtopped, and exposed based on the field visit on April 22, 2015. The streams are tributary to Cedar Swamp Brook. None appear to have significant fishery habitat, but common stream salamanders such as the two-lined and dusky salamander likely occur here. One perennial watercourse crosses the easement via a shallow culvert. Overtopping of the culvert occurs during periods of heavy flow (right). The impounded waters upstream of the culvert provide vernal pool habitat for wood frogs and spotted salamanders. The existing easement is a cleared ROW through a mature hardwood forest of mixed oak, maple, hickory, tulip poplar, beech, birch, white pine, and Eastern hemlock trees. Hiking trails are maintained within the associated conservation area. Invasive species such as winged euonymus, Japanese barberry, and multiflora rose are present but only in low to moderate amounts. Very good wildlife habitat exists in this area due to the size of the forested tract and the mix of woodlands, clearings, and wetlands.
- **Wetland #12** – Cedar Swamp Brook is conveyed beneath Route 44 through a three-sided box culvert. The riparian wetlands upstream and downstream of this crossing are similar to those for Wetland #8 above. Recent field investigations by the Town of Mansfield indicate that installation of the proposed gravity sewer main at this culvert crossing would require significant disturbance of the roadway. Although jacking could be utilized, the jacking pits required would result in considerably more disturbance within the wetland, floodplain, and upland



Wetland #11 – Culvert and unnamed stream along utility easement



Wetland #12 – Cedar Swamp Brook at Route 44

²² Connecticut Ecosystems, LLC, January 2012, "Four Corners Area Sewers Wetland Delineation, Valley View Drive, Mansfield, CT".

review area. Preliminary discussions with the owners of the properties on parcel 54 and parcel 55 have been positive regarding acquiring an easement to cross the brook downstream of the bridge. The sewer main is proposed to be installed beneath approximately 30 feet of Cedar Swamp Brook and riparian wetlands on parcel 54 and parcel 55.

All future development within 150 feet of a wetland in Mansfield must receive approval from the Inland Wetlands Agency (IWA), including installation of the proposed sewer main. For significant projects that have the potential to cause significant impacts on a wetland, the IWA requires a more extensive application, including delineation of wetland boundaries by a soil scientist, stormwater management plans, and quantification of impacts of proposed activities on the ecological communities and function of the wetland. Direct impacts on wetlands are discussed in Section 3.10.5.

3.10.3 Species of Special Concern

A request for a Natural Diversity Data Base (NDDB) review was sent to the CTDEEP in March 2015 (Appendix B). The NDDB includes all information regarding critical biologic resources available at the time of the request. This information is a compilation of data collected over the years by the DEEP Bureau of Natural Resources and cooperating units of DEEP, private conservation groups, and the scientific community. DEEP responded by letter with a preliminary determination dated March 20, 2015 stating that no negative impacts on state-listed species are expected as a result of the proposed installation of sewer mains related to the Mansfield Four Corners Sanitary Sewer Project.

The state records indicate that extant populations of federal or state endangered, threatened, or special concern species have been located in the vicinity of the project area. Specifically, American kestrel and Savannah Sparrow are believed to be located in the woods and fields south of Route 44 on Route 195 and south of Route 44 near Route 195, and wood turtle and Southern bog lemming habitat is believed to exist in the vicinity of Cedar Swamp on Route 195²³. Other species previously identified as being located in the vicinity of the proposed UConn Technology Park include grasshopper sparrow, vesper sparrow, northern spring salamander (historical sighting), horned lark (historical sighting), and bobolink. None of these species will be impacted by the installation of the sewer collection system, which will be located in previously disturbed roadway, ROW, and developed land.

3.10.4 Fisheries

The majority of the project area is located within the Willimantic River watershed. Only a small area in the eastern proposed service area drains to the Fenton River. Each is described below relative to fisheries species.

Fenton River

The Fenton River is designated as a Class III Wild Trout Management Area by CTDEEP. While the river is dominated by blacknose dace, it provides habitat to a good diversity of species. The CTDEEP occasionally stocks brown trout and brook trout in the Fenton River.

²³ Milone & MacBroom, Inc., April 2014, *Water Diversion Permit Application – Tolland-Mansfield Regional Pipeline and Interconnection: Attachment J – Soil Scientist Report*, The Connecticut Water Company, http://www.ctwater.com/en/News/Service%20Updates/~/_media/Files/UConn/CTWaterDivPermpdf.pdf

DEEP conducted a fisheries survey in the Fenton River in July 1994 just upstream from the Fenton River Wellfield. As noted in the 2006 *Fenton River Study*, the most abundant species sampled included (listed in descending order of abundance) blacknose dace, white sucker, fallfish, and tessellated darter. Wild brook trout and brown trout were also collected but were less abundant.

Ten subreaches were delineated for the purpose of fish collection during the Fenton River Study. These subreaches ranged from just above the Fenton River Wellfield to the Fenton River's confluence with Mansfield Hollow Lake. Fish collection was performed at each location in July and August 2003. A total of 523 plots were fished during the data collection period resulting in the capture of 3,402 fish from 17 taxa. The overall fish abundance of the river between the Fenton River Wellfield and Mansfield Hollow Lake was calculated as being 1.08 fish per square meter. The most abundant species collected were blacknose dace (45.6%), brown trout (12.7%), bluegill (8.2%), fallfish (7.3%), and white sucker (7.1%).

Most recently, DEEP conducted sampling at three locations along the Fenton River on June 12, 2014. Two of the locations were in Mansfield, and one location was in Willington. The three samples yielded 17 taxa and 1,257 specimens. Stocked brown trout (35.3%), blacknose dace (10.2%), white sucker (5.3%), and bluegill (4.4%) were the most abundant species. A total of 27 wild brook trout were collected.

Willimantic River

The Willimantic River is listed as a Connecticut Trout Management Area maintained by the CTDEEP. The CTDEEP notes that the Willimantic River has a good diversity of fluvial species. The CTDEEP stocks brown trout and brook trout (*Salvelinus fontinalis*) in the Willimantic River although it is unlikely that these species reproduce in the river (Brian Murphy, CTDEEP, personal communication).

Electrofishing was conducted by the CTDEEP at two locations in the Willimantic River in July 1994. The electrofishing performed near the Willimantic River Wellfield and upstream of Depot Road in Coventry yielded a total of 1,676 specimens of 23 taxa of fish and evidenced a mix of fluvial specialist, fluvial dependent, and macrohabitat generalist species. The most abundant species collected were fallfish (25.7%), common shiner (20.0%), white sucker (18.7%), redbreast sunfish (9.4%), and smallmouth bass (8.8%). A single brown trout was collected in these samples.

CTDEEP performed a fish survey at Depot Road in Coventry, Connecticut in August 2009. Many species were conspicuously absent despite good field conditions. A total of 12 taxa and 51 specimens were sampled. The most abundant species collected were fallfish (35.3%), common shiner (23.5%), redbreast sunfish (11.7%), and chain pickerel (7.8%). A single brown trout was collected in these samples.

CTDEEP performed a fish survey at three locations along the Willimantic River on July 12, 2011. This sample collected 17 taxa and yielded 502 specimens. Fallfish (32.9%), common shiner (30.1%), white sucker (9.5%), and tessellated darter (7.7%) were the most abundant species. Four rainbow trout and three brown trout were collected.

Most recently, DEEP conducted sampling at three locations along the Willimantic River on June 27, 2014 and July 3, 2014. One of the locations was in Stafford, one was in Willington, and one was in Mansfield. The three samples yielded 16 taxa and 208 specimens. Fallfish (26.9%), red breasted sunfish (16.9%), white sucker (21.6%), and smallmouth bass (7.7%) were the most abundant species. A total of four wild brown trout were collected.

Cedar Swamp Brook

No published data is available for Cedar Swamp Brook within the project area. According to a telephone conversation with Mr. Neal Hagstrom (DEEP Fisheries Biologist) on June 17, 2015, the DEEP has not sampled Cedar Swamp Brook for several years. However, the brook is known to support cold-water species of fish from its mouth up to the swamp upstream of Route 195. This is consistent with comments received from the public at the scoping meeting indicating that trout have been caught in good numbers in the swamp. In addition, portions of Cedar Swamp Brook (particularly its tributary on parcel 11) appear to be able to support warm-water fisheries based on the field observations presented in Section 3.10.2.

3.10.5 Analysis of Direct and Indirect Impacts on Biological Resources

Vegetation and Wildlife

The proposed sewer collection system is largely proposed to occur within public roadways and developed/previously disturbed parcels and accessways. The sewer main will be installed below grade such that existing lawns can be restored, and other land can be returned to brush. Significant vegetation clearing is not required for the construction of the sewer collection system, and therefore, direct impacts on vegetation are expected to be minimal. Land surface restoration will be completed quickly following construction.

Minor and temporary disturbance of wildlife due to construction noise could occur in the vicinity of the proposed sewer main; however, Routes 195 and 44 are currently busy travelways, and construction of sewer facilities will occur in close proximity to these two transportation corridors. Silt fencing will be used to prevent amphibians from entering construction areas.

Inland Wetlands and Watercourses

The highest-quality wetlands in the proposed sewer area are Wetlands #1, #7, #8, #9, and #11. Each wetland supports a variety of habitat types and species, and each high-quality wetland has the potential to support species of special concern.

The proposed sewer project has been designed to minimize direct impacts on wetlands and watercourses. No direct impacts will occur on Wetlands #1, #2, #3, #4, #5, #8, #9, or #10. The proposed sewer main will be installed beneath Wetlands #6, #7, #11, and #12. Anticipated temporary impacts are summarized below:

- Temporary impacts on Wetland #6 include approximately 73 linear feet of direct wetland impacts and additional work within the upland review area.
- Temporary impacts on Wetland #7 include approximately 30 linear feet of direct wetland impacts and additional work within the upland review area.
- Temporary impacts on Wetland #11 will likely be avoided by utilizing the existing abandoned water main as a sleeve for the new force main, a process that will minimize the need for excavation in this area. Any required installation trenches will be installed away from wetland areas. No direct wetland impacts on Wetland #11 are expected although some construction work is likely to occur within the 150-foot upland review area.

- Temporary impacts on Wetland #12 include approximately 30 linear feet of direct wetlands impacts and additional work within the upland review area.

The total linear footage of direct wetland impact is anticipated to be 113 feet. The width of the impact area will vary based on site-specific construction needs. The total square footage of impact is estimated to be less than 5,000 square feet or 0.1 acre.

Several potential mitigation measures related to the direct wetlands impacts have been identified:

- Wetlands #6 and #7 are relatively small and likely are dry for part of the year, but Wetland #12 is a perennial stream. Construction will be timed to correlate with the summer low-flow period in order to facilitate construction access, minimize the potential impact on underlying wetland soils, and to minimize the potential impact on wetland fauna. Instream water controls will be required at Cedar Swamp Brook.
- Best management practices can be utilized to prevent the migration of sediment into nearby wetlands as discussed in Section 3.8.5 for stormwater management.
- Endangered species surveys will be conducted in these areas prior to construction. If such species are found, the Town of Mansfield will incorporate mitigation measures to protect these species.
- No permanent fill is proposed within the wetland areas. All areas will be restored to existing conditions to the extent possible.
- Bentonite clay dams installed transversely with the sewer main will prohibit the migration of groundwater along the sewer main.
- The construction sequence, location of trenching and impacts, and potential mitigation measures will be reviewed by the Inland Wetlands Agency.

Although the use of horizontal directional drilling was considered, the Town of Mansfield does not believe that this installation method will be successful for installing gravity sewer mains. This is due to the very minimal slopes required as well as the presence of boulders in the vicinity of the proposed crossings.

Future development or redevelopment will be regulated by the local review process, including the 150-foot upland review area adjacent to any wetland. Significant projects in the sewer service area will require the more extensive application process to prevent secondary impacts on wetlands and watercourses. The potential for wetland impacts is summarized in Table 3.10-1 for each identified wetland.

Species of Special Concern

The existing NDDB review is valid through March 20, 2016. Construction of the proposed sewer mains is not expected to impact endangered, threatened, or special concern species. Potential impacts related to future development will need to be addressed as part of local permitting efforts.

**TABLE 3.10-1
Potential Impacts on Wetlands and Watercourses**

Wetland Number	Location	Habitat Quality	Direct Impacts?	Construction and Future Development Review
1	Cedar Swamp	High	No	Local permitting
2	Parcel 12	Low	No	Local permitting
3	Pond behind parcel 11	Moderate	No	Local permitting
4	Parcel 16 at Route 195	Moderate	No	Local permitting
5	Parcel 3	Moderate	No	Local permitting
6	Parcel 21 (Rosal's Apartments)	Moderate	Yes, 73 linear feet	Local permitting
7	Parcel 28	High	Yes, 30 linear feet	Local permitting
8	Parcel 27 and Cedar Swamp Brook crossing at Route 44	High	No	Local permitting
9	Parcel 30 and parcel 61	High	No	Local permitting
10	South of proposed Jensen's pumping station	Moderate	No	Local permitting
11	Utility easement between Jensen's and Discovery Drive	High	No	Local permitting
12	Cedar Swamp Brook at Route 44	Moderate	Yes, 30 linear feet	Local permitting

Fisheries

No construction work is proposed to occur in any stream in the project area that would impact fisheries resources. The only major stream crossing will occur beneath Cedar Swamp Brook as discussed above. Direct impacts on fisheries resources are believed to be minimal. Potential long-term impacts on fisheries as a result of stormwater runoff due to secondary impacts related to future growth are addressed in Section 3.8.5.

3.11 Physical Environment

3.11.1 Topography

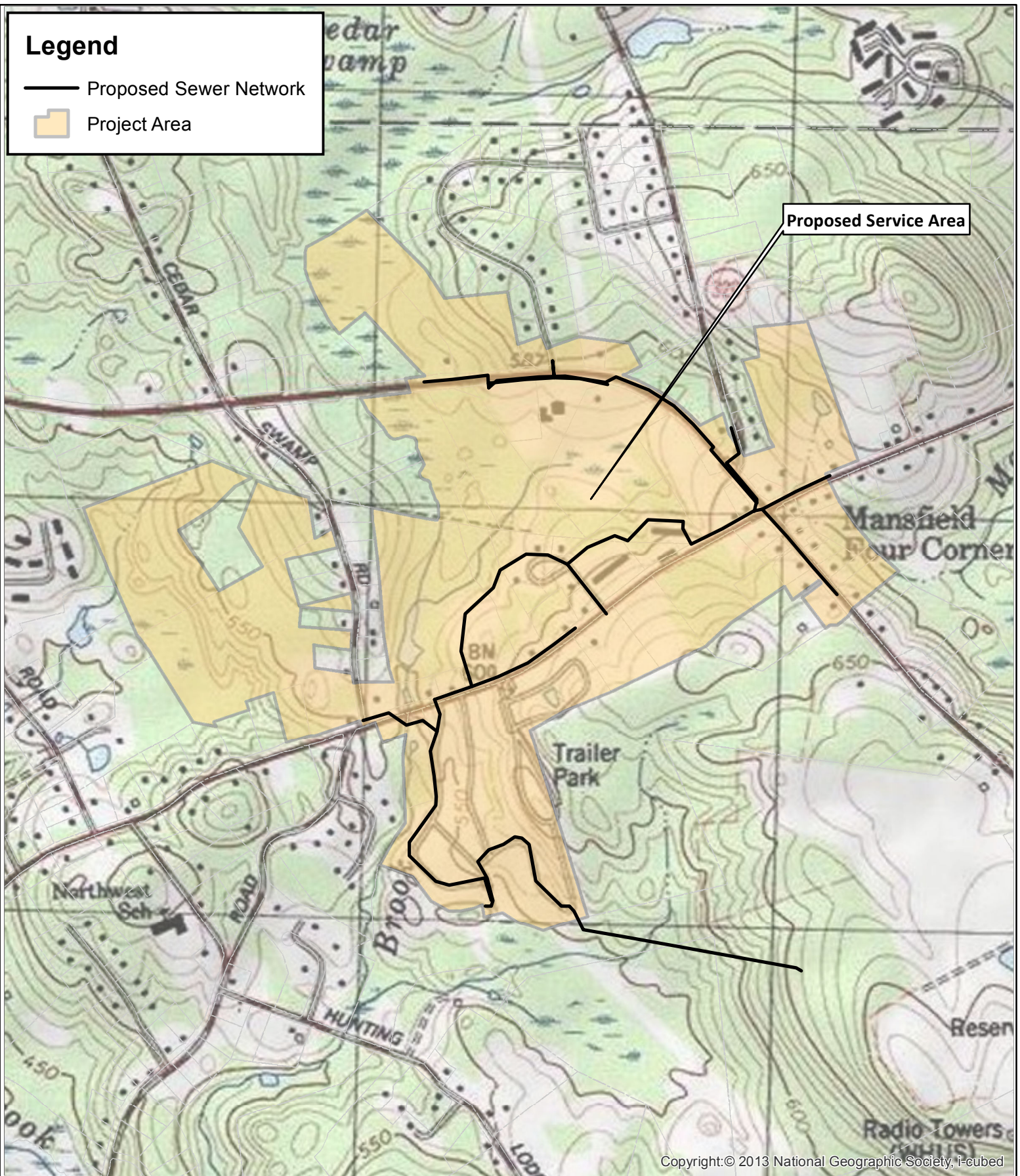
The topography of the study area is typical of the eastern highlands in Connecticut, with gently rolling hills draining into established stream valleys. A topographic map of the project area is presented in Figure 3.11-1. Elevations range from approximately 540 feet at Cedar Swamp Brook on Route 44 to approximately 680 feet on parcel 3 northeast of the intersection of Route 195 and Route 44. Slopes in the project area are generally gentle to moderate in nature. The steepest slopes that coincide with the proposed sewer mains lie within the utility easement that extends between Jensen's and the terminus of the proposed sewer project at Discovery Drive.

3.11.2 Bedrock Geology

According to the 1985 *Bedrock Geologic Map of Connecticut* digitized by the CTDEEP, the Four Corners project area is underlain by three bedrock formations consisting of relatively hard metamorphic rock:

Legend

- Proposed Sewer Network
- Project Area



Copyright: © 2013 National Geographic Society, i-cubed

SOURCE(S):
USA USGS Topo Map
UCONN MAGIC Census Designated Places Layer

Figure 3.11-1: Topography

LOCATION:
Mansfield, CT



Mansfield Four Corners Sewer Project

MXD: Y:\2111-11\GIS\Maps\LocationMap.mxd

Map By: JEP
MMI#: 2111-11
Original: 1/28/2016
Revision: 3/3/2015
Scale: 1 inch = 1,000 feet

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- The northern and northwestern portions of the project area are underlain by Brimfield Schist, defined as gray, rusty-weathering, medium- to coarse-grained interlayered schist and gneiss.
- The southern, central, and eastern portions of the project site are underlain by the Upper Member of the Bigelow Brook Formation, defined as gray, rusty-weathering, and medium-grained schist.
- The area where the 10-inch-diameter force main is proposed to be installed between Jensen's and Discovery Drive is underlain by the Lower Member of the Bigelow Brook Formation, defined as gray, medium-grained granofels.

The three formations are divided by two mapped fault lines as shown on Figure 3.11-2. The northern fault is believed to be a thrust fault that is likely mostly Devonian or Ordovician in origin. The southern fault is not defined on the 1985 map. Both faults are believed to be inactive.

Areas where bedrock is close to the surface ("ledge") are of particular interest to this analysis since such areas can inhibit the installation of sewer mains. Weston & Sampson conducted a boring program for the proposed sewer project in the vicinity of the proposed sewer mains in July 2014. Results are presented on the review plan set dated August 22, 2014 included as Appendix C. The presence of shallow ledge was noted in front of Willard's and Holiday Mall on Route 195, on parcel 27 north of Route 44, and along Old Wood Road within Jensen's Rolling Hills Community. Construction impacts related to this shallow ledge are discussed in Section 3.11.4 and 3.13.2.

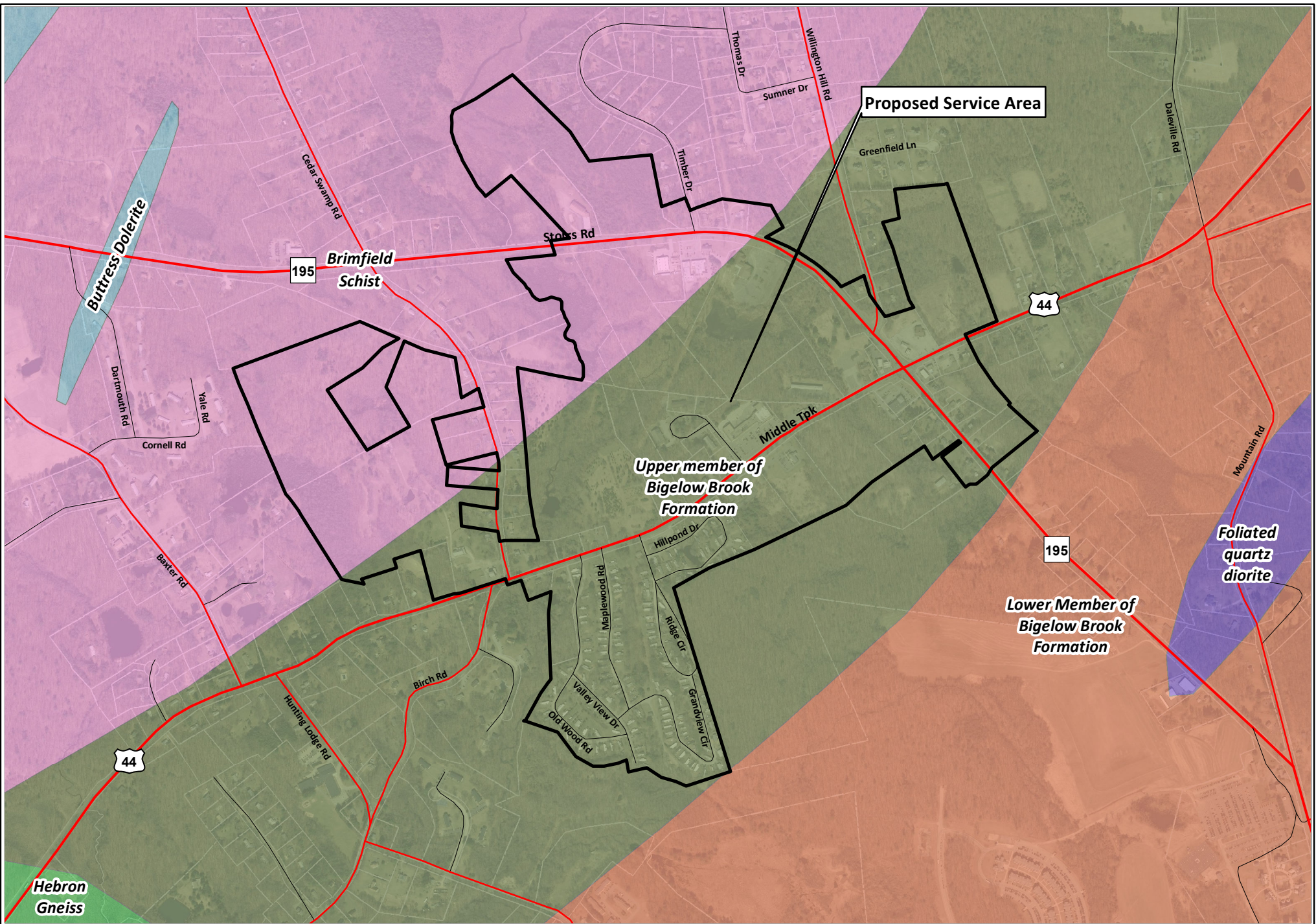
3.11.3 Surficial Geology

Figure 3.11-3 depicts surficial geology in the Four Corners area. The project area is largely comprised of till and thick till, with localized areas of sand and gravel and swamp surrounding Cedar Swamp Brook and its tributaries and a small tributary to Nelson Brook. Soils in the study area have been classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) to be Canton and Charlton soils, Catden and Freetown soils, Charlton-Chatfield complex, Gloucester gravelly sandy loam, Hinckley gravelly sandy loam, Paxton and Montauk fine sandy loam, Ridgebury Leicester and Whitman soils (extremely stony), Sudbury sandy loam, Sutton fine sandy loam, Timakwa and Natchaug soils, Udorthents-Pits complex, Udorthents-Urban land complex, and Woodbridge fine sandy loam. The NRCS Web Soil Survey²⁴ indicates that soils in each of these groups have been rated as having "very limited" suitability for septic tank absorption fields. The "very limited" classification indicates that the soil has one or more features that are unfavorable for the specified use. These limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance costs can be expected. The Web Soil Survey report is attached as Appendix D.

The USDA further presents data that suggest that soils in the proposed sewer service area are "somewhat limited" or "very limited" relative to the following:

- the capacity of soils to convey surface and subsurface water and on the properties that affect water quality
- the properties that affect excavation and construction costs related to subsurface water management

²⁴ <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>



SOURCE(S):
 CT ECO 2012 Orthoimagery
 CT DEEP Bedrock Geology Layer,
 Parcels, and Roads



Figure 3.11-2: Bedrock Geology

Mansfield Four Corners Sanitary Sewer EIE

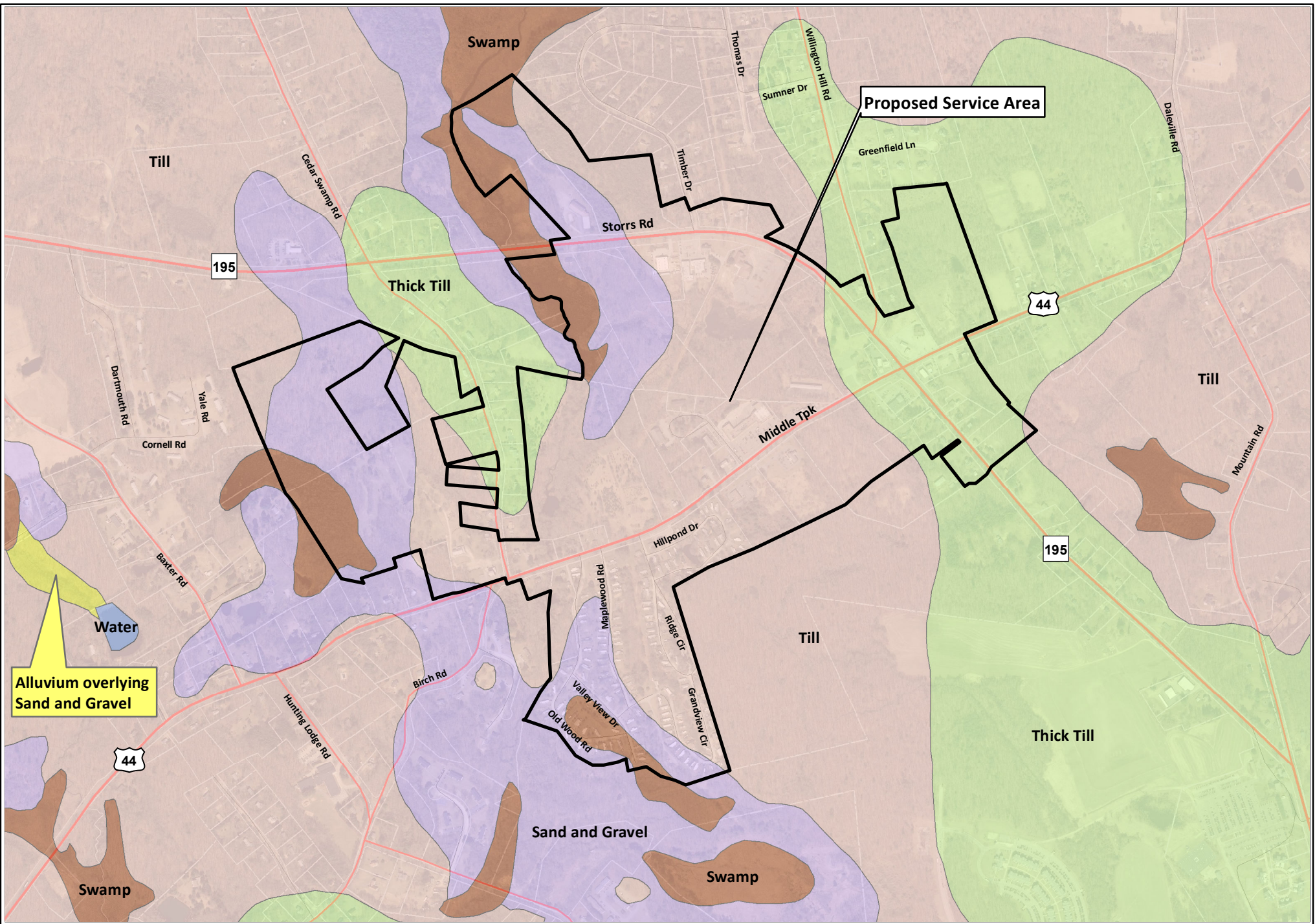
LOCATION: Mansfield, CT

Map By: CMP
 MMI#: 2111-11
 Original: 6/30/2015
 Revision: XX/XX/201X
 Scale: 1 in = 1,000 ft



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MXD: V:\2111-11\GIS\Maps\Bedrock Geology.mxd



SOURCE(S):
 CT ECO 2012 Orthoimagery
 CT DEEP Quaternary Geology,
 Parcels, and Roads



Figure 3.11-3: Surficial Geology

Mansfield Four Corners Sanitary Sewer EIE

LOCATION: Mansfield, CT

Map By: CMP
MMI#: 2111-11
Original: 6/30/2015
Revision: XX/XX/201X
Scale: 1 in = 1,000 ft



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MXD: V:\2111-11\GIS\Maps\Surficial Geology.mxd

- the properties that affect subsurface water management system performance
- the factors that affect the capacity of the soil to convey surface water across the landscape
- The CTDEEP has prepared a GIS layer that documents prime farmland soils and statewide important farmland soils.
- Prime farmland soils are located on a majority of the parcels within the proposed sewer service area. Parcels with significant coverage of such soils in areas that are not currently developed include parcels 3, 11, 12, 13, 29, 32, 50, 57, and 64. Of this group, only parcels 3 and 57 appear to have recently been used for agriculture.
- Statewide important farmland soils exist on parcels 1, 9, 12, 12, 14, and 27. Of this group, parcels 1 and 13 are undeveloped, and parcel 27 is currently used for agriculture.

The DEEP has also prepared GIS layers denoting soil suitability for a variety of stormwater management techniques including pervious paving, wet extended detention basins, and dry detention basins.

- The parcels "most suitable" for the use of pervious pavement include parcels 1, 13, 19, 27, 28, 32, 33, 47, 49, 50, and 64. Other parcels in the proposed sewer service area are either considered "least suitable" for pervious paving or were not rated.
- The "most suitable" parcels for wet extended detention basins include parcels 3, 4, 5, 6, 11, 13, 21, 29, 32, 33, 35, 38, 39, 40, 41, 42, 44, 45, 46, 57, 58, 59, and 60. Other parcels in the proposed sewer service area were considered "least suitable" or were not rated.
- The "most suitable" parcels for dry detention basins include parcels 3, 4, 5, 6, 11, 13, 21, 32, 33, 35, 38, 39, 40, 41, 42, 44, 45, 46, 57, 58, 59, and 60. Portions of parcels 32 and 39 were ranked as "somewhat suitable." Other parcels in the proposed sewer service area were considered "least suitable" or were not rated.

Portions of the proposed sewer main project pass through areas where surficial materials or soils are susceptible to erosion, including along Route 195 near Willard's, between Professional Park Road and Route 44 where the sewer main will be installed in easements, Route 44 near Jensen's Rolling Hills Community, within Jensen's Rolling Hills Community, and along the utility easement between Jensen's and the terminus of the project at Discovery Drive. Appropriate measures will be taken during construction to prevent erosion in the construction area.

3.11.4 Analysis of Direct and Indirect Impacts on the Physical Environment

No changes in topography will occur as a result of the proposed sewer collection system. Steep slopes will be encountered during construction, specifically in the area between Jensen's Rolling Hills Community and the terminus of the project at Discovery Drive. The proposed construction strategy is to install the proposed 10-inch-diameter HDPE force main – to the maximum extent practical – inside of the existing UConn 16-inch-diameter water main. The UConn 16-inch water main is currently still in use but is scheduled for replacement in fall 2015 and will therefore be obsolete by the time the sewer project goes to construction. The HDPE force main will be pulled through the old water main toward the vicinity of the proposed Jensen's pumping station such that the elevation difference will be an

advantage to the installation. Based on this construction method, installation trenches are expected to be minimized along much of this portion of the proposed sewer project, and no impacts on steep slopes or erosion-susceptible surficial materials or soils are anticipated in this area. If the 16-inch water main is found to be unusable following its decommissioning, alternative means of installing the water main will need to be reviewed including conventional construction methods.

Construction in areas of shallow ledge may create rock and soil fragments that may not be able to be reused within the trench. This is discussed in Section 3.14.3.

The proposed sewer main project is expected to require excavation of bedrock in certain areas. Construction methods for trenching bedrock typically include blasting with small-scale explosives and/or ripping with heavy equipment. Jackhammers or other handheld equipment may also be used to break up small areas of rock. The area of effect of such methods is typically constrained to the immediate project area such that widespread impacts on the bedrock are not realized.

Blasting in Connecticut is regulated under Section 29-349 of the CGS and Section 29-349 of the RCSA. Blasting operations are required to use every reasonable precaution to ensure the safety of the general public and workers, including the use of matting (to prevent fly rock), warning signals, flags, and barricades. Where the possibility exists of potential property damage, seismographs can be required by the Office of the State Fire Marshal. According to the Connecticut Department of Construction Services²⁵, seismographs are required by most insurance companies. Blasters must notify utilities through Call Before You Dig (CBYD) and the local fire marshal at least 24 hours in advance of blasting (more time is necessary for CBYD).

RCSA Section 29-349-220 requires that blasting operations be conducted in accordance with nationally recognized good practices. This includes the use of preblast surveys. The maximum ground vibration level is set at 2 inches per second at 40 hertz, and the air blast safe level is 129 decibels (dB) with a maximum at 133 dB.

Contractor specifications for construction of the sewer collection system will indicate that blasting must be conducted in accordance with all state regulations. If blasting is necessary, a preblast inspection and survey will be required as well as a postblast survey. In accordance with the suggestion by the International Society of Explosives Engineers, retention of a hydrologist by the blasting contractor will be required to participate in the survey of nearby existing private wells. Wells that are located in close proximity to blasting will be tested prior to the blasting to provide documentation in case of a change in water quality.

Construction will proceed in accordance with best management practices for sediment and erosion control. Although surficial materials and soils susceptible to erosion will be disturbed as part of this project, these disturbances will be localized and will be minimal. Secondary impacts on areas with surficial materials and soils susceptible to erosion will be considered by the Mansfield Planning & Zoning and Conservation Commissions when individual projects are proposed.

The sewer project will not have significant direct impacts on prime farmland or statewide important farmland soils. Off-road areas where the sewer main will be installed do not traverse such soils in active agricultural areas. Secondary impacts on prime farmland soils and statewide important farmland soils

²⁵ http://www.ct.gov/dcs/lib/dcs/office_of_education_and_data_management_files/sp_11_explosives.pdf

are possible as these soils occur on lands with moderate and high development and redevelopment potential. In terms of areas actively used for agriculture, only portions of parcels 27 and 57 would be affected. Parcel 3 appears to have formerly been used for agriculture, and the associated fields could be developed. Other parcels with significant prime farmland soils or statewide important farmland soils are not currently used for agriculture. As such, significant impacts are not anticipated.

Several parcels are considered to have areas that are suitable for a variety of stormwater management configurations, including permeable paving and wet and dry detention basins. These development techniques should be considered by future developers as part of the overall program to limit the impact of stormwater runoff from development sites. The Town of Mansfield will encourage developers to consider the soil suitability for such systems as part of new development in the area.

3.12 Air Quality

The Federal Clean Air Act was passed by Congress in 1970 and signed into law by former President Nixon. It was last amended in 1990. This act requires EPA to ensure that all Americans have safe air to breathe by (1) reviewing the public health standards for six major air pollutants every 5 years; (2) updating the standards as necessary to "protect the public health with an adequate margin of safety" based on the most recent studies available; and (3) considering only the public health, not the cost of compliance, when setting air quality standards.

In an effort to achieve the Clean Air Act goals, EPA promulgated primary and secondary national ambient air quality standards (NAAQS) in 1971 for six pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), and particulate matter smaller than 10 micrometers in diameter (PM₁₀). Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The NAAQS pollutants and standards as updated through September 2013 are presented in Table 3.12-1 on the following page.

3.12.1 Existing Environment

Connecticut has adopted the national standards above and also a State Implementation Plan to attain and maintain these standards. The entire state is currently in attainment for CO, NO₂, Pb, SO₂, and PM_{2.5}. The DEEP notes that Connecticut typically exceeds the ozone standard on 20 days per year, which is an improvement over the early 1980s when Connecticut exceeded the revised standard on more than 100 days each year.

The document *Conservation & Development Policies: The Plan for Connecticut* recognizes that protecting and ensuring the integrity of environmental assets such as air quality are critical to public health and safety. State agency policies relative to air quality are outlined under Growth Management Principle #5. A list of the policies and strategies for air quality from the plan follows:

- Attain NAAQS in accordance with the State Implementation Plan with an emphasis on cost-effective strategies and effective enforcement of regulated sources.
- Reduce CO₂ emissions in the state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan.

**TABLE 3.12-1
National Ambient Air Quality Standards**

Pollutant	Primary/ Secondary	Level	Averaging Time	Form
Carbon Monoxide	Primary	9 ppm (10 mg/m ³)	8-hour	Not to be exceeded more than once per year
		35 ppm (40 mg/m ³)	1-hour	
Lead	Primary and Secondary	0.15 µg/m ³	Rolling 3-Month Quarterly Average	Not to be exceeded
Nitrogen Dioxide	Primary	100 ppb	1-hour	98 th percentile, averaged over 3 years
	Primary and Secondary	53 ppb ⁽¹⁾	Annual	Annual mean
Particulate Matter (PM ₁₀)	Primary and Secondary	150 µg/m ³	24-hour	Not to be exceeded more than once per year on average over 3 years
Particulate Matter (PM _{2.5})	Primary	12 µg/m ³	Annual	Annual mean, averaged over 3 years
	Secondary	15 µg/m ³	Annual	Annual mean, averaged over 3 years
	Primary and Secondary	35 µg/m ³	24-hour	98 th percentile, averaged over 3 years
Ozone	Primary and Secondary	0.075 ppm ⁽²⁾	8-hour	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Sulfur Dioxide	Primary	75 ppb ⁽¹¹⁾	1-hour	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	0.5 ppm	3-hour	Not to be exceeded more than once per year

Notes: ppb = parts per billion; ppm = parts per million; mg/m = milligrams per meter; µg/m = micrograms per meter

¹ The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

² The 1997 standard of 0.08 ppm (annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In some areas, the prior 1-hour standard of 0.12 ppm is still in effect ("anti-backsliding").

Source: DEEP Bureau of Air Management NAAQS (2010)

- Promote transportation alternatives to the automobile such as bicycling, walking, and public transportation as a means to reduce air pollution.
- Emphasize pollution prevention as a means of maintaining a clean and healthful environment.
- Proactively address climate change adaptation strategies to manage the public health and safety risks associated with the potential increased frequency and/or severity of drought conditions, including impacts to air quality.

The plan suggests using the number of "Good Air Days" as a performance metric for measuring progress through 2018.

3.12.2 Construction-Related Activities

Minor, temporary construction impacts on air quality are expected and unavoidable. Overall, these emissions are expected to have a minimal impact on air quality. Construction activities are expected to generate fugitive dust and mobile source emissions. Such sources of dust are attributed to construction

vehicle disturbance during hauling, loading, dumping, and backhoeing. Meteorological conditions, the intensity of the activities, and the soil moisture content govern the extent to which particles will become airborne.

The use of air pollution devices on construction equipment and other forms of controls that reduce the impact from fugitive dust emissions will be utilized during this project to minimize impacts on air quality. Dust can also be mitigated by the use of regenerative air sweepers and sprinkler trucks. The proper phasing of construction will further minimize the length of time that soil remains exposed to wind and water. Activities will be conducted in accordance with proper protocols and regulations, and no washings will be directed to storm drainage.

3.12.3 Analysis of Direct and Indirect Impacts on Air Quality

Construction-related air quality impacts are expected to be minimal. Long-term secondary impacts on air quality are also expected to be minimal. The current zoning in the project area does not support land uses that are significant generators of exhaust. The sewer pumping stations will have provisions to ensure proper management of odors. Therefore, impacts on air quality related to the pumping stations will also be minimal. To the extent that future development generates increased traffic, there is potential for increased vehicular air emissions. There is also the potential for reduced vehicular-related air emissions if future development brings work, living spaces, and/or commercial uses that require less travel to work, home, and convenience shopping. In that respect, infill development may have a positive secondary benefit on air quality.

3.13 Noise

Section 22a-69 of the CGS gives the Commissioner of DEEP the authority to develop, adopt, maintain, and enforce a comprehensive statewide program of noise regulation, including the following:

- Controls on environmental noise through the regulation and restriction of the use and operation of any stationary noise source
- Ambient noise standards for stationary noise sources that, in the commissioner's judgment, are major sources of noise when measured from beyond the property line of such source
- Consultation with state and local governmental agencies when such agencies adopt and enforce codes, standards, and regulations dealing with noise insulation and abatement for any occupancy or class of occupancy
- Controls on airport and aircraft noise to the extent not preempted by federal law

Sections 22a-69-1 to 22a-69-7.4 of the RCSA set forth the statewide program of noise regulation. Class A noise zones include residential areas where human beings sleep or areas where serenity and tranquility are essential to the intended use of the land. The Class B Land Use category includes retail trade, personal business and legal services, educational institutions, government services, agricultural activities, and lands intended for such commercial or institutional uses. It also includes transportation, communications, and utilities. Class C lands include manufacturing activities, transportation facilities, warehousing, military bases, mining, agriculture, and other lands associated with production uses.

Based on these definitions, the proposed sewer project is located within and adjacent to areas of Class A and Class B noise zones, with the exception of parcel 27 (tree farming is a Class C land use for noise).

The regulations require the following:

- No person shall cause or allow the emission of impulse noise in excess of 80 dB during the night in a Class A noise zone, nor in excess of 100 dB at any time regardless of zone.
- Continuous noise within 5 decibels below the standards set for each noise zone (Table 3.13-1) shall be considered excessive.

The regulations indicate that no person in a Class B noise zone shall emit noise exceeding the levels stated in Table 3.13-1. Levels emitted in excess of values listed below are considered to be excessive noise.

**TABLE 3.13-1
Noise Zone Standards for Emitter to Designated Receptor (dBA)**

Noise Zone	C	B	A (Day)	A (Night)
A	62	55	55	45
B	62	62	55	45
C	70	66	61	51

Note: dBA = A-Weighted Decibels

3.13.1 Existing Environment

While no site-specific noise monitoring data was collected for the proposed project, site observations and existing land uses are coincident with noise levels indicated in Table 3.13-1. This is consistent with previous work conducted by Frederic R. Harris²⁶ in 1993, which indicated that the hourly equivalent noise level during the daytime (8 a.m. to 10 p.m.) at that time ranged from 48 to 54 dBA near the Jensen's Rolling Hills Community and ranged from 51 to 56 dBA near Route 195 south of Mansfield Four Corners. Nighttime levels ranged from 41 to 48 dBA and from 42 to 52 dBA at the two locations, respectively. These noise levels were generally below the allowable limits set by the DEEP regulations for daytime periods but generally higher than the A standard for the nighttime period. As such, the project area is believed to already be at or near the noise zone standard set by the CTDEEP.

3.13.2 Construction-Related Activities

It is expected that construction activities related to the installation of sewer mains and pumping stations will generate minimal noise. Mobile sources of noise (which include many types of construction equipment) are excluded from regulation by Section 22a-69-1.7(i), and construction noise is exempted from regulation by Section 22a-69-1.8(g). Nevertheless, the use of heavy construction equipment is the most common noise generator during construction activities. Construction equipment typically has instantaneous noise emission levels from 85 to 100 A-weighted decibels (dBA) at a 50-foot distance. However, the noise is typically intermittent such that the average dBA is consistent with the values in Table 3.13-1.

²⁶ Fuss & O'Neill, October 2011, *Final Environmental Impact Statement – North Hillside Road Extension, Mansfield, Connecticut*, United States Department of Transportation, Federal Highway Administration, Connecticut Department of Transportation, and the University of Connecticut.

In general, construction activity occurs during the daytime during regular business hours when higher sound levels are typically more tolerable to nearby homes and businesses. Due to the nature of construction activity where the use of heavy equipment can vary from location to location, it is difficult to predict the specific sound levels that will impact a particular property during construction. The highest noise levels will likely be experienced in areas where ledge must be removed, such as the area fronting Willard's and the Holiday Mall, on parcel 27, and on Old Wood Road²⁷. Overall, adverse noise impacts during construction activities will be temporary and will not persist in any one area for an extended period of time.

3.13.3 Analysis of Direct and Indirect Impacts on Noise

A temporary, localized increase in noise levels will occur during the construction period. Several mitigation measures are available to mitigate impacts during the construction period. Contractors will be required to make reasonable efforts to limit the impacts of construction noise on nearby properties, particularly with Class A noise zones (residential areas). Such efforts typically include restriction of work to daytime hours, proper maintenance of sound-muffling equipment, and advance notice of construction activities to nearby properties.

The new sewer mains and pumping stations will not result in long-term noise impacts. Underground sewer mains are not significant noise generators. Each pumping station is designed to be submersible style such that the pumps are located within an underground wetwell and submerged within the collected sewage. According to Weston & Sampson, the operation of the pumping stations will be close to inaudible from outside the station²⁸. In addition, the emergency generators at each station will be located inside the electrical/generator building and will be outfitted with critical silencers to reduce exhaust noise to extremely low levels. These generators should also be set to be exercised during weekday daytime working hours.

Based on the types of development allowed by the zoning regulations, it is unlikely that noise levels in the proposed sewer service area would be increased by 10 dBA over existing levels. All types of allowed uses are consistent with those allowed in Class A or Class B noise zones as defined by the DEEP. In addition, the Mansfield Planning and Zoning Commission is charged by Article Six, Section B(4)(c) of the Zoning Regulations to ensure that development and redevelopment are consistent with the acceptable noise levels as determined by the rules, regulations, and standards of the DEEP. Any new development will be regulated at the local level for these concerns. Therefore, the individual and cumulative impact of noise levels related to secondary impacts from the project is expected to be minimal.

3.14 Solid and Hazardous Materials

The United States Department of Transportation defines hazardous materials as "*any substance which may pose an unreasonable risk to health and safety of operating or emergency personnel, the public, and/or the environment if not properly controlled during handling, storage, manufacture, processing, packaging, use, disposal, or transportation.*" The use of hazardous and even nonhazardous materials can result in the generation of hazardous wastes that require proper disposal. Hazardous wastes are

²⁷ Based on the refusal notations on the 8-22-14 Weston & Sampson Four Corners Sanitary Sewer Project review plan set.

²⁸ Town of Mansfield, August 27, 2014, "Four Corners Sanitary Sewer Project – Questions & Answer Summary."

defined by the United States EPA as having corrosive, reactive, ignitable, or toxic characteristics that can potentially harm human health or the environment when improperly managed. Hazardous waste generation, treatment, storage, and disposal are regulated by the federal Resource Conservation and Recovery Act (RCRA).

Connecticut hazardous waste generators rely on out-of-state access to disposal capacity because increased federal regulatory requirements imposed in the mid 1980s effectively ended in-state disposal practices. Previously, industrial wastes were often directly discharged to surface impoundments adjacent to manufacturing plants or disposed of in municipal landfills that accepted such wastes. The United States EPA maintains a database of potential pollutant sources and/or generators of hazardous wastes.

3.14.1 Existing Environment

Table 3.14-1 presents a summary of known spills in the Mansfield Four Corners area. Five or six gas stations are now or were formerly located in this area, and releases of gasoline have been documented at several of these sites. Although several remediation programs have been undertaken in the immediate vicinity of the leaks, the documentation indicates that nearby properties have been affected by contamination plumes. Given the relatively small parcel sizes at some of these sites, it is believed that this gasoline may have migrated off these sites and into the project area. In addition, other surficial fuel spills are known to have occurred in the area.

Hazardous wastes are required to be disposed of properly regardless of source. The Mansfield Transfer Station accepts some hazardous wastes from residents and small businesses; others must be brought to the Household Chemical Drop-Off Facility in Willington. Larger generators must contract directly with a transport company.

The Mansfield Four Corners area is mainly a commercial and residential area lacking heavy industry. Each of these types of use generates solid waste. According to the Town of Mansfield²⁹, residential trash and recycling can either be picked up by the town collection service or self-transported to the Mansfield Transfer Station. Residential bulky waste must either be self-transported to the Mansfield Transfer Station or picked up by a private contractor. Most commercial organizations must make their own arrangements for trash and recycling disposal. While some small businesses may be able to make use of the Mansfield Transfer Station, larger entities must contract directly with a trash and recycling company.

²⁹ <http://www.mansfieldct.gov/trash>

TABLE 3.14-1
Summary of Known Contamination in Project Area

Parcel	Address	Cause	Substance of Concern	Year Reported
8	1733 Storrs Road	Motor Vehicle Accident	Motor Vehicle Fluids (One gal.)	1998
10	1725 Storrs Road	Hose Failure	Diesel Fuel (10 gallons)	2002
16	625 Middle Turnpike	Leaking UST at parcel 59	Gasoline	1989
18	1660 Storrs Road	Leaking USTs	Diesel, Gasoline	1989
18	1660 Storrs Road	Overfill	Diesel Fuel (One gallon)	2014
18	1660 Storrs Road	Overfill	Gasoline (One gallon)	2014
18	1660 Storrs Road	Overfill	Gasoline (One gallon)	2014
18	1660 Storrs Road	Overfill	Gasoline (0.25 gallons)	2015
21	611 Middle Turnpike	Leaking UST (Parcel 37)	Groundwater Contamination	2007
23	1659 Storrs Road	Leaking USTs	Gasoline	1988
23	1659 Storrs Road	Leaking UST	Gasoline	2011-12
24	650 Middle Turnpike	Leaking UST	Not Reported	Pre-2004
25	644 Middle Turnpike	Not Reported	VOCs, ETPH, Arsenic	2007
37	607 Middle Turnpike	Leaking UST	Contamination of Neighboring Supply Well	2004
56	575 Middle Turnpike	Leaking UST	Not Reported	1988
56	575 Middle Turnpike	Leaking UST	Not Reported	2012
57	1646 Storrs Road	Motor Vehicle Accident	Antifreeze (Full Radiator)	2012
59	632 Middle Turnpike	UST Failure	Gasoline (Ongoing Monitoring)	1989
59	632 Middle Turnpike	Leaking UST	Not Reported	2004
59	1645 Storrs Road	550-gallon UST Failure	No. 2 Fuel Oil	2010
60	Middle Turnpike	Leaking UST	Fuel Oil	Pre-2002

Sources: EDR Database (Appendix E), Eastern Highland Health District Files, 2008 Earth Tech Report; 2002 Town of Mansfield *Water Supply Plan*

Note: UST = underground storage tank; VOC = volatile organic compound; ETPH = extractable total petroleum hydrocarbon

3.14.2 Construction-Related Activities

The DEEP Remediation Division offered comments prior to the scoping period regarding the potential to encounter contaminated groundwater (Appendix A). The primary concern of the DEEP is that construction activities related to the sewer system will intercept groundwater and soil that may be polluted with leaded and unleaded gasoline and that dissolved or potentially free product could be encountered. The DEEP recommends that the contractor be made aware of this condition and the contractor's obligation to report certain environmental conditions in accordance with CGS Section 22a-6u. Should any utilities encounter contaminated soil during the repair or construction activities, the following procedures, as recommended by the DEEP, will be followed:

The contractor is obligated to notify the Department and DEEP's OCRSD in the event that oil, gasoline or chemicals are encountered during the installation of the sewer line (860-424-3338). However, the utility may reuse the contaminated soil in the same excavation within the same area of concern without prior approval by DEEP if:

- *Any condition that would be a significant environmental hazard as defined in CGS Section 22a-6(u) is reported by the utility and that the location is identified on a map submitted to the DEEP Remediation Division.*
- *Any excess contaminated materials are disposed of in accordance with solid and hazardous waste regulations as appropriate.*
- *The upper 1 foot of the excavation is filled with clean fill materials or paved.*

This applies to cases where:

- *Contaminated soils/waste are encountered on property not owned by the utility, and*
- *The utility did not create the contamination.*

These conditions and procedures will be included in the construction documents, and the selected contractor will be informed of said procedures. All of the above will ensure that any pollution discovered during the project is properly addressed and that the workers encountering said pollution are properly protected.

3.14.3 Analysis of Direct and Indirect Impacts on Solid and Hazardous Materials

No significant impacts on solid or hazardous materials are expected as a result of the proposed sewer project. Future development associated with the proposed sewer project would result in increased generation of solid waste. Depending on the types of businesses, an increase in the amount of hazardous waste is also possible. As waste is only temporarily stored at the Mansfield Transfer Station, minimal impacts on this facility are expected.

Construction of the proposed sewer system is expected to generate a small amount of solid waste from unrecyclable construction materials, asphalt scraps, and any leftover soil and rock that are replaced by bedding material within the trenches. Such solid waste will be disposed of by the contractor in accordance with applicable laws and regulations.

Finally, contingency measures have been identified in the event contaminated groundwater is encountered during construction.



4.0 IMPACT ANALYSIS SUMMARY

This section summarizes the unavoidable adverse impacts associated with the proposed sanitary sewer project, the irreversible and irretrievable commitment of resources that will occur, and proposed mitigation measures to reduce impacts associated with the construction and operational phases of the project.

4.1 Unavoidable Adverse Environmental Impacts

Although a goal of this project from the start has been environmental impact avoidance, certain adverse impacts are unavoidable. These are predominantly in the category of short-term construction-related impacts and additional long-term use of utilities and services. Soil erosion and sedimentation control measures have also been identified as well as proper construction management techniques. The following specific unavoidable environmental impacts have been identified for this project.

- Utilities and Services: The proposed project will result in an increase in utility usage, namely increased use of the UConn WPCF. Long-term development in the Four Corners area will also rely upon utilities, including water, sewer, electricity, and gas (if and when it becomes available in the proposed sewer district).
- Air Quality: Construction activities may result in short-term impacts on ambient air quality due to direct emissions from construction equipment and fugitive dust emissions. These impacts are temporary and will affect only the immediate vicinity of construction. Emissions from project-related construction equipment and trucks are expected to be insignificant with respect to compliance with the NAAQS. A number of mitigation measures have been proposed to offset these impacts. Secondary impacts may also occur from future increases in traffic although secondary benefits may offset any increases.
- Noise: Construction equipment associated with installation of the sewer collection system may result in temporary increases in noise levels in the immediate area of construction. A number of mitigation measures have been proposed in an effort to offset these impacts.
- Traffic Disruption: A certain degree of additional truck and equipment use and access will be necessary during construction, which is unavoidable. Additionally, traffic disruption will occur to accommodate construction of the sewer collection system. Mitigation measures have been proposed in an effort to offset these impacts.

4.2 Irreversible and Irretrievable Commitment of Resources

The implementation of this project will consume nonrenewable resources during the construction of the sewer collection system (i.e., construction supplies, fuel, etc.). Since these resources cannot be reused, they are considered to be irreversibly and irretrievably committed. Additionally, the irreversible and irretrievable expenditure of approximately \$9M is expected for the construction of the proposed sewer collection system.

4.3 Cumulative Impacts

CEPA regulations require that the sponsoring agency for a project consider the cumulative impacts of its action. Cumulative impacts are those that result from the incremental impact of the proposed action when added to other past, present, or reasonably foreseeable future actions. Potential cumulative impacts associated with the proposed project include the following:

- *Sewage Discharge and Treatment Needs*: The proposed action has the potential to result in an additional 0.187mgd of sewage generation in the Four Corners area based on a conservative analysis of secondary growth assuming full buildout conditions for the 20-year planning period. This demand for sewage treatment will not be realized all at once but likely over years or even decades. Subtracting existing discharges to the treatment plant, plus the projected Four Corners development and all other known planned projects in Mansfield, results in 0.71 mgd of treatment plant capacity remaining in the UConn WPCF. As developments are realized, UConn may need to evaluate the replacement of certain sections of existing sewer main on Discovery Drive.
- *Stormwater*: Direct impacts on stormwater associated with the construction and operation of the sewage collection system will have a negligible effect on stormwater runoff and on flooding conditions. Stormwater runoff will be generated in the future associated with secondary growth in the Four Corners area, growth that is one of the goals of the project. The majority of increased stormwater runoff will occur on existing vacant parcels although some developed parcels could also be redeveloped into uses with greater lot coverage. Many of the existing developed areas are unlikely to change the amount of impervious surface since much of the parcel is already impervious.
- *Groundwater*: The proposed sewer project is expected to have a long-term beneficial impact on local surface water quality through the reduction of untreated wastewater discharges from individual septic system failures and their associated bacterial and nutrient loadings. Connecting to the community sewer system would eliminate the risk of surface discharges due to septic system failures.
- *Traffic*: The proposed project is likely to foster additional and/or a higher density of development within the sewer service area related to future development. Individual proposals must be analyzed for specific traffic generation. Review and approval by the Mansfield Planning & Zoning Commission will be required. Any increases in traffic volumes will require on-site and off-site analysis and, if appropriate, mitigation strategies such that acceptable levels of service are maintained.

4.4 Mitigation Opportunities That Offset Adverse Environmental Impacts

Throughout the development of this project, attempts have been made to avoid impacts. In instances where impacts were unavoidable, mitigation measures have been sought. The following mitigation measures have been identified to reduce or offset potential adverse impacts associated with the proposed project.

Order of Construction Sequence – The final design will consider beginning at the Jensen's pumping station, with force main work proceeding both toward Discovery Drive (and the connection to the UConn sewer system) and collection system work proceeding toward Route 44 and beyond (refer to the discussion in Section 2.8).

Secondary Growth Related to Availability of Sewer Service – Secondary growth related to the proposed sewer project is both expected and encouraged through town planning documents and is integral to the project purpose and need. Site-specific issues related to development and redevelopment will be mitigated through local permitting processes. (Refer to the discussion in Section 3.1.6).

Construction-Related Impacts – Construction phasing will be designed to minimize disruption to existing businesses although some disruption will be unavoidable. This will ensure that at least one access to a property remains open at all times, or coordinating with a property owner a specific time when access to the property will not be possible. In the latter case, such times will be minimized to the extent possible. (Refer to the discussion in Section 3.2.5).

Monetary Impacts Related to Sewer Assessment – Prior to levying assessments, the Town of Mansfield will conduct a benefit-cost analysis for each property to determine the maximum assessment that could be applied to each property such that the property may still receive a benefit from sewer service. (Refer to discussion in Section 3.2.5). The cost of obtaining easements will offset some of the assessment cost for certain property owners.

Aesthetics Mitigation Opportunities – The various provisions and requirements within the Mansfield Zoning Regulations and the ongoing update to these regulations, including design guidelines for Historic Villages and the Mansfield Four Corners area, will help to ensure that development and redevelopment are consistent with established standards for aesthetics. As envisioned in the 2006 POCD and *Mansfield Tomorrow*, individual projects will be considered with neighborhood aesthetics in mind (Refer to discussion in Section 3.4.3).

Mitigation Opportunities for Public Water Supply – Future public water service connections will be limited to serving intensities envisioned in the 2006 POCD. The agreement between the Town of Mansfield and CWC commits to the establishment of a Water System Advisory Committee to oversee operation of the local system with participation by CWC, UConn, and town staff. It is expected that CWC and UConn will coordinate with the town to facilitate billing; this may occur under a separate future three-way agreement. Several DPH guidelines, including "*Water Main Design and Construction Guidelines*" and "*General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area*" will be incorporated into the construction documents.

Mitigation Opportunities for all Public Utilities and Services – Coordination will continue between the town and local utilities relative to existing and proposed utility lines and mains in the project area. A formal CBYD markout will be completed prior to beginning construction to ensure that underground utilities are not impacted by the project.

Stormwater Management Mitigation Opportunities – New development and redevelopment projects will be subject to modern-day stormwater management requirements. Redevelopment projects have the potential to improve stormwater hydraulics (i.e., peak runoff rates) as well as stormwater quality in comparison to the development standards of 40 or more years ago when these sites were initially developed. For both development and redevelopment projects, use of LID techniques will be encouraged through the planning and zoning review process, and protection of wetlands from stormwater runoff will be managed through the wetland review process for those projects located within the 150-foot upland review area.

Air Quality Mitigation Opportunities – Numerous controls are proposed for minimizing short-term impacts on air quality from fugitive dust and other pollutant emissions. The following mitigation measures have been identified for reducing the length of time that soils are exposed, off-site tracking, and vehicle and equipment emissions:

1. Construction will be properly phased to minimize the length of time that soils are exposed before final materials are placed and landscaping is completed.
2. Exposed earth will be stabilized with grass, pavement, or other cover as early as possible.
3. Water or wetting agents will be used on exposed soil or gravel areas.
4. Stockpiled material will be covered, shielded, or stabilized as necessary.
5. Periodic sweeping of the construction site and driveway will be performed.
6. Truck tires and equipment leaving the construction site will be periodically cleaned.
7. Portable generators, on-site machinery, and vehicles will be properly maintained.
8. Consideration will be given to using construction equipment with air pollution control devices and/or use of "clean" fuels including ultra-low sulfur diesel fuel (15 ppm sulfur), compressed natural gas or emulsified fuels (e.g., Purinox, approved by the California Air Resources Board).
9. Anti-idling regulations will be followed.

Noise Mitigation Opportunities – The project is not expected to result in significant noise impacts. As such, mitigation measures are not proposed as part of the project. With respect to noise generated during construction, noise abatement measures included in project construction specifications may include:

1. Properly functioning muffler devices will be installed and maintained on construction equipment.
2. Construction will comply with the Town of Mansfield and State of Connecticut noise performance standards.

Construction-Related Mitigation Opportunities – The following additional measures will be taken to mitigate potential short-term, localized construction-related impacts:

1. Major excavation is not an element of this project. Disposal of unusable debris and soils will proceed in accordance with pertinent local, state, and federal regulations.
2. Potential construction-related water quality and runoff impacts will be mitigated through the proposed stormwater management plan and erosion control plan. Construction-related erosion controls will be designed and installed in accordance with The Connecticut Council on Soil and Water Conservation *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* to protect nearby wetlands and watercourses.

3. Provisions for safety and security will be reflected in the project specifications. Provisions for fencing, lighting, and other safety controls will be included in the project design.

4.5 Certificates, Permits, Approvals

The proposed sewer project will be subject to environmental certificates, permits, and approvals. Table 4.5-1 is a listing of potentially required permits and approvals. Additional permits or approvals may be identified by review agencies during the design process.

TABLE 4.5-1
List of Potentially Required Construction and Operational Permits

Permit/Approval	Reviewing Authority
Wastewater Discharge Approval	University of Connecticut
Stormwater Construction Permit	Department of Energy & Environmental Protection
Construction Dewatering Permit	Department of Energy & Environmental Protection
DOT Encroachment Permit	Department of Transportation
Inland Wetlands Permit	Mansfield Inland Wetlands Agency
Flood Management Certification	Department of Energy & Environmental Protection
Planning & Zoning Permit (Pumping Stations)	Mansfield Planning & Zoning Commission

4.6 Project Costs and Benefits

The total project cost has been estimated by the design engineer to be \$9 million, as outlined in Table 4.6-1. State funding for this project is estimated at \$3 million through a grant-in-aid to be administered through the CTDEEP.

TABLE 4.6-1
Anticipated Cost of Project¹

Item	Estimated Cost
Sanitary Sewer Infrastructure	\$1,620,000
Earthwork	\$1,110,000
Pavement Replacement	\$1,800,000
Pumping Stations and Pressurized Piping	\$2,260,000
Environmental, Traffic Control & Restoration	\$280,000
Engineering & Mobilization	\$990,000
Contingency	\$940,000
TOTAL CONSTRUCTION COST	\$9,000,000

¹Weston & Sampson, Inc., 2014

In addition to construction costs, the town will incur financing costs related to the issuance of bonds for the project. Such costs are based on the total amount bonded, interest rates at the time of bond issuance, and the length of the bond term. Issuance of a \$9.0M, 20-year bond at 3% interest would result in a finance cost of \$1.97 million.

In November 2014, a referendum was passed in the Town of Mansfield authorizing the town to undertake the Four Corners sanitary sewer project at an estimated cost of \$9 million and to borrow that

amount. The resolution further states that the town anticipates receiving a grant from the state in the amount of \$3 million, for an estimated net project cost of approximately \$6 million.

Property assessments will be levied for each property in the sewer service area, calculated using formulas established in the town's Water and Sewer Ordinance, Chapter 159 of the Mansfield Code of Ordinances. Once the Water Pollution Control Authority (WPCA) identifies how much of the project cost is to be recovered through property owner assessments, these formulas will be used to identify the specific amount attributed to each property in the service area. In addition, each property will also be assessed for its portion of the debt service (i.e., interest) associated with the assessment. The determination on how much of the project cost is to be recovered through assessments will not be made until after the project has been constructed. Prior to approving an assessment schedule, the WPCA will hold a public hearing on the proposed assessments.

Individual property owners will be responsible for the cost of connecting to the sewer. For a typical residential building lot, this cost ranges between \$1,000 and \$5,000, depending on site conditions and the location of the septic tank in relation to the sewer line.

Mansfield's total debt service is at one of its lowest points in history, placing the town in a good position with regard to repayment of the debt needed to fund the project.

The following specific benefits are expected to occur as a result of the construction and operation of a sewer system in the project area:

- Creation of construction-related jobs
- Improve and protect the quality of surface water and groundwater in the Four Corners area by virtue of abandonment of failing and vulnerable subsurface sewage disposal systems
- Provide a long-term, reliable system for sewage disposal in the Four Corners area
- Prevent future regulatory violations
- Retain existing commercial businesses and foster economic development consistent with local, regional, and state POCDs



5.0 CONSULTATION AND COORDINATION

5.1 Scoping

Numerous local, regional, and state entities have been consulted during the preparation of the subject EIE. A scoping notice was published in the *Environmental Monitor* on March 3, 2015. A copy of that notice is included in Appendix A. A public scoping meeting was held on March 18, 2015 to present the project to the general public and allow for comments. Local newspaper coverage has documented the project.

Agency comments were received from the CTDEEP and the Connecticut DPH. Written comments were also received from numerous members of the public. Copies of all written comments are also included herein as Appendix A. A summary of these comments follows:

Connecticut Department of Energy & Environmental Protection – In several interagency memoranda, DEEP commented on the proposed project. Specifically, the following topics were discussed:

- Local water budget
- Measures for handling interception of contaminated groundwater

Connecticut Department of Public Health – In a letter dated April 6, 2015, the DPH indicated that it had reviewed the scoping notice and provided comments associated with the following topics:

- Separation distances of certain sewer system components (including sewer trunk lines, pump stations, grinder pumps, sanitary sewer manholes, and clean-outs) from community water systems
- General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area
- Water Main Design and Construction Guidelines
- Location and mapping of private wells on proposed plans

General Public – Written comments were received from seven members of the Mansfield community. Table 5.1-1 presents a summary of the nature of these comments and the EIE section where they are addressed.

All scoping comments have been evaluated and incorporated into the analysis and proposed action as required under CEPA.

TABLE 5.1-1
Summary of Scoping Comments and EIE Section Where Addressed

Topic	EIE Section
Demonstration of project purpose and need	1.3
Evaluation of alternatives	2.0
Sewer avoidance	2.0
Distribution of capital cost of the project, cost benefit assessment	2.0, 3.2.3, 4.6
Mandatory sewer connection	3.5.2
Future potential land uses/impacts of increased density of development	3.1.6
Implication and timing of new zoning regulations	3.1.4
Rural character of Mansfield	3.1
Stormwater quality and quantity	3.5.3, 3.8.1, 3.8.2
Protection of wetlands	3.10.2, 3.10.5
Protection of watercourses	3.8.1
Protection of drinking water supplies	3.5.1, 3.8.3
Protection of natural resources	3.10
Potential for traffic impacts	3.7
Protection of cultural resources	3.6
Flood hazard concerns	3.9
Adequacy of UConn sewage treatment capacity	2.7, 3.5.2
Assessment of cumulative impacts	4.3
Potential impacts on community services	3.3
Implications of UConn's conservation easement	3.1.5
Phasing and sequence of the project	2.8
Cost-benefit analysis	4.6
Identification of required permits	4.5

5.2 Consultation and Coordination with Agencies/Organizations

General presentations made to the Town of Mansfield have included various stakeholders as well as members of the public. Specifically, public meetings were held as follows:

- August 14, 2014 at Mansfield Town Hall
- August 18, 2014 at Jensen's Rolling Hills Community
- August 20, 2014 at Vinton Elementary School
- August 22, 2014 at WPCA meeting;
- August 27, 2014 at Mansfield Senior Center and Mansfield Public Library (public informational session and open house)
- March 18, 2015 at Mansfield Town Hall (public scoping meeting for EIE)

5.3 Public Review

Formal notice of the existence of the EIE has been published in the *Willimantic Chronicle* and in the *Environmental Monitor*. A period of no less than 45 days will be provided for notice, distribution, and review of the EIE by any interested parties. Comments will be reviewed; additional environmental study and analysis will be performed, if warranted, and the evaluation will be amended as appropriate.

Upon completion of the 45-day public comment period, the sponsoring state agency (in this case DEEP) must forward the following information to the OPM for determination of the adequacy of the evaluation: (1) all public notice documentation; (2) a brief summary of the public hearing, if one is held; (3) comments received from all interested parties; (4) the agency decision relative to proceeding with the proposed action; and (5) a discussion of the intentions for initiation of actions for minimizing impacts. This constitutes the Record of Decision (ROD) (EIE document and the measures for mitigation identified therein).

The CEPA process concludes with the review of the EIE and ROD by OPM and its determination of whether or not regulatory requirements have been satisfied. Once OPM determines the EIE and the supporting documentation in the ROD to be adequate, the EIE provides the basis for the final design and implementation of the project.



6.0 DOCUMENT PREPARERS AND REFERENCES

6.1 Public Review

The individuals, agencies, and organizations listed in Table 6.1-1 have contributed either directly or indirectly to the content in this document. A summary of the EIE authors and their roles follows.

**TABLE 6.1-1
EIE Contributors**

Role	Entity
Sponsoring Agency	Connecticut Department of Energy & Environmental Protection 79 Elm Street Hartford, CT 06106
Implementing Agency	Town of Mansfield Audrey P. Beck Municipal Building 4 South Eagleville Road Mansfield, CT 06268
Primary EIE Author	Milone & MacBroom, Inc. 99 Realty Drive Cheshire, CT 06410
Design Engineer	Weston & Sampson Engineers, Inc. 273 Dividend Drive Rocky Hill, CT 06067

The primary author of this EIE is the consulting firm of Milone & MacBroom, Inc. Milone & MacBroom, Inc. is a professional consulting firm comprised of engineers, planners, environmental scientists, landscape architects, and surveyors. A summary of the Milone & MacBroom, Inc. staff involved with the environmental analysis and preparation of this document follows.

Jeanine Armstrong Gouin, P.E., Vice President (Project Manager) – Ms. Gouin has served as the project manager, technical contributor, and editor of this EIE. Ms. Gouin holds a Bachelor of Science degree in civil engineering and is a professional engineer licensed to practice in the State of Connecticut. Ms. Gouin has conducted and managed many EIEs in Connecticut pursuant to CEPA. Her technical background has focused on water resources, water supply, ecological resources, and environmental permitting.

Scott J. Bighinatti, M.S., CFM – Lead Environmental Scientist – Mr. Bighinatti holds Bachelor of Science and Master of Science degrees in Natural Resource Management. He has notable expertise in hydrology, hydrogeology, geology, and geographic information systems. He has been a significant contributor to this EIE, having served as the principal analyst for the Existing Environment and Analysis of Impact.

William A. Root, M.S. – Senior Project Specialist – Mr. Root has provided technical expertise in the areas of wetland and wildlife biology. Mr. Root holds Bachelor degrees in Biology and Environmental Science and a Master of Science degree in Forestry & Environmental Studies. He is a certified soil scientist, is a

certified United States Army Corps of Engineers wetland delineator, and holds a CTDEEP Scientific Collector's permit. Mr. Root provided specific expertise in wetland science and biological resources.

Additional technical support was provided by the following individuals:

- Corey Pelletier – Environmental Analyst
- Jessica Pica, M.S., E.I.T – Water Resource Engineer
- Alyssa Longo – Engineering Technician

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APPENDIX A

Scoping Documentation and Public Comments



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Environmental Monitor Archives



March 3, 2015

Scoping Notices

1. Hawleyville Low Pressure Sewer Extension, Newtown
2. Norwalk River Railroad Bridge Replacement, Norwalk
3. **Revised deadline!** Milford Property Acquisition, Milford
4. University of Connecticut South Campus Development, Mansfield
5. **NEW!** Mansfield Four Corners Sewer Extension, Mansfield

Post-Scoping Notices: Environmental Impact Evaluation (EIE) Not Required

No Post-Scoping Notice has been submitted for publication in this edition.

Environmental Impact Evaluations

No Environmental Impact Evaluation has been submitted for publication in this edition.

State Land Transfers

1. Hartland

The next edition of the Environmental Monitor will be published on **March 17, 2015**.

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Scoping Notices

"Scoping" is for projects in the earliest stages of planning. At the scoping stage, detailed information on a project's design, alternatives, and environmental impacts does not yet exist. Sponsoring agencies are asking for comments from other agencies and from the public as to the scope of alternatives and environmental impacts that should be considered for further study. Send your comments to the contact person listed for the project by the date indicated.

The following Scoping Notices have been submitted for review and comment.

1. Notice of Scoping for Hawleyville Low-Pressure Sewer Extension

Municipality where proposed project would be located: Newtown

Project Location: Residential and commercial/industrial properties along Route 6 (Mount Pleasant Road),

including removal of an undetermined number of on-street parking spaces, to accommodate redirected traffic from Gilbert Road.

- Closure of Coventry Road and Maple Lane to vehicular traffic and replacement with a pedestrian access that will also accommodate emergency (life/safety) vehicles and equipment.

The new building construction (Honors and Fine Arts) will tie into central utilities and will be designed to achieve a minimum Leadership in Energy & Environmental Design (LEED) Silver designation. The conversion of Gilbert and Coventry Roads and Maple Lane will further strengthen the pedestrian core of the campus. All elements of the SCD are within the portion of the Fenton River watershed that drains to Mirror Lake and are in areas of existing development.

In addition to addressing potential impacts associated with the SCD projects, secondary and cumulative impacts resulting from projects constructed in 2013-2015, as well as projects that will foreseeably be constructed during 2015-2017 will be addressed in the SCD CEPA process (see figure). Projects constructed in 2013 that met or exceeded the thresholds within the Generic Environmental Classification Document have followed the CEPA process and are documented at <http://www.envpolicy.uconn.edu/eiarchivedCEPA-NEPAreviews.html>.

Project Map(s): [Click here to view a map of the project area.](#) [Click here to view a map of the projects.](#)

Written comments: from the public are welcomed and will be accepted through **March 19, 2015**. Comments previously received during the Honors Residence Hall's scoping period will also be considered as comments received on the SCD proposed action.

There will be a Public Scoping Meeting for this project at:

Date: **March 11, 2015**

Time: 7:00 p.m. (Doors will be open at 6:00 p.m. to allow review of informational materials.)

Place: Room 146, UConn Bishop Center; One Bishop Circle; Storrs, CT

Written comments should be sent to:

Name: Paul Ferri

Agency: UConn - Office of Environmental Policy

Address: 31 LeDoyt Road, U-3055; Storrs, CT 06269

Fax: 860-486-9295

E-Mail: paul.ferri@uconn.edu

If you have questions about the Public Scoping Meeting, or other questions about the scoping for this project, please contact Mr. Ferri as directed above.

The agency expects to release an Environmental Impact Evaluation for this project, for public review and comment late spring 2015.

5. Notice of Scoping for Mansfield Four Corners Sewer Extension

Municipality where proposed project would be located: Mansfield

Project Location: Along Route 195 (Storrs Road), approximately 3,000 feet north and 1,000 feet south from its intersection with Route 44 (Middle Turnpike Road); along Route 44, approximately 600 feet east and 3,700 feet west from its intersection with Route 195; and along portions of North Hillside Road and Professional Park Road.

Project Description: Public Act 14-98, Section 97 authorized a \$3 million grant-in-aid to the Town of Mansfield to extend sewers to the Four Corners area. The project involves installation of approximately 22,000 feet of sewer piping inclusive of collection system, a trunk sewer and a force main, two submersible pump stations, and related equipment and appurtenances to provide public sewer service to the Four Corners area as well as certain properties along Route 195 and Route 44, including a manufactured home development known as Rolling Hills Community. This area has a history of sewage disposal challenges due to high water table and poor soils. Wastewater would be discharged to the University of Connecticut's wastewater treatment plant.

The Four Corners area is one of three main commercial centers in Mansfield. It serves as the northern

gateway to Mansfield and has the benefit of being located at the crossroads of two state arterial roads. Plans to extend water and sewer to this area will enable redevelopment with a mixture of residential and commercial uses. Given its proximity to the new Technology Park, it is anticipated that this area will be focal point for research and light industry and may also become a priority housing location for Tech Park workers. The size of the area combined with extensive wetland resources will result in clusters of development that have been designated by the Town as appropriate for higher intensity uses.

Project Map: [Click here to view a map of the proposed project.](#)

Written comments from the public are welcomed and will be accepted until the close of business on: **April 6, 2015**

There will be a Public Scoping Meeting for this project at:

DATE: **March 18, 2015**

TIME: 7:00 p.m. (Doors will be open at 6:00 p.m. to allow review of informational materials.)

PLACE: Council Chamber, Mansfield Town Hall; Four South Eagleville Road; Storrs, CT

Purpose of Meeting: The Scoping Meeting will present information about the project and solicit public comments on the project's purpose and need, preliminary alternatives, and areas of key environmental concern.

Written comments should be sent to:

Name: Carlos Esguerra
Agency: Department of Energy & Environmental Protection
 Bureau of Water Protection & Land Reuse
Address: 79 Elm Street
 Hartford, CT 06106-5127
Phone: 860-424-3756
Fax: 860-424-4067
E-Mail: carlos.esguerra@ct.gov

If you have questions about the public meeting, or other questions about the scoping for this project, contact Mr. Esguerra, as directed above.

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act. Please contact us at (860) 418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint. Any person needing a hearing accommodation may call the State of Connecticut relay number - 711. Requests for accommodations must be made at least two weeks prior to any agency hearing, program or event.

Post-Scoping Notices: Environmental Impact Evaluation Not Required

This category is required by the October 2010 revision of the [Generic Environmental Classification Document](#) for State Agencies. A notice is published here if the sponsoring agency, after publication of a scoping notice and consideration of comments received, has determined that an Environmental Impact Evaluation (EIE) does not need to be prepared for the proposed project.

No Post-Scoping Notice has been submitted for publication in this edition.

EIE Notices

After Scoping, an agency that wishes to undertake an action that could significantly affect the environment must produce, for public review and comment, a detailed written evaluation of the expected environmental impacts. This is called an [Environmental Impact Evaluation](#) (EIE).

No Environmental Impact Evaluation has been submitted for publication in this edition.

State Land Transfer Notices

Connecticut General Statutes [Section 4b-47](#) requires public notice of most proposed sales and transfers of state-owned lands. The public has an opportunity to comment on any such proposed transfer. Each notice includes an address where comments should be sent. [Read more about the process.](#)

The Following State Land Transfer Notice has been submitted for publication in this edition.

Four Corners Sanitary Sewer Project Scoping Meeting



John Carrington, P.E., Town of Mansfield
Derek Dilaj, P.E., Town of Mansfield

Jeanine Armstrong Gouin, P.E., Milone & MacBroom, Inc.
Scott Bighinatti, CFM, Milone & MacBroom, Inc.

Purpose of Tonight's Meeting

- Provide background information
- Present the project scope and objectives
- Provide information relative to the overall schedule and future efforts
- Provide a forum for gathering input
- Understand the topics of public interest / concern
- Identify questions to be answered



Public Opportunity to Provide Input

- Following the formal presentation, the meeting will be open to public for comments
- Rules of Order
 - ✓ Please use the sign-in sheet if you would like to speak
 - ✓ For those providing comments, please use the microphone, state your name and address, and direct your comments to the moderator, not the audience
 - ✓ We would ask that you be patient and courteous while you wait your turn and remain quiet while others are speaking
 - ✓ If you would like to speak a second time, please wait until everyone has had an opportunity.

Introduction to the Team

Town of Mansfield

Matthew W. Hart

Ken Rawn

John C. Carrington, P.E.

Derek M. Dilaj, P.E.

Town Manager

Chair of Four Corners Committee

Director of Public Works

Assistant Town Engineer

CT Department of Energy & Environmental Protection

Carlos Esguerra

Sanitary Engineer II

Milone & MacBroom, Inc.

Jeanine A. Gouin, P.E.

Scott Bighinatti, CFM

Vice President/Project Manager

Lead Environmental Scientist

The Core MMI Team



Jeanine Gouin, P.E.



Scott Bighinatti, CFM



David Murphy, PE, CFM



Corey Pelletier



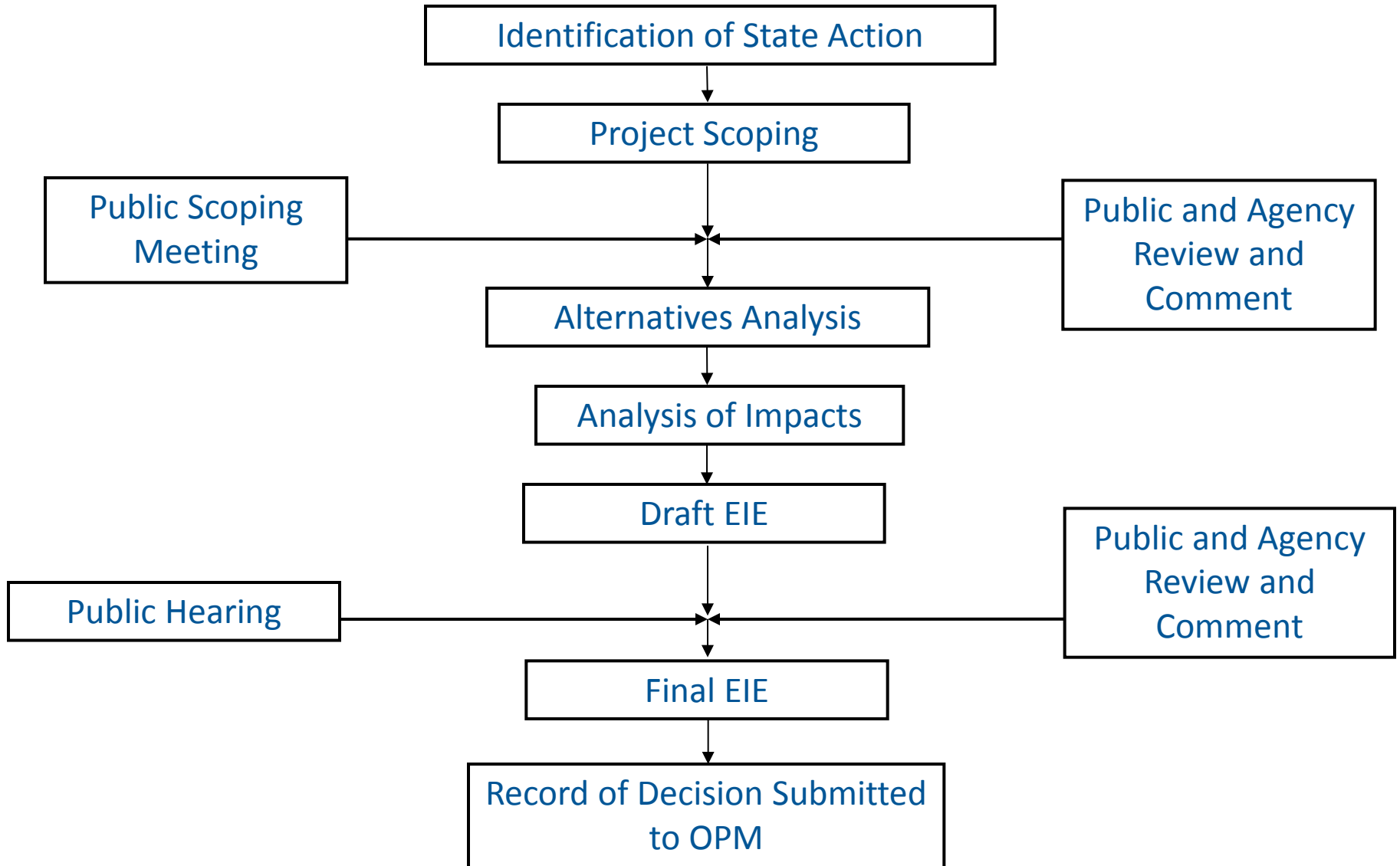
Jessica Pica, E.I.T.

What is CEPA?

- A state act that applies to certain state-funded projects in Connecticut.
- A mechanism for planning and coordination among interested parties, including the public at large.
- A process of identifying and evaluating environmental impacts such that they can be avoided, minimized and mitigated.



EIE Process



Project Need/History

- Historic and ongoing contamination from failing septic systems and underground storage tanks
- Water quality and public health concerns
- Unsuitable conditions for new and existing septic system function due to high groundwater table and poor soils
- Limitations on allowable uses and development within the Four Corners Planned Business/Mixed-Use area, one of three main commercial areas in Mansfield

Project Purpose

- Improve the quality of surface water and groundwater
- Provide a long-term, reliable system for sewage disposal in the Four Corners area
- Prevent regulatory violations
- Retain existing commercial businesses and foster economic development in the northern gateway to Mansfield, consistent with local, regional, and state plans

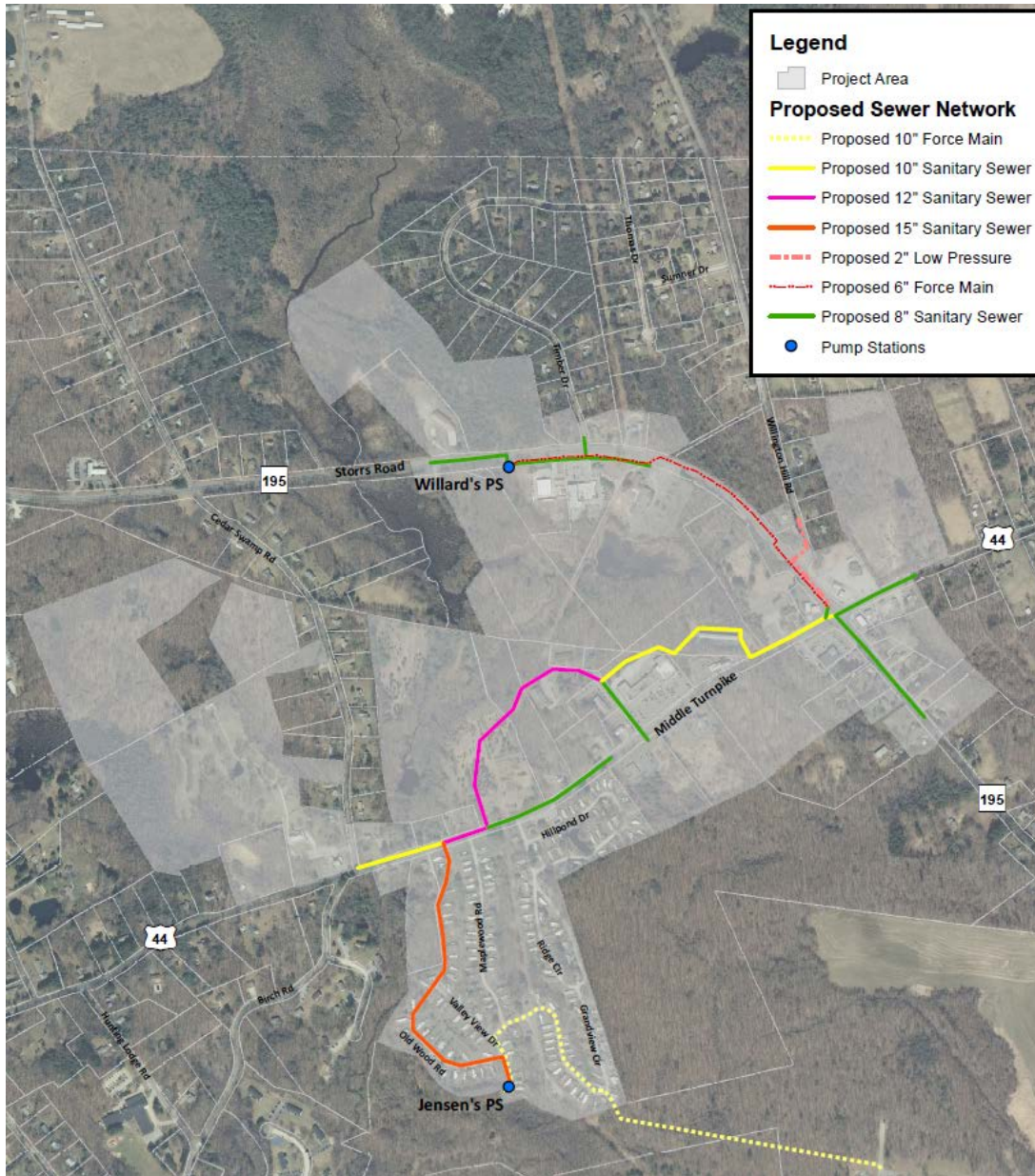
Proposed Construction Elements

- Approximately 22,000 feet of sewer piping
 - ✓ Collection System
 - ✓ Trunk Sewer
 - ✓ Force Main
- Two submersible pump stations
 - ✓ Willard Pump Station on Route 195
 - ✓ Jensen's Pump Station at Rolling Hills Community
- Related equipment and appurtenances

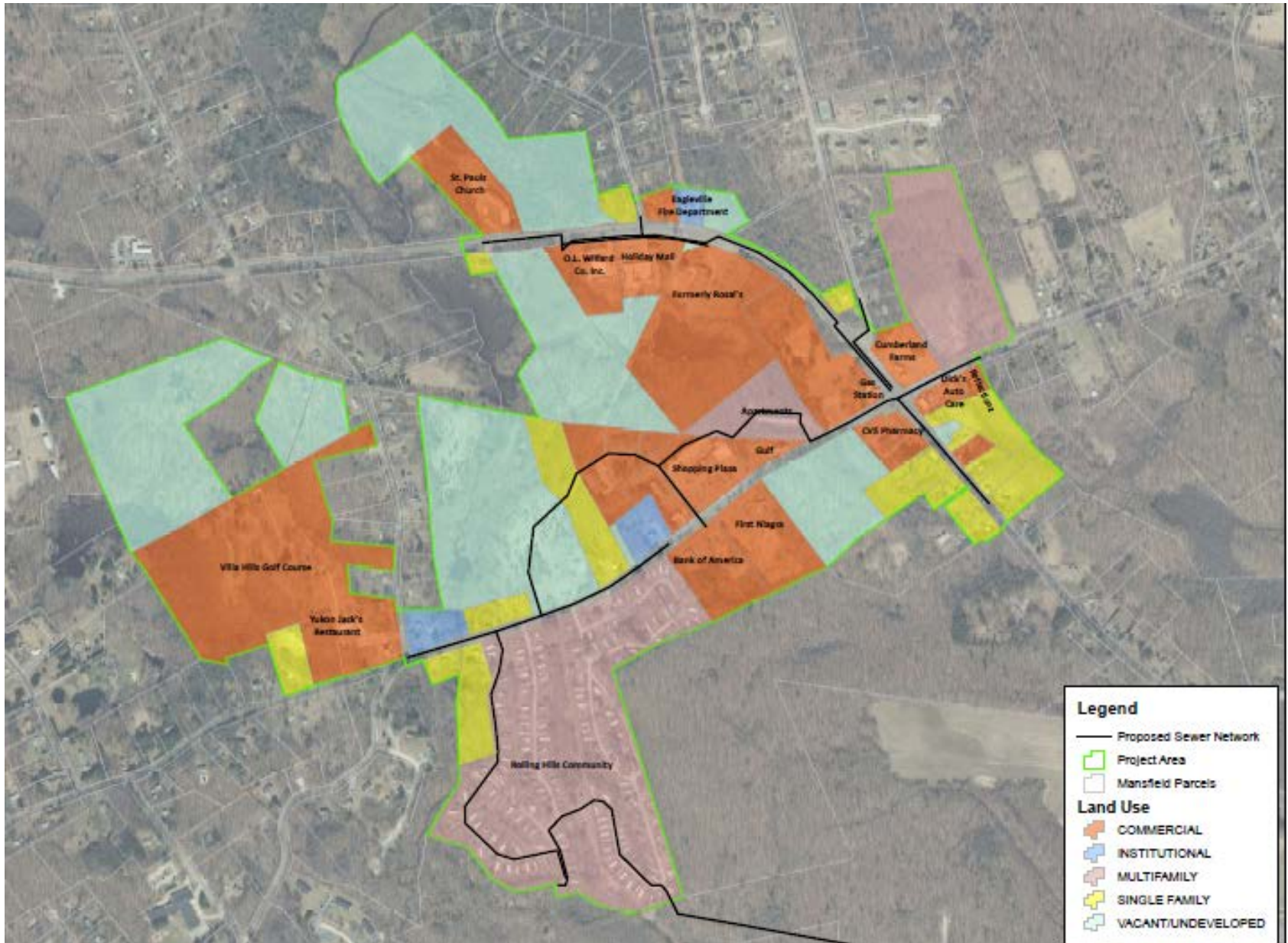
Proposed Service Area

- Proposed Collection & Transmission Area
 - ✓ Along 195 approximately 3,000 feet north and 1,000 feet south of the 195/44 intersection
 - ✓ Along 44 approximately 600 feet east and 3,700 feet west of the 195/44 intersection
 - ✓ Portions of North Hillside Road and Professional Park Road
- Approximately 61 parcels within 500 acres
 - ✓ 195 – St. Paul's, Willard's, Holiday Mall, Former Rosal's
 - ✓ Four Corners Commercial Area – Cumberland Farms, CVS
 - ✓ 44 – Dollar General, Gas Stations, Rolling Hills Community

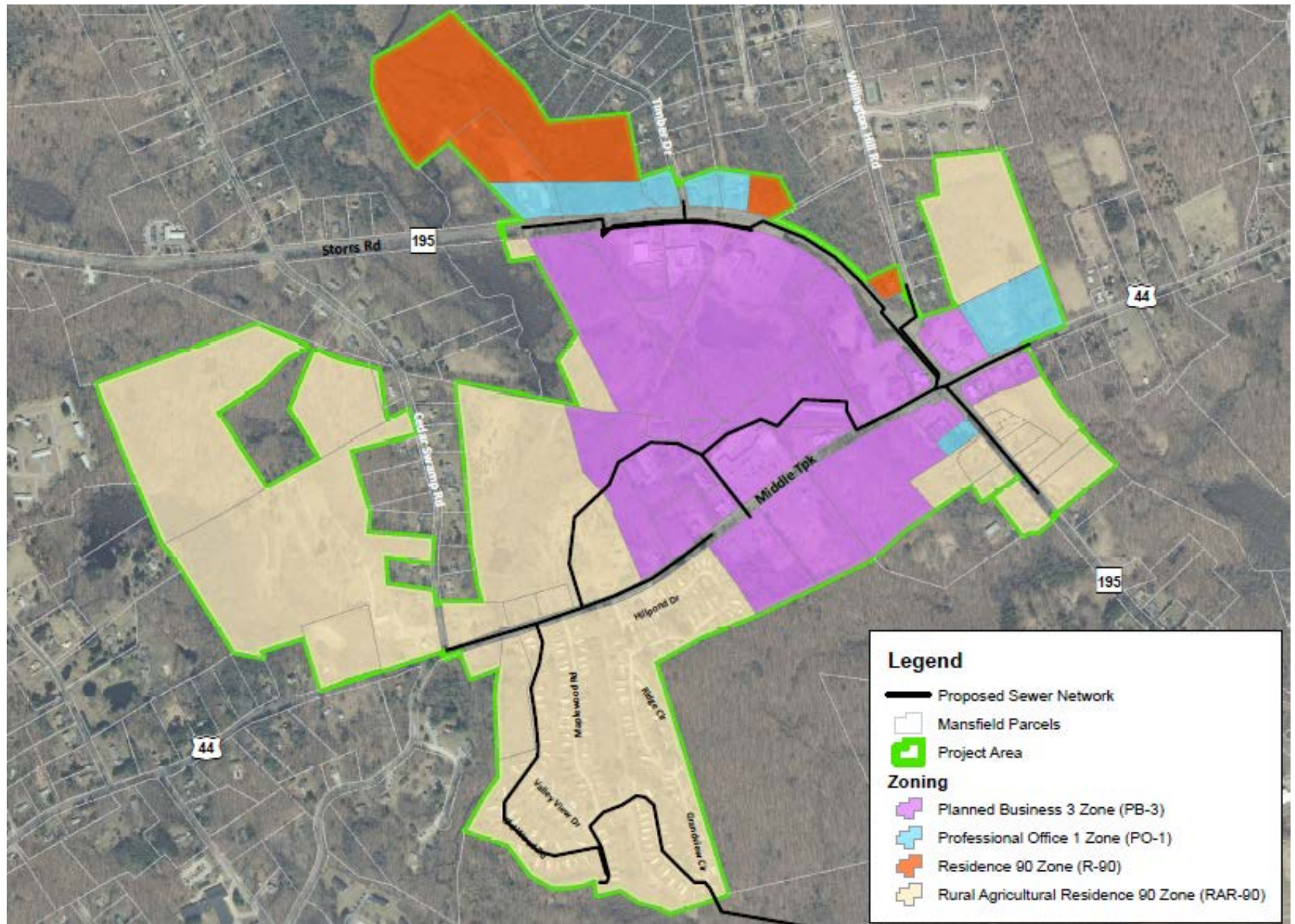
Proposed Project Elements & Service Area



Existing Conditions – Land Use



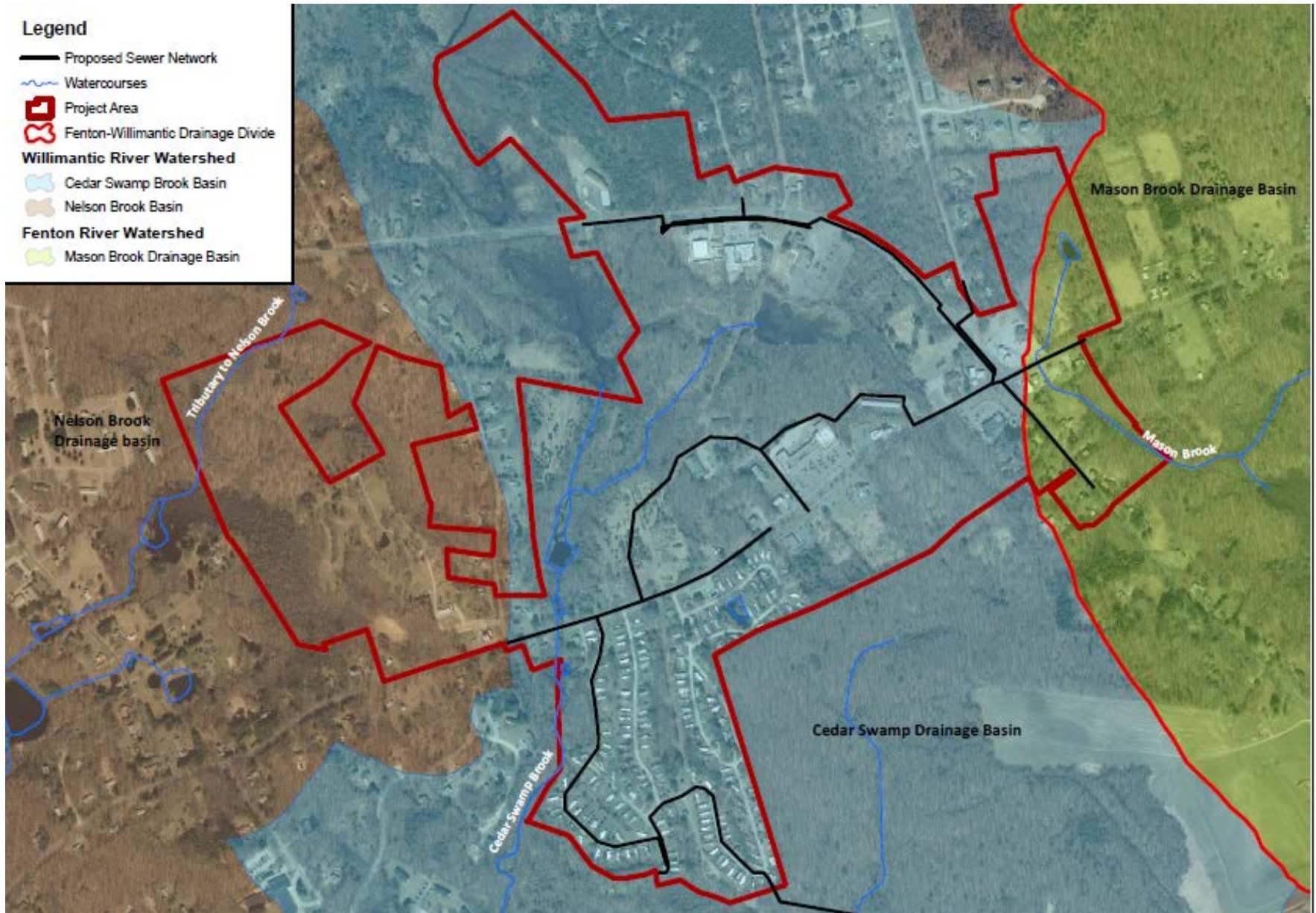
Existing Conditions – Zoning



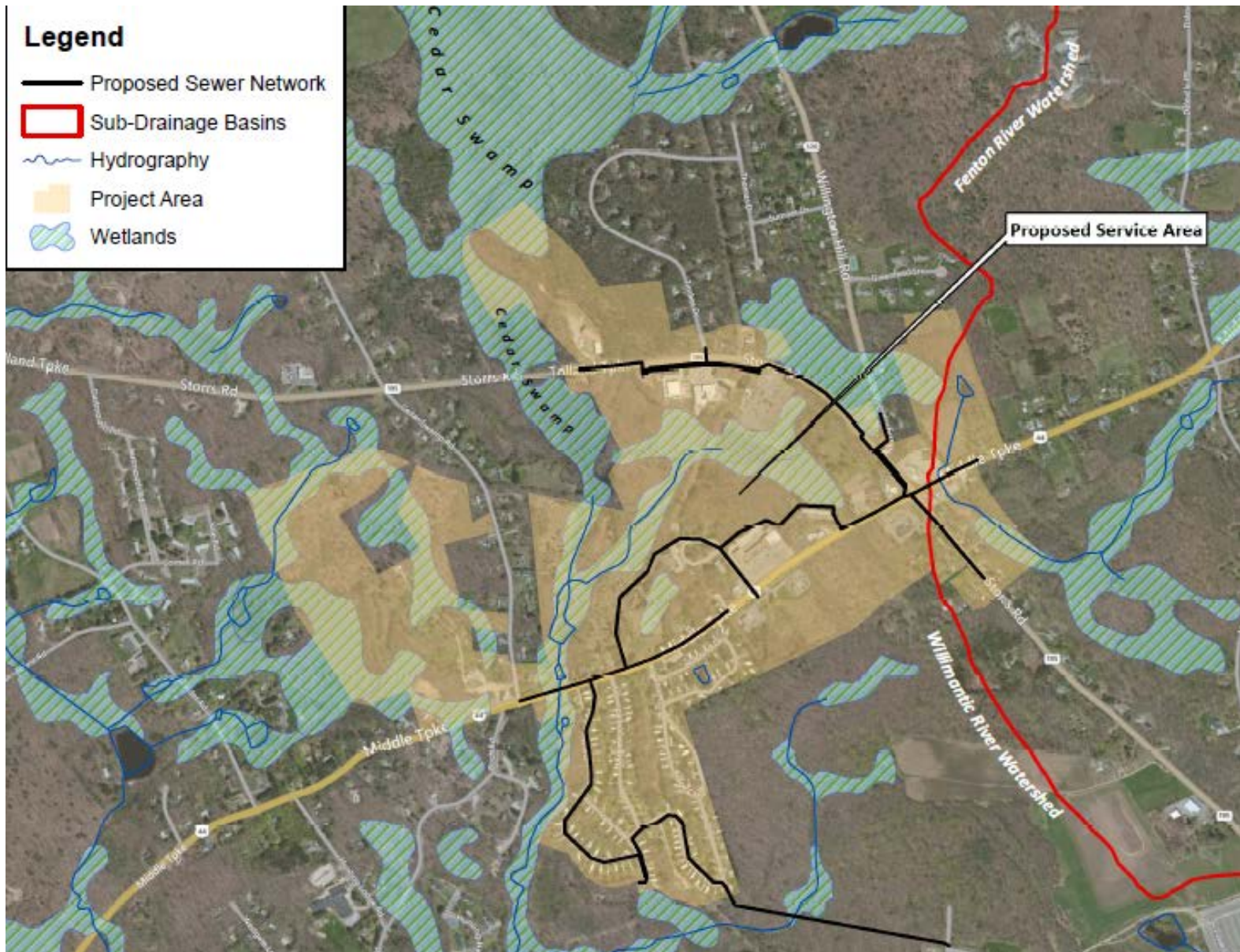
Existing Conditions – Watershed Divides

Legend

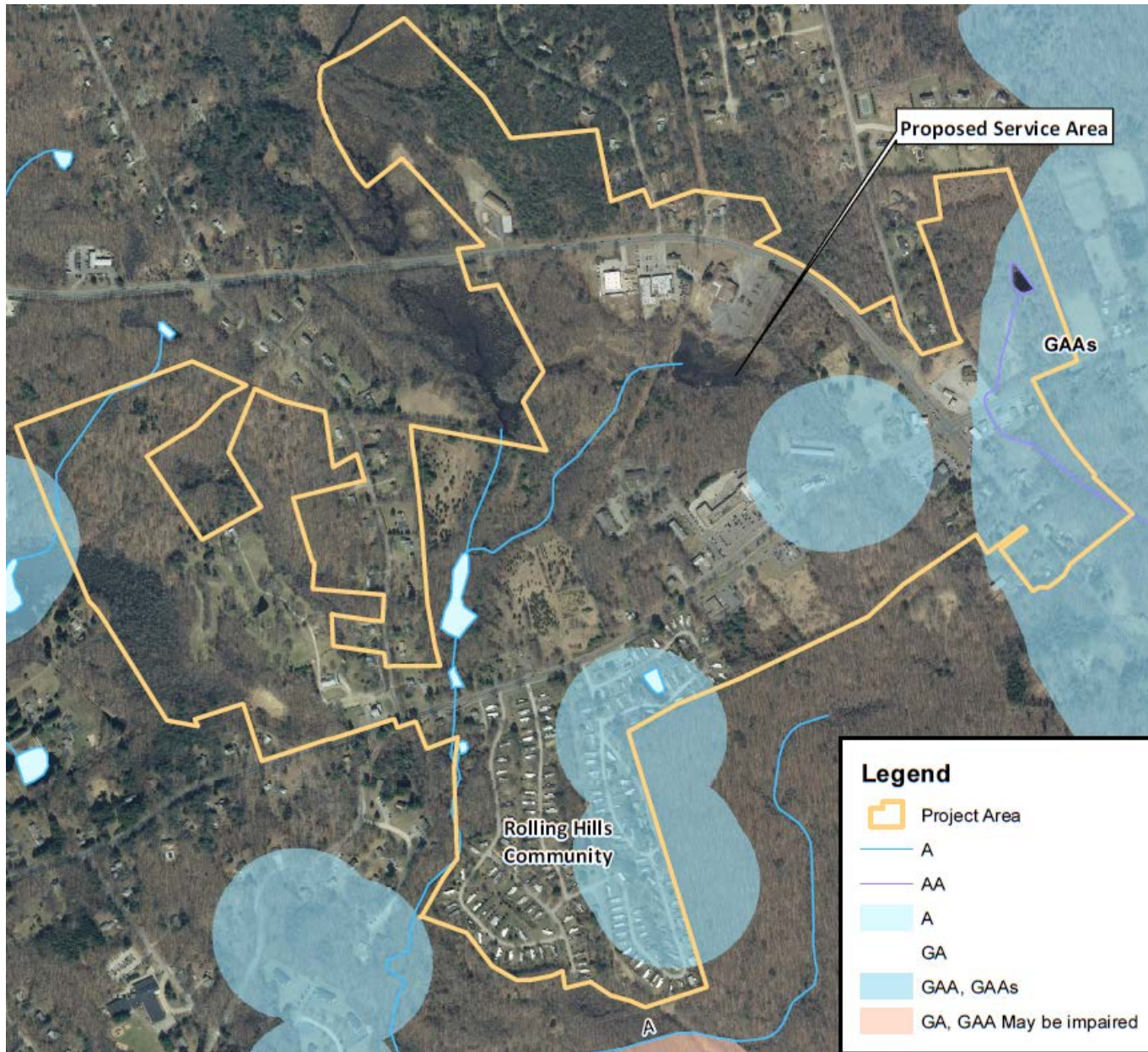
- Proposed Sewer Network
 - ~ Watercourses
 - ▣ Project Area
 - ⬮ Fenton-Willimantic Drainage Divide
- Willimantic River Watershed**
- ▣ Cedar Swamp Brook Basin
 - ▣ Nelson Brook Basin
- Fenton River Watershed**
- ▣ Mason Brook Drainage Basin



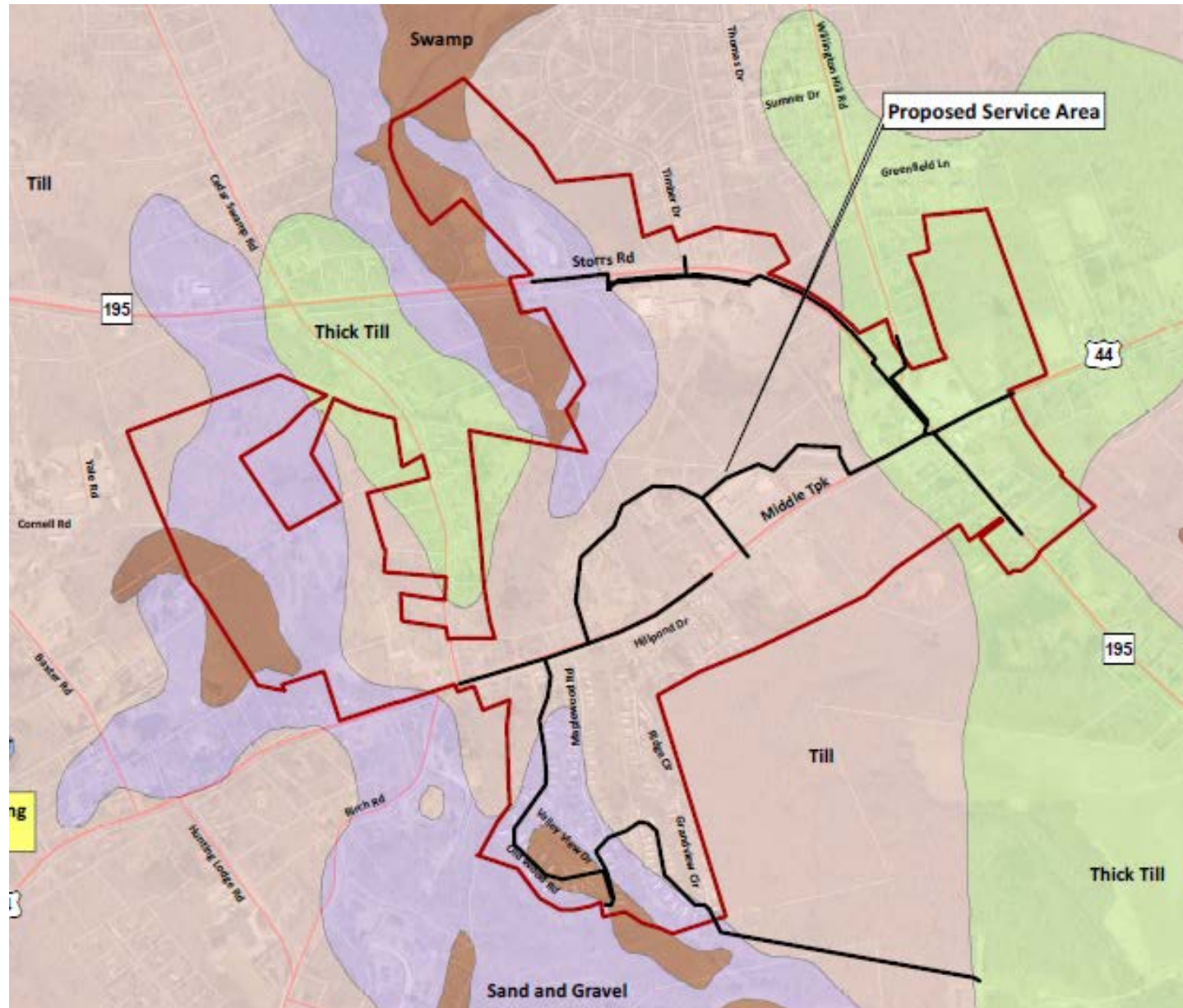
Existing Conditions – Wetlands



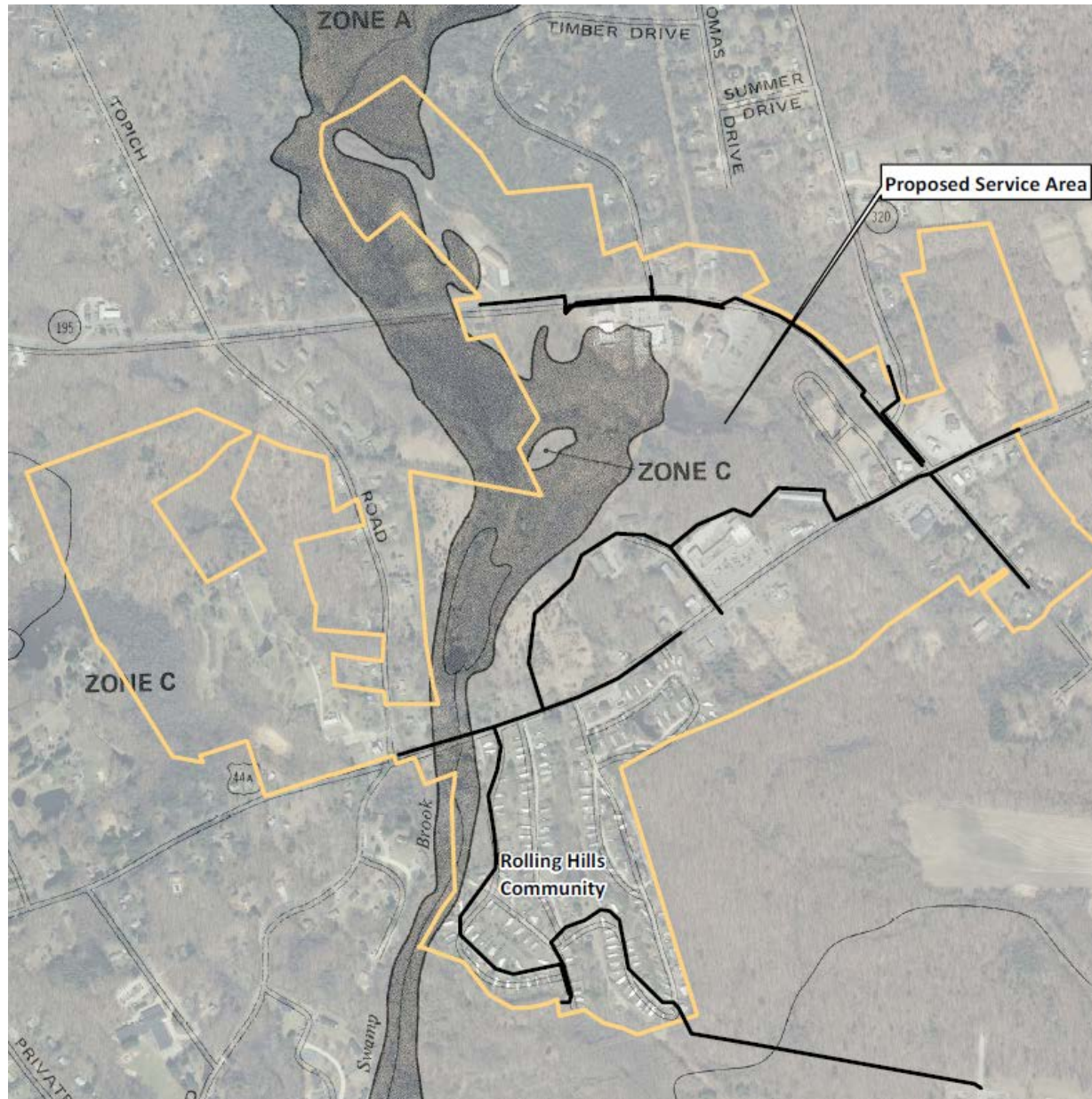
Existing Conditions – Water Quality



Existing Conditions – Geology



Existing Conditions – Floodplains



Alternatives Analysis

- Alternative 1 – No Action
- Alternative 2 – Community Subsurface Wastewater Disposal System
- Alternative 3 – Pre-Engineered Package WWTF
- Alternative 4 – Discharge to UConn WPCF
 - ✓ Conveyance System Alternatives
 - ✓ Routing Alternatives

Assessment / Impact Evaluation

- Land Use & Zoning
- Socioeconomics
- Community Facilities and Services
- Aesthetic/Visual Resources
- Public Utilities and Services
- Cultural Resources
- Traffic and Parking
- Water Resources
- Flood Hazard Potential
- Biological Environment
- Physical Environment
- Air / Noise Quality
- Solid Waste / Hazardous Materials



Areas of Likely Interest & Concern

- Potential for secondary growth impact / maintenance of Mansfield's rural character
- Consistency with existing/updated Town Plan of Conservation & Development and zoning regulations
- Construction related impacts – potential need for blasting, traffic disruption
- Watershed sensitivity and water balance – Fenton River, Eagleville Brook, Nelson Brook
- Protection of Cedar Swamp and other wetlands
- Protection of surface water and groundwater

Timeline and Milestones

- **March 3, 2015** – Scoping Notice Published in Environmental Monitor
- **March 18, 2015** – Public Scoping Meeting
- **April 6, 2015** – Close of Scoping Period
- **Early Summer 2015** – Anticipated Publication of Draft EIE & Public Comment Period
- **Late Summer 2015** – Record of Decision to OPM
- **Fall 2015** – Anticipated approval from OPM; Proceed with final engineering design and regulatory permitting
- **Spring 2016** – Anticipated Construction

Comments & Questions

Comments and questions regarding the project and/or the CEPA process may be directed to:

Carlos Esguerra, Project Manager
Department of Energy & Environmental Protection
Bureau of Water Protection & Land Use
79 Elm Street
Hartford, CT 06106-5127
p: 860-424-3756
f: 860-424-4067
carlos.esguerra@ct.gov

SPEAKER SIGN-IN SHEET

PUBLIC HEARING
TOWN OF MANSFIELD
FOUR CORNERS SANITARY SEWER PROJECT
MARCH 18, 2015

<u>NAME</u>	<u>AFFILIATION</u>	<u>EMAIL (OPTIONAL)</u>
1. Pat Suprenant	Mansfield Independent News	PatSuprenant@earthlink.net
2. Arthur Smith		arthur.smith@ac1.com
3. Brian Colman		brc02@qchad.com
4. Virginia Raymond		
5. Richard Sh		
6. Bill Paulson		
7. Tony Lett	Resident	-
8. Rue Hussack	Resident	
9.		
10.		

Mansfield Public Meeting 3/18/2015

Verbal comments from Pat Suprenant:

- Thought scoping meeting was to determine IF EIE is necessary.
Carlos indicated that an EIE will be conducted.
- Is portion between PS and UConn STP part of EIE, including UConn's Conservation Open Space Land up to Hillside Road?
Yes, it is.
- Portions of sewer line appear to go through the proposed 100 acres of of Open Space Easement designated for UConn's roadway, the terms and conditions/status remain open, to combine the landfill easement with the roadway open space. How can you proceed w/the EIE without having the utility ROW/easement. EIE would be incomplete without having that resolved.
EIE is an early planning mechanism. The project will need to obtain all necessary easements to be constructed, but not to evaluate potential environmental impact.
- Will ACOE be asked their opinion regarding through landfill conservation easement open space?
The Corps certainly has the opportunity to comment on the EIE. The issue of the easement will be taken up separately.
- Proposal to repurpose an existing- soon to be abandoned - water line to snake sewer line – water pipeline is being replaced due to corrosion. How is the safety of the sewer line to be guaranteed?
- When was the last time FEMA evaluated floodplain. Do we need an updated survey before EIE can be complete?
- What is the capacity of the STP currently and in the future? Will it be able to handle the 1 M sf for UConn's Tech Park, in concert w/ 187,000 sf of private development for the 4-corners area, as projected by Weston & Sampson for 500 acres, plus 1.85 MGD flowing through that system. If not, what restrictions will be placed on development? Possible expansion of STP must be considered simultaneously.
- How far out is the EIE planning horizon? Will it be adequate to evaluate the adequacy of the sewage treatment plant capacity?
- Impact of water and sewer discharge on the Willimantic River?
- What provisions have been made for stormwater runoff from the 187,000 sf of projected development?
- What traffic studies will be undertaken to determine from the 187,000 sf of development, the currently proposed 90-room hotel, 90-unit apartment complex, 40-unit age restricted facility, an 80,000 sf shopping mall?

Ended at 47:30



Memo

To: John Carrington, P.E., Town of Mansfield
From: Carlos Esguerra, Sanitary Engineer 2. CTDEEP
CC: Jeanine Armstrong Gouin, P.E. Milone & McBroom
Derek Dilaj, P.E., Town of Mansfield
Eric Thomas & Dave Fox, CTDEEP
Date: 4/8/2015
Re: Town of Mansfield. Four Corners Sewer Extension. CEPA scoping notice comments.

Hi John,

Comments from the parties listed below were received as part for the referenced scoping notice. All comments received need to be evaluated as the Town and M&B move forward in the preparation of an EIE document. Please continue to keep me informed throughout the development of this document.

Please contact me with any questions you may have relative to this matter. Thank you.

- 1) Virginia Raymond (Submitted to Town and M&B via email on March 18, 2015).
- 2) David Morse (Submitted to Town and M&B via email on March 18, 2015)

Enclosed are the following additional comments:

- 3) Eric Thomas, CTDEEP
- 4) William Warzecha, CTDEEP
- 5) CT-DPH
- 6) Ronald/Martha Kelly
- 7) Alison Hilding/Richard Sherman
- 8) Elizabeth Wassmundt
- 9) Tulay Luciano
- 10) William Paulson

Eric Thomas, CTDEEP

Does your program have a sense of what initial estimated changes would occur in the local water budget with the proposed sewer extension project, and can those estimates be framed for each of the sub-watersheds impacted by planned/promoted redevelopment? It must be challenging, as new potable water is being introduced from an out-of-basin source (Connecticut Water, from their Shenipsit Lake Reservoir). Will the proposed extent of the wastewater collection system create a net deficit of return water to the local ground water system, and instead export it to the UConn POTW for treatment and discharge to the Willimantic River, thereby bypassing local sub-basins of Eagleville Brook, Cedar Swamp Brook and possibly Mason Brook (w/ latter draining within the Fenton River watershed)?

William Warzecha, CTDEEP

The following are my comments regarding the two projects in the Remediation Division's eastern district (2 in Mansfield) that are being reviewed by the office of Environmental Review.

No remediation division comments for the new honors program dormitory project at the intersection of Gilbert Road and Mansfield Drive.

The main concern with the Notice of Scoping by DEEP for proposed extension of sewers to the Four Corners area of Mansfield at the intersection of Routes 44 and 195 is the concern of intercepting ground water and soil that may be polluted with leaded and unleaded gasoline that will depend on the depth of the sewer line. There are 5 or 6 gas station sites now or formerly located in the area of the Four Corners. The release of gasoline (leaded and unleaded) has been documented at each of the sites. There is a likelihood that the plume of gasoline also migrated off the site below Routes 44 and 195 and rights of way in the area giving concern that dissolved and possibly free product may be encountered. The contractor installing the sewer line should be made aware of the condition and his obligations to report the certain environmental conditions under 22a-6u requiring notification to the Department as well as to notify DEEP's OCRSD in the event oil, gasoline or chemicals are encountered during the installation of the sewer line (860-424-3338). In such cases, it is expected that OCRSD would coordinate closely with remediation should a problem arise. Also you may want to share the following guidance with the contractor, which may be accessed directly from Remediation's web page.

Guidance for Utility Company Excavation

The Department of Energy & Environmental Protection (DEEP) currently recommends the following procedure to be followed by utilities that encounter contaminated soil during repair or construction activities. This applies to cases where:

1. Contaminated soils/waste are encountered on property not owned by the utility, and
2. Contamination was not created by the utility.

The utility may reuse the contaminated soil in the same excavation within the same area of concern without prior approval by DEEP provided:

1. Any condition that would be a significant environmental hazard as defined in CGS Section 22a-6(u) is reported by the utility and that the location is identified on a map submitted to the DEEP Remediation Division.
2. Any excess contaminated material is disposed in accordance with solid and hazardous waste regulations as appropriate.
3. The upper 1 foot of the excavation is filled with clean fill material or paved.

Any sampling required to make a determination as to whether a significant environmental hazard exists or how excess spoils will be disposed will be the responsibility of the public or private entity performing the excavation.

The Division wants to make sure that any pollution discovered during the project is properly addressed and that workers who may encounter pollutants impacting ground water, soil or air (volatilizing into work space areas) are properly protected.

Regards, Bill W.

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Jewel Mullen, M.D., M.P.H., M.P.A.
Commissioner



Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

April 6, 2015

Carlos Esguerra
Department of Energy and Environmental Protection
Bureau of Water Protection and Land Reuse
79 Elm Street
Hartford, CT 06106-5127

Re: Notice of Scoping for Mansfield Four Corners Sewer Extension

Dear Mr. Esguerra:

The Department of Public Health (DPH) has reviewed the Notice of Scoping for Mansfield Four Corners Sewer Extension. The project involves installation of approximately 22,000 feet of sewer piping inclusive of collection system, a trunk sewer and a force main, two submersible pump stations, and related equipment and appurtenances to provide public sewer service to the Four Corners area as well as certain properties along Route 195 and Route 44, including a manufactured home development known as Rolling Hills Community. This area has a history of sewage disposal challenges due to high water table and poor soils. Wastewater would be discharged to the University of Connecticut's wastewater treatment plant.

A review of the DPH database for public water supplies indicates that there are numerous public water systems located along the proposed route of the sewer extension. The attached table provides a list of the potentially affected public water systems and contact information. All the public water systems are currently served by individual wells. Although a majority of the public water systems are also located along the route of the proposed Connecticut Water Company water main, the construction schedule cannot be predicted for either project and it is unknown whether the individual public water systems will be required to connect to the main. Therefore, the sewer extension design must incorporate measures to protect the sources of public drinking water supply.

The DWS considers pump stations, grinder pumps, sanitary sewer manholes and cleanouts to be sources of pollution that require the maximum separating distance to public water supply wells pursuant to the Regulations of Connecticut State Agencies (RCSA) Section 19-13-B51(d). Sanitary sewer piping and joints may be allowed to be closer if it can be demonstrated to the DPH that the piping and joint are sound enough to prevent leakage. Separating distances are dependent on the withdrawal rate of the well; therefore the noted public water systems should be contacted during the design phase to verify the withdrawal rate of their public drinking water supply wells in order to ensure that they are appropriately protected from sanitary encroachments. The DPH is particularly concerned with the proposed trunk line, pump station and force main located within the Jensens Rolling Hills Residential Community. It appears that these facilities, intended to convey the sewage flows of the entire system, are proposed to be located in close proximity to the drinking water supply wells that serve the residents of this public water system.



Phone: (860) 509-7333 • Fax: (860) 509-7359 • VP: (860) 899-1611
410 Capitol Avenue, MS#51WAT, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph


Affirmative Action/Equal Opportunity Employer

The easternmost portion of the sewer service area is within the public water supply watershed of Mansfield Hollow Reservoir, a source of public drinking water for the customers of Windham Water Works (PWSID# CT1630011). The project plans should show the limits of the public drinking water supply watershed and the practices outlined in the attached "General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area" should be incorporated into the construction documents.

The sewer and force main should be designed and constructed to be protective of the proposed public water supply main. The attached "Water Main Design and Construction Guidelines" provides guidance on separating distances between sanitary sewers and public water supply mains. Specifically, Section (6) Separating Distances from Sources of Pollution, under the "Installation" subheading should be referenced when designing the system.

The proposed sewer project will include 20 residential or multi-family properties. Some or all of these properties may be supplied by a private well. Private wells located within the proposed area should be located and identified on the proposed plans. Section 19-13-B51(d)(a)(2) of the Public Health Code states "No such well shall be located within seventy-five feet of a system for disposal of sewage or other source of pollution. Greater separation distance shall be required for certain industrial waste on certain rock formations. If a sewer lateral is constructed of extra heavy cast iron pipe with leaded joints or equal approve type of tight joints, a minimum separating distance of twenty-five feet shall be maintained". Installation of any grinder pumps and sewer piping should be installed outside of the sanitary radius of the wells as outlined in EHS Circular Letter 2006-43 (http://www.ct.gov/dph/lib/dph/environmental_health/2006-43_Separation_Distances_for_Potable_Water_Wells.pdf).

Sincerely,



Ellen Blaschinski, RS, MBA
Public Health Branch Chief
Regulatory Services Branch

Attachments

Cc: Lori J. Mathieu, Suzanne Blancaflor, Tom Chyra, DPH
Robert Miller, Eastern Highlands Health District
Affected Public Water System Administrative Contacts

Notice of Scoping Mansfield Four Corners Sewer Extension

April 6, 2015

Page 3 of 3

Public Water System	PWSID Number	Administrative Contact	Mailing Address	Telephone
Jensens, Inc. Rolling Hills Residential	CT0780141	Jeff Racicot, Superintendent, East Kristian Jensen III	Connecticut Water Company 321 Main Street, Danielson, CT 06239 Jensens, Inc. PO Box 608 246 Redstone St. Southington, CT 06489	860-292-2856 Not available
S&P Properties	CT0780271	Daniel J. Saunders	226 Bear Swamp Road, Andover, CT 06232	860-228-4068
Yukon Jack's	CT0780347	Adam Brodin	591 Middle Tpke, Mansfield, CT 06268	860-429-6421
1768 Storrs Road	CT0787054	Norval Smith	15 Shore Drive Coventry, CT 06238	860-478-7003
Holiday Mall	CT0780034	Robert Moskowitz	117 Stonemill Rd. Storrs, CT 06268	860-429-6109
Cumberland Farms	CT0780164	Mark Souza	CFI/Gulf A Group of Companies, 2643 Hartford Ave. Johnston, RI 02919	401-477-2387
Public America/Mansfield Aquasition	CT0780424	Mark Sanderson	3180 Washington Rd., West Palm Beach, FL 33045	Not available
Mansfield Shopping Center	CT0781202	William A. Krason	731 Farmington Ave., Farmington, CT 06032	860-674-8007
603 Middle Turnpike-Mansfield	CT0780464	David Scranton	68 Barstow Lane, Tolland, CT 06040	860-872-0838



General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area

DRINKING WATER SECTION • JULY 2014

Emergency Response Plan

A response plan should be written for actions to be taken for the containment of accidental fuel or chemical spills or the failure of temporary erosion and sedimentation controls that may occur during construction. Spill response equipment should be available on-site at all times along with personnel trained in the proper use of such equipment. A person or persons should be designated by the contractor for emergency response coordination on a 24/7 basis.

Vehicles and Machinery

Designate one area for auto parking, vehicle refueling and routine equipment maintenance. The designated area should be well away from exposed surfaces or storm drains. Methods and locations of refueling, servicing, and storage of vehicles and machinery should be addressed and included as notes on the final site plans. Minor servicing and refueling of machinery should be completed on a fueling pad with containment. All major equipment repairs must be made off site. Onsite fuel storage should be discouraged.

General Site Conditions

Keep pollutants off exposed surfaces. The burying of stumps or construction debris must not be allowed on the job site. Sediment fences and hay bales must be strategically placed, inspected and maintained to prevent sedimentation and erosion. Temporary storm water ponds and basins must be routinely inspected and maintained. If unexpected conditions occur, additional fences and hay bales should be available for use as needed to prevent runoff. Protect exposed stockpiles of soil to prevent runoff. Use as little water as possible for dust control. Clean up leaks, drips and other spills immediately to prevent or minimize soil contamination. Never hose down "dirty" pavement or surfaces where materials have spilled. Use dry cleanup methods whenever possible.

Hazardous Materials Storage

Paints, paint products and other hazardous materials should be removed from the site during non-work hours or otherwise stored in a secure area to prevent vandalism. Place covered trashcans and recycling receptacles around the site. Cover and maintain dumpsters, check frequently for leaks, and never clean a dumpster by hosing it down on site.

Sanitation

Make sure portable toilets are in good working order. Check frequently for leaks.

Notification

Notification of the project start date should be sent to the Public Water System as soon as it has been determined. Public Water System personnel should be granted daily site access to review compliance with site best management practices. The Public Water System, DPH Drinking Water Section (860-509-7333 OR after hours at 860-509-8000), and appropriate sections of the Department of Energy and Environmental Protection must be notified immediately of any chemical/fuel spill or any major failure of an erosion and sedimentation control at the construction site. Emergency telephone numbers and a statement identifying the construction site as a sensitive public water supply area should be posted where they are readily visible to contractors and other on-site personnel. A note should be added to the construction documents stating the sensitivity of the area.

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WATER MAIN DESIGN AND CONSTRUCTION GUIDELINES

Effective Date: October 1, 2006

The following guidance is provided in the interest of facilitating the approval process for federally or state funded projects such as Drinking Water State Revolving Fund and STEAP grant projects that may include water main replacements or installations. Discretion in the application of these guidelines is allowable except as required by regulation. For routine distribution water main installations that do not require approval from the Department prior to construction, it is recommended that the following guidelines be utilized during design and construction except as required by regulation.

Sizing and Layout

(1) Section 19-13-B102(p) of the Regulations of Connecticut State Agencies (RCSA) requires transmission facilities to be sized to provide flows in excess of the maximum flows experienced in the community water system or service area. In addition, Section 19-13-B102(f)(1) of the RCSA requires that all service connections have a minimum water pressure at the main of 25 psi under normal operating conditions which in these guidelines includes normal peak demands but excludes fire flow demands. Whenever feasible, it is recommended that the minimum water pressure be 35 psi. Positive pressure (20 psi minimum recommended) should be maintained under all flow conditions, including fire flows if fire protection is provided, at all points in the distribution system. Pressure reducing devices should be installed where static pressures will exceed 100 psi. Pressure reducing devices conforming to section 604.7 of the current State of Connecticut Plumbing Code should be installed on individual service lines where static pressures entering the building are greater than 80 psi. If fire protection is to be provided, the system design should be such that fire flows, minimum fire flow pressures, hydrant spacing, etc. are in accordance with the requirements of the local fire protection regulatory authority.

(2) Water mains should be sized, whenever possible, to achieve a balance between hydraulic requirements and water quality maintenance. Excessive retention time (less than 5 to 7 days of retention time recommended) may result in low flow areas which may lead to water quality deterioration during normal operating conditions. If excess capacity is required for fire flow or future demands, flushing devices or equivalent should be installed in low flow areas and an operational plan should be implemented to routinely flush low flow areas. The use of smaller diameter parallel water mains in lieu of single larger mains should be considered whenever possible.

(3) Water mains should be looped and dead-end water mains avoided whenever possible. If dead-end mains are unavoidable, flushing devices should be installed at the termini of the dead-end water mains and an operational plan should be implemented to routinely flush the dead-end mains. If water mains will be separated by a closed valve thereby creating static conditions (as in the case of pressure zone boundaries for example), flushing devices should be installed on both sides of the closed valve.

Materials

(1) Pipes, fittings, valves, meters, fire hydrants, and other appurtenances should, at a minimum, conform to the most current applicable AWWA standards if available. In the absence of applicable

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WATER MAIN DESIGN AND CONSTRUCTION GUIDELINES

AWWA standards, materials and products should conform to other applicable recognized industry performance standards, if available, to ensure integrity and performance during service.

(2) Water service lines should conform to sections 603 and 605 of the current State of Connecticut Plumbing Code.

(3) Materials and products should not cause the water delivered to the customers to become non-potable, produce aesthetic problems such as taste and odors, or promote bacterial growth after being placed into active service. All pipe materials and products including, but not limited to, paints, linings, coatings, adhesives, and lubricants in direct contact with potable water should be certified to NSF/ANSI Standard 61. All materials and products in contact with potable water should be compatible with the water quality characteristics.

(4) Materials should be capable of withstanding internal and external forces to which they may be subjected while in service.

(5) Metallic materials should be protected against internal and external corrosion.

(6) The use of non-metallic buried water pipe should include a tracer wire, underground utility detection tape, or equivalent means for pipe location.

(7) Non-permeable materials, including joint gaskets, should be used in areas where organic contamination is reasonably known to exist or encountered during construction.

Appurtenances

(1) Shut-off valves should be installed at intervals and locations as determined by the public water system (PWS) to minimize interruptions of service to customers during repairs or maintenance.

(2) At high points in water mains where air may accumulate and cause pipe restrictions, provisions should be made to remove the air by air release valves or equivalent means. Air release valves should be located and installed to prevent the entry of rainwater and vermin and under no circumstance should they be subject to being submerged.

(3) Blow-offs or equivalent appurtenances should be installed at low points of the water main installation, depending on flow rate and pipe profile, where sediment may accumulate.

(4) Chambers, pits, or manholes containing distribution system appurtenances should be located, to the extent feasible, to prevent flooding or adequately drained to keep the structure dry. If gravity drainage is not practical and a sump pump or other mechanical means are employed to drain the water to a storm sewer or other drainage system, a check valve should be installed on the pump discharge line and the discharge should be located above the normal flow elevation in the receiving chamber or pipe. In no instance should a drain be connected directly to any sanitary or combined sewer.

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WATER MAIN DESIGN AND CONSTRUCTION GUIDELINES

- (5) Flushing devices should be installed at intervals and locations as determined by the PWS to allow for adequate flushing of the entire water main.
- (6) The drain ports for dry-barrel fire hydrants should be provided with a gravel pocket or equivalent for drainage and should not be connected to any sewer. Hydrant drains should be located at least 10 feet from sanitary sewer force mains and any part of a subsurface sewage disposal system. Hydrant drains should be located a minimum of 18 inches from gravity sanitary and storm sewers (10 feet recommended whenever possible). If the water table in the area is known to be high, the drain ports should be plugged watertight and an operational plan should be implemented to pump the hydrant barrels dry during freezing weather.
- (7) Fire hydrants should not be installed on water mains that are not sized for fire protection and should not be connected to a PWS which does not have adequate flows/capacity to meet fire flows.
- (8) Flushing devices should not be directly connected to any sewer.
- (9) Flushing devices should be capable of providing a minimum flushing velocity of 2.5 feet per second.
- (10) Appurtenances should be installed in accordance with the most current applicable AWWA standards/manuals if available. If manufacturer's instructions are more stringent than AWWA standards, appurtenances should be installed in accordance with manufacturer's instructions. In the absence of applicable AWWA standards, appurtenances should be installed in accordance with the more stringent of manufacturer's instructions or other applicable recognized industry standards if available. At a minimum, appurtenances should be firmly supported to prevent excessive settlement.

Service Connections

- (1) Domestic service pipes should have a minimum diameter of $\frac{3}{4}$ inch.
- (2) Domestic service pipes should be sufficiently flexible to prevent fracture from expansion, contraction, and differential settlement.
- (3) Domestic service pipes should be connected to a single-service corporation stop at the water main and should be installed with a shut-off valve and curb box.
- (4) Domestic service connections should be individually metered.
- (5) Means should be provided to flush dedicated fire service lines to remove stagnant water.

Installation

- (1) Installation of water pipe should be in accordance with the most current applicable AWWA standards/manuals if available. If manufacturer's instructions are more stringent than AWWA

**STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION**

WATER MAIN DESIGN AND CONSTRUCTION GUIDELINES

standards, water pipe should be installed in accordance with manufacturer's instructions. In the absence of applicable AWWA standards, water pipe should be installed in accordance with the more stringent of manufacturer's instructions or other applicable recognized industry standards if available. At a minimum, continuous uniform and stable support, free of unsuitable materials, should be provided such that the water pipe is fully and firmly supported along its entire length. Proper embedment and backfill, free of unsuitable materials, should be provided and sufficiently compacted to ensure that the water pipe is adequately supported, stabilized, and protected. Special care should be taken when making pipe joints to ensure water tightness.

(2) All materials should be kept as clean as possible during construction. The use of plugs or equivalent on the open ends of the pipe is recommended to prevent contamination of pipe at the job site. Joints should be cleaned of any grit and other foreign material which may promote leakage.

(3) All buried water pipe should be placed at such a depth below finished ground level, four feet minimum, that will prevent freezing during the coldest weather experienced. Service connections that will not be used during freezing weather and will be drained during such time may be exempt from this recommendation. In special situations, excluding ledge, where it may not be feasible to bury the water pipe below the frost line, the use of adequate insulation or equal may be permissible to prevent freezing of the water pipe. Consideration should also be made for insulating water pipe that is installed four feet or greater below finished ground level but passes above or below a structure that may be a cold air source such as a culvert.

(4) Thrust blocks and/or restrained joints should be used on all tees, bends, caps, plugs, reducers, valves, hydrants, etc. to prevent joint separation. If a combined thrust block/restrained joint system is used, either the thrust block or restrained joint system should be designed to provide full thrust restraint independent of the other system.

(5) The water main should be adequately protected by the use of flexible joints, preferably ball and socket joints, or equivalent in critical areas of water main stress such as piping through rigid walls or structures and/or where differential settlement may occur.

(6) Separating Distances from Sources of Pollution:

(A) Parallel installations: water mains should be laid at least 10 feet horizontally, measured edge to edge, from any existing or proposed sewer (sanitary, building/house, and storm) whenever possible. If the 10-foot horizontal separating distance cannot be physically achieved, the water main may be installed closer provided that is located in a separate trench or on an undisturbed shelf and at least 12 inches horizontally (18 inches recommended), measured edge to edge, and 18 inches above the top of the sewer, measured from crown to invert. There should be no reduction in the 10-foot horizontal separating distance for a sanitary sewer force main. No water main should come in contact with any part of a sewer manhole.

(B) Crossings: at sewer crossings, a minimum vertical clearance of 18 inches, measured from crown to invert, should be maintained between the water main and sewer with the preferred location

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WATER MAIN DESIGN AND CONSTRUCTION GUIDELINES

of the water main above the sewer whenever possible. The water main should be centered at the sewer crossing such that the water main joints are spaced as far as possible from the sewer. If the water main will cross above the sewer and will be centered above the sewer such that the water main joints are spaced as far as possible from the sewer, the vertical separation distance may be reduced to 12 inches. There should be no reduction in the vertical separation distance of 18 inches for sanitary sewer force main crossings. If the water main will cross under a sewer, special consideration should be given to the structural support of the sewer to prevent settling or deflection of the sewer which may damage the water main.

(C) If the separating distance requirements stated in Sections (A) and (B) above cannot be achieved, the design engineer should evaluate alternatives so that the water main will be protected from potential contamination. The following alternatives may be considered acceptable:

(i) The sewer in conflict should be made of materials and have watertight joints equivalent to water main pipe, constructed in accordance with water main standards of construction, and pressure tested to ensure water tightness.

(ii) The use of pipe joint repair clamps or equivalent on the water main to ensure watertight pipe joints in addition to sufficient pipe wall thickness.

Additional alternatives not listed above may also be acceptable if adequately supported and documented.

(D) There should be a minimum separating distance of 10 feet between water mains/service lines and any part of a subsurface sewage disposal system.

(E) Separation of water service lines and building sewers should be in accordance with section 603.2 of the current State of Connecticut Plumbing Code.

(7) Bridge/Surface Water Crossings:

(A) For bridge crossings the water pipe should be adequately supported, protected from damage, and insulated to protect the pipe from freezing. Expansion or flexible joints should be installed as necessary. Shut-off valves should be installed on both sides of the bridge crossing.

(B) For underwater crossings shut-off valves should be installed on both sides of the crossing.

Cross Connections

(1) Section 19-13-B37 of the RCSA requires that no physical connection be made between the distribution system of a PWS and any customer with a private well or existing PWS well unless such well is physically disconnected from the customer's plumbing. In addition, if the well is known to be contaminated, the customer shall also install a reduced pressure principle backflow prevention device (RPD) on the service line from the PWS.

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WATER MAIN DESIGN AND CONSTRUCTION GUIDELINES

Hydrostatic Testing and Disinfection

(1) After construction is completed all new water pipe and appurtenances should be subjected to hydrostatic pressure and leakage testing to ensure water tightness and integrity of construction in accordance with the most current applicable AWWA standards/manuals if available. If manufacturer's instructions are more stringent than AWWA standards, water pipe should be hydrostatic tested in accordance with manufacturer's instructions. In the absence of applicable AWWA standards, water pipe should be hydrostatic tested in accordance with the more stringent of manufacturer's instructions or other applicable recognized industry standards if available.

(2) Section 19-13-B47 of the RCSA requires that after construction is completed all new water pipe and appurtenances be disinfected and flushed. Disinfection should be done in accordance with the most current version of AWWA Standard C651. Chemicals used in the disinfection process should be certified to NSF/ANSI Standard 60.

(3) After disinfection and flushing but prior to placing the water main into active service, water sample(s) representative of the new construction should be collected in accordance with the most current version of AWWA Standard C651. Samples should be analyzed, at a minimum, for total coliform bacteria, HPC, total and free-chlorine residual, and physical parameters. Test results, with the exception of chlorine, should meet the water quality standards shown in Table 1 prior to placing the water main into active service.

Table 1 – Water Quality Standards

Parameter	Standard
Total Coliform Bacteria	0 or absent
HPC	< 100 organisms/mL
Color	< 15 CU
Turbidity	< 5 NTU
Odor	< 2
PH	range 6.4 – 10



STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH
REGULATORY SERVICES BRANCH
ENVIRONMENTAL HEALTH SECTION

Circular Letter # 2006-43

Date: September 19, 2006

To: Local/District Directors of Health
Chief Sanitarians

From: Suzanne Blancaflor, M.S.,
Chief, Environmental Health Section

Re: Separation Distances for Potable Water Wells

It has come to the Department of Public Health's attention that there may be confusion concerning separation distances for potable water supply wells and public sewer service laterals containing pump vaults. Section 19-13-B51(d)(a)(2) of the Public Health Code reads as follows:

"No such well shall be located within seventy-five feet of a system for disposal of sewage or other source of pollution. Greater separation distance shall be required for certain industrial waste on certain rock formations. If a sewer lateral is constructed of extra heavy cast iron pipe with leaded joints or equal approve type of tight joints, a minimum separating distance of twenty-five feet shall be maintained"

The sewer lateral 25-foot separation distance applies only to tight piping that has been inspected and approved by the Local Director of Health. Approved sewer lateral piping and connections are listed in Table 2A of the Technical Standards. Some public sewer systems utilize pumps and pump vaults that are installed on the sewer laterals. Such pumps (i.e. grinder, ejection) and pump vaults are sources of pollution and must maintain the 75-foot separation distance. The Local Director of Health and his/her designee should approve all sewer extension projects and installation of sewer laterals. Local Health Directors need to be in contact with the local WPCA to ensure the health department has received all pertinent information to review each project.



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This program recognizes that there may be instances, such as sewerage lake-area developments, where it is not possible to provide the specified separation due to the lot layouts and existing well locations. In these cases our office has supported Local Health Departments/Districts granting exceptions if:

1. Separation distances are maximized, and;
2. Special precautions are taken such as the usage of higher-grade pipe, leakage testing, etc., and;
3. It is determined the exceptions are unlikely to pollute any well, and;
4. The exceptions will result in an improvement to the existing well and/or sewage system, and;
5. The pumping rate of the affected well is reduced to less than 10 gpm.

We recommend any such exceptions be discussed with the appropriate personnel at the Department. Please also be aware that no exceptions should be granted for new construction.

Please feel free to contact the Department with further questions.

- C. Robert Scully, Supervising Sanitary Engineer, Environmental Engineering Program
Ray Jarema, Section Supervisor, Private Well Program
Pamela Kilbey-Fox, Chief, Local Health Administration Branch, DPH
William Gerrish, Director, Office of Communication, DPH

April 5, 2015

RE: Mansfield Four Corners Sanitary Sewer Project
Scoping Meeting

Dear Mr. Esguerra,

I am an elected member of the Town of Mansfield's Town Council. I want you to know and to consider the following as you manage this project.

The statement in support of this project as presented by the Mayor, Chair of the Mansfield Council, did not receive unanimous support within the Mansfield Town Council. The vote was 6 to 3.

This project is very controversial amongst Mansfield townspeople. The referendum vote passed with a very small margin and only with the addition of the Uconn student vote. The students were urged to vote "yes" by those in favor of the project. Townspeople are angry about this.

Townspeople are concerned about the environmental impact of this project. The EIE should answer these questions and provide that the townspeople's comments and requests be complied with.

1. What is the need to modify the conservation easement due to the Landfill Closure Project #900748? Will any modification of this easement allow for activity currently prohibited within the Landfill conservation area? If so, why and is this good for the environment?
2. All required easements should be in place and available for all to read and understand before the EIE is complete.
3. The Cedar Swamp must be protected. Is there current mapping of this swamp? If not, provide for this to be done; the sewer piping is proposed to run very close to the swamp.
4. The impact of proposed development must be investigated. People are concerned about development induced runoff into the Cedar Swamp which can lead to contamination of drinking water for properties not in, but close to, the sewer area. Personally, I live within about 1 ½ miles of the Four Corners region and am familiar with the brooks and wetlands in the greater area. I fear that my well could be impacted by development.
5. Scientists claim that the New England area will experience severe weather patterns due to climate change. Already we see that happening. The EIE must address what will happen to the Four Corners area if there is a deluge of rain, especially if the area has been built out and up. The Four Corners area is where Mother Nature planned to collect water runoff.
6. The sewer line travels very close to the Cedar Swamp. The EIE should require a study of the impact to the natural habitat of animals, birds, plants, etc. Do endangered species live there?

The EIE should provide valid reasons why the Four Corners area should have a sewer system other than to allow for development. It is not the case that the septic system of every property at the Four Corners is failing. It is the case that there are alternative septic systems which should be able to cure any existing septic problem. The public believes that it is DEEP's place to protect the environment; it is not DEEP's place to provide for development. The area is not suitable for expanded development; the area is swampland or high water table. It is not DEEP's place to provide for existing developer landowners to capitalize on their investments.

The EIE must address Uconn's sewer treatment facility. Will the facility have the capacity to handle development of Four Corners along with the Uconn proposed expansions? What will be the impact on the Willimantic River?

Townpeople are concerned about the need for expanded development at the Four Corners. Repeatedly, townspeople say they want Mansfield to be a rural community. The EIE should prove that a sewer system is required for the existing properties at Four Corners and that there is no viable alternative for them.

Thank you.

Betty Wassmundt

Member Mansfield Town Council

54 Old Turnpike Road

Storrs, CT 06268

860-429-8300

PUBLIC COMMENT SHEET

TOWN OF MANSFIELD
FOUR CORNERS SANITARY SEWER PROJECT
ENVIRONMENTAL IMPACT EVALUATION

NAME: DAVID MORJE
ADDRESS: 64 Birchwood Hts, Storrs
AFFILIATION: citizen

COMMENTS: I would have liked a clearer statement
by Malouf & McBroon of their charge from
Town of Mansfield. Why the focus wholly on
option #4, tying into UConn's system, and
will there be a cost-benefit analysis of the
two parties, UConn & town?

Why were other agencies not present
at this EIE hearing? DPH, D.O.T.
O.P.M. ? Army Corps of Engineers? They
should have been represented, to air their
concerns & lend their ~~own~~ expertise to the
process.

The hearing and M&M presentation seemed
wholly lacking in a clear overarching picture
of development and environmental impacts that
included UConn's planned development of North
Campus.

April 6, 2015

Carlos Esguerra
carlos.esguerra@ct.gov
Department of Energy & Environmental Protection
Bureau of Water Protection & Land Reuse
79 Elm Street
Hartford, CT 06106-5127

Dear Mr. Esguerra;

This letter provides our comments on the proposed scope of the Environmental Impact Evaluation for the Four Corners Sewer Extension. Our primary concern is that this EIE provide clear evidence for the need for these proposed sewer extensions consistent with meeting the public health and general welfare of the town of Mansfield.

1. **Need for the Project:** Because sewers inevitably increase the potential density of development within a community, it is imperative that the purpose and need for this project be explained with data on septic system failures or other factors that have brought this proposed sewer extension under consideration. Why is development needed in this part of Mansfield? Does the town Plan of Development and the State's Plan of Conservation and Development support the proposed action? Is it supported by the residents of the Town of Mansfield? Is there a sewer plan for the town of Mansfield that has identified this portion of Mansfield as requiring sewers to correct existing wastewater discharge issues?
2. **Evaluation of Alternatives:** The scoping document must include a range of alternatives for achieving the objectives of the proposed project including the following; a) the no action alternative that assumes no public sector investments are needed; b) a private sector solution to sewer extensions based on the assumption that commercial development must pay its own way for such services when such services might be needed in the future; c) the use of engineered septic systems to replace failing septic systems, d) the use of community leaching fields as a means to limit the unnecessary installation of sewer lines through rural areas, e) a down-scaled sewer system reflecting a more moderate development scenario, f) a down-scaled sewer system with upgrades tied to potential development as it occurs and g) a careful evaluation of other town-wide alternatives to the proposed action that would locate development in other areas of Mansfield that are already better suited for higher density development and would make the proposed action less urgent.
3. **Sewer Avoidance Assessment:** Because sewers inevitably increase the density of development and have cumulative impacts on growth, it is imperative that the scoping document provide an exhaustive analysis of all of the strategies that can be used to avoid the installation of sewers. Extension of sewer services should always be a choice of last resort in a rural community and as a result the scoping document should clearly identify and evaluate all strategies that will avoid the need for the proposed project or, at least minimize its scope.

4. **Wetland Avoidance Assessment:** If it is determined that there are no alternatives to the installation of sewers, then the scoping document must provide alternative routes for sewer line extensions that will avoid or at least minimize impacts of natural resources including federal and state regulated inland wetlands. The EIE must identify and evaluate the locations of all federal and state inland wetlands and determine which of these wetlands provides habitats for threatened and endangered species and which may serve other important ecological functions that may be disturbed by the proposed alternatives. Construction of sewer lines disturb ground water patterns in the affected area. For this reason, the scoping document must also identify and evaluate the impacts of shifting water tables and ground water flows on the natural resources above and below ground. Will the proposed sewer line actions inadvertently drain wetland areas by providing a viaduct for the free flow of water to new and unexpected locations? The scoping document must also identify whether the proposed alternatives are subject to individual U.S. Army Corps of Engineer (USACOE) Wetland permits or whether they may fall under a Nationwide Permit program of the USACOE.
5. **Other Regulated or Critical Natural resources:** The scoping document must identify and evaluate all other natural resources that could be impacted by the proposed action under each of the alternative development and no action scenarios discussed above. Regulated resources that must be identified and evaluated include threatened and endangered species impacts, historic and archaeological resources, Public Act 490 protected farm and forestland, zones where prime agricultural soils exist, steep slope terrain with highly erodible soils, carbon monoxide hot spots within the study area, and ground and surface water quality classifications in the study area. The scoping document must evaluate the waste water treatment plant's capacity to handle town and University waste water in consideration of varying intensities of use now as well as the foreseeable future.
6. **Stormwater Runoff:** The scoping document must address the stormwater runoff impacts associated with all of the proposed alternatives. Is there adequate space and capacity for stormwater discharges in the affected study areas in light of high water tables and other development constraints? The EIE must determine the anticipated location and size of all impervious surfaces areas that will be created by the proposed actions and what impacts that will have on the natural attenuation of stormwater. The EIE must provide guidance and requirements on the development of stormwater management plans for the affected study area. The EIE must also identify all of the regulatory requirements for stormwater management and review alternatives that reduce stormwater impacts. The stormwater analysis must be based on the latest groundwater and surface water discharge trends for the affected study area using the latest flood and stormwater prediction modelling. Impacts of the proposed action on climate change must also be considered.
7. **Cumulative Impacts of the Proposed Action and its Alternatives:** Since sewers are one of the greatest facilitators of rapid growth in developing municipalities, and Mansfield is already a growing community with significant traffic and water supply issues, the proposed scoping document must evaluate the impact of each alternative considered on the demand for increased water services and the traffic impacts that would be associated with each development scenario. The cumulative impacts analysis must also consider the effects of each alternative on commercial and housing development using reasonable assumptions about population growth within the town and at the University of Connecticut over the next five, ten and twenty year periods.

8. **Avoidance of Segmented Planning:** Since the town of Mansfield is also simultaneously considering changes to its town plan of development, which in turn may trigger changes to its zoning regulations, the scoping document must identify and evaluate the costs and benefits of the proposed actions once the new town Plan of Development is adopted. Similarly, the University of Connecticut is seeking to divert water from another watershed to provide a greater supply to meet its institution as well as town of Mansfield. This proposed diversion project must be considered in the scoping document for the Four Corners Sewer Extension including how it might impact some of the development scenarios.

The cumulative environmental impacts of the new Storrs Downtown as well as the completion of the N. Hillside Road and also the UCONN Tech Park should be considered in addition to the potential changes to the town's POCD, along with the possibility of a major water diversion as currently sought by UCONN and the Town of Mansfield.

An EIE of the Four Corners Sewer Project should include a comprehensive evaluation of traffic patterns and volume resulting from all of these recently completed, intended, and future projects. Likewise a calculation of the total increase in impervious surface in the aggregate along with its potential impact on surface waters needs to be addressed. In addition a careful study of economic impact, including but not limited to existing businesses and existing housing with a consideration to possible market saturation, begs consideration. The cumulative environmental impact of these recent and intended projects to Mansfield (and the surrounding northeast area) warrants careful examination. These projects should not have been addressed in a piecemeal fashion in the first place.

9. **Impacts on Other Community Services:** What public services will be required if the proposed action is adopted? Inevitably sewers trigger the need for other public services that are integral and connected with the project and should not be segmented from the proposal (e.g., expanded fire, police and ambulance services, expanded school systems, increased maintenance of roads, construction of sidewalks and maintenance and inspection of utility systems, etc.).
10. **Density Analysis:** The size of the proposed sewer lines will determine the potential development capabilities that could occur within the study area. The scoping document must identify the density assumptions used to select sewer line capacities proposed within the study. Moreover, what are the population growth assumptions and commercial development assumptions associated with the diameter of each proposed sewer line extension?
11. **Consistency Determinations:** Is the proposed action and its alternatives consistent with a) the town's zoning regulations; b) the Town Plan of Development; c) the town's adopted sewer plan (if any) d) The State Plan of Conservation and Development Policies Plan, e) the Capitol Region Council of Government's Regional Plan of Development, f) the state's Water Diversion policy goals and/or any diversion permits that may apply to the University of Connecticut and/or the town of Mansfield. In addition, the scoping document should evaluate whether the proposed actions are consistent with sustainable development principles that focus on actions with the least disrupting means of achieving their goals.
12. **Phased Development:** The scoping document also needs to identify and evaluate strategies for meeting the needs for this project that phase development over longer time periods consistent with community needs, market forces and financial resources. Specifically, what is driving the

urgent need for sewer extensions in a very rural area of northeast Connecticut (i.e. the Four Corners Area) that has had no significant groundwater resource issues in the last fifty years?

13. **Cost Benefit Analysis:** Given the existence of a wide range of vacant commercial properties in the study area and in other designated commercial areas in Mansfield, the scoping document needs to confirm the investment value of the proposed sewer extensions as a means for attracting and retaining commercial growth in an uncertain business environment. Where is the objective market research that supports the proposed action? Where is the demand for development that would be supported by the proposed sewer extensions? Given the disappointing thirty year history of the technology park, commercial development in the study area is not likely to proceed quickly. The proposed action appears to be highly speculative without a robust market study and without evidence of wide scale failed septic systems in the study area. Is it legitimate for the state to invest limited fiscal resources in speculative ventures that have had a long and checkered history of poor performance? What are costs and benefits

to the town's tax rolls from the proposed development given the town services that will be required on an annualized basis?

Thank you for your consideration of our recommendations and concerns.

Sincerely,

Alison Hilding
17 Southwood
Storrs, CT 06268

Richard Sherman
9 Bates Road
Chaplain, CT 06235

Alison Hilding acknowledges for the record that she is a member of the Council on Environmental Quality. She is writing this as a private citizen and is not representing the Council at this time.

April 6, 2015

Mr. Carlos Esguerra
CT DEEP Bureau of Water Projection and Land Reuse
79 Elm Street
Hartford, CT 06106-5127

Mr. Esguerra: I have followed the planned development for Mansfield's Four Corners' area (junction of Routes 195 and 44). I opposed the \$9 million-plus sewer project last fall *because environment work and zoning regulations had not been completed*. The same issues exist. But, now investors are jostling to build out and overcrowd a quiet entry to our town. We understand that a hotel, a large multi-family residential apartment unit complex, senior citizen housing and other commercial and office space ventures are being proposed. Note that year-around town residents are already inundated with a major UConn student (mostly) housing/restaurant (mostly) high-density, compact complex that many are disappointed in.

Still, our zoning regulations are not finalized. While some, I understand, refer to the pair of new gas stations facing one another at this corner as pleasing to the eye, it is obvious they are unfamiliar with aesthetics (and other guidelines that protect valuable resources and meet the goals and objectives of the community) that can be obtained when comprehensive and meaningful overlay zones are in place. You are aware that designing new zoning ordinances and overlay zones have been part of the project since its initiation and should be codified BEFORE any more of the project goes forward. Area-specific zoning ordinances and then the oft-mentioned overlay zone codes that complement the regulations will protect, modify and define this important space.

Still, the environmental impact of this project (with a proposed excess of buildings AND acres of asphalt-covered parking lots) has not been undertaken – after all, this borders on a swamp area with unique features that also feeds into other water systems.

The proposed water/sewer/development project should be halted until local zoning regulations are encoded, followed by overlay district ordinance laws that append the zoning regulations. Please, do not let the temptation of development and the push of a large university with powerful and political motivations overtake the correct resource-protective procedures. It is important that the tools of zoning codes and subsequent overlay district zones be in place in order to implement modified (and aesthetically pleasing) growth in this environmentally sensitive locale.

Thank you for your consideration.

Martha Kelly
29 Bundy Lane; Storrs, CT 06268

Note: Although I am an elected member of our Board of Education, I am writing as a private citizen. My views do not reflect the Board of Education's. MK

Cc: Linda Painter, Mansfield Planning and Zoning Department

Tulay Luciano
808 Warrentville Road
Mansfield Ctr. CT 06250
860.429.6612
March 27, 2015

Carlos Esguerra
Connecticut Department of Energy & Environmental Protection;
Bureau of Water Protection and Land Use;
79 Elm Street; Hartford, CT 06106-5127.
carlos.esguerra@ct.gov

Re.: Scoping for Mansfield Four Corners Sanitary Sewer Project

Dear Mr. Esguerra:

I appreciate the opportunity to comment on this important project.

Alternative 1: No Action: Should be the preferred action. Because:

- With the installment of the water pipes and sewer lines, the growth of Mansfield will threaten the rural character of Mansfield.
- The area watersheds of rivers and brooks, such as Fenton – a potable water supply – will be adversely affected.
- The area wetlands such as Cedar Swamp will be adversely affected.
- The flood hazard potential: The Four Corners area has high water table and poorly draining soils. If the area gets tremendous rains due to climate warming, will the design of the sewer project prevent the possible flooding?

Alternative 4: Discharge to UConn WPCF: Does UConn have adequate sewer capacity to hold and process the additional sewage coming from this project? Will UConn be able to expand its sewer facility? (Although this question was posed several times to Mansfield Town Council, no definite answer has been received yet.)

Best regards,
Tulay Luciano

Comments CTDEEP Scoping Meeting Four Corners Sewer Project, March 18, 2015

Mansfield Town Councilor Virginia Raymond
162 Maple Road Mansfield, CT 06268
860-429-1003

I also serve on the Town Council Finance Committee and the Mansfield Four Corners Water and Sewer Committee.

My comments are being presented against the backdrop of three commensurate activities:

1. the Connecticut Department of Energy and Environmental Protection ("CTDEEP") tentative determination to approve an application by the Connecticut Water Company ("CWC") and the University of Connecticut ("UCONN") to perform an inter-basin transfer of a maximum of 1.85 million gallons per day of water from the Shenipsit Reservoir to the University of Connecticut and the Town of Mansfield (CTDEEP public hearing to be held March 25, 2015);
2. the Town of Mansfield ("Mansfield") Four Corners Sewer "Extension" (emphasis added) Sewer Project (hereinafter referred to as "Four Corners Project" or "Sewer Project" ; and
3. the "Mansfield Tomorrow Plan of Conservation and Development" ("POCD") which serves as Mansfield's fifth POCD in accordance with Section 8-23 of Connecticut General Statutes which requires municipalities to adopt a POCD every ten (10) Years.

Before I get into the body of my comments, I am curious about the use of the word "Extension" in describing the Mansfield Four Corners Sewer Project. Currently Mansfield has no sewer lines in Four Corners area so I am interested in receiving an explanation as to what criteria the Mansfield project has met to be deemed an extension and what advantage there is to be gained from a project review and permitting perspective, if any, in having a project deemed an extension as opposed to what, in this case, is a proposed new sewer line?

Summary discussion:

Map 1, Sewer Project dated February 2015 and Map 2, Proposed Water dated May 20, 2014

- General thinking of town management and the Mansfield Water and Sewer Committee is that a full blown EIE would not be needed because all environment issues have been studied as part of the CWC/UCONN inter-basin water line along Route 195 and Route 44 (Sewer Project can draft in behind CWC/UCONN EIE). I disagree for the following reasons:
 - Potable water and untreated sewage are two very different effluents;
 - In a number of cases the proposed sewer line deviates from the CWC proposed water line;
 - Black dots indicate manholes needed to perform maintenance and repairs. Note that along the yellow dotted line at the base of the map (line leading from the Jensen's Pumping Station to the North Hillside road has very few manholes yet this is a mature forest containing wetlands as you see better in a later map. Is this correct; should there be better access to the sewer lines in the event of a leak or breach?

Map 3, Sewer District and Document 3a, List of 61 properties and preliminary sewer assessment

- Encompasses 61 properties. Properties highlighted in yellow are currently unimproved/open space.

Map 4, Proposed Sewer Layout showing wetlands and 100-year floodplain

- Many of the properties are within or immediately adjacent to the Cedar Swamp and the floodplain.
- This is particularly important as it relates to Mansfield's draft POCD.
 - POCD recommends "Smart Growth" whereby new development is built up, condensed to avoid sprawl and parking is placed in the back of buildings.
 - Construction projects discussed include:
 - 90-room hotel on Parcel 11; two-story office space on Parcel 3; one-story office space on Parcel 1; office and retail on Parcel 16; commercial on Parcel 32; convenience store and clustered housing on Parcels 45 and 48; expansion of Jensen's Rolling Hills Community and clustered housing (exact locations not yet disclosed).
 - Have been told by the Town Manager that CTDeep will not require any storm drains (is this true?).
 - What will be the impacts of all the additional impermeable roof and parking surfaces on Cedar Swamp? I know that the question has been, but I'm not sure answered as to when the Cedar Swamp area was last mapped for wetlands or inventoried regarding fauna
 - In selling the sewers to residents we were told by CWC and Mansfield Development Director that there would be construction overlays associated with the water lines to contain unwanted development. These overlays have never found their way into the draft POCD.
 - In selling this project to residents we were told that the zoning regulations in effect in 2013 (as opposed to any new zoning regulations that result from the current draft POCD) will prevail with regard to any post-water-and-sewer-installation construction growth. While Mansfield citizens have requested that this provision be explicitly cited in the POCD, such language has not made its way into the document.

Map 5, Project Layout

- This map shows the large mature forest area immediately adjacent to the southern portion of the proposed sewer district.

Map 6, FEMA Flood Zones

- This map illustrates the intricate system of wetlands and vernal pools, and flood plans located in and around the mature forest;
- I drew in the approximate proposed location of the line intended to connect the Mansfield sewer project to the "sleeve" which will eventually deliver the affluent to the UConn waste water treatment facility.
- As you can see, the proposed location of the line crosses numerous wetlands, the UCONN Open Space Preservation Area and, as we will see in a later drawing a vernal pools.

Document 7, Excerpt from UCONN Wetland Mitigation Monitoring Report 5

- U.S. Army Corp of Engineers Conservation Easement
- 60 +/- acre conservation easement deed restriction established as part of the UConn Landfill and chemical pit closure requirements;
- Conservation easement expressly. . ." prohibits any filling, clearing, and other disturbances (including vehicle access) on these sites except for activities explicitly authorized by the Corps of Engineers in these documents."

Brief overview of additional maps:

- Vernal Pools
- Preservation Area

- UCONN Development Envelope
- UCONN Alternative Development envelope
- North Campus Wildlife Habitat Area
- ETC

As a council member I voted against sending this project to referendum for bonding. Based on the input I received from constituents they were largely opposed to the project. Some opposed the project believing growth in this area will adversely impact the environment and the rural quality of life so important to Mansfield residents, while others opposed the project for economic reasons. My sense prior to the Town Council's vote to send the question to referendum was that the question would be defeated and, as it turned out, had it not been for the same-day registered student voters it was defeated.

It is against this backdrop that I should CTDEEP approve this project C that any such approvals or permits to construct contain a provision that construction begin at the point that the sewer line interconnects with the existing "sleeve" that is generally located at the point where the UConn North Hillside Road ended prior to the commencement of the construction of the North Hillside Road extension (**reference attached Map 1 dated February 2015**). As with any major construction project there is the potential for cost overruns; sometimes significant cost overruns. By beginning construction at the North Hillside Road connection point if the project should encounter major cost overruns at least the portion of the sewer line that has been completed can be connected to the UCONN waste water treatment facility. The Town Council and townspeople can then determine if we wish to put any more Town taxpayer money into the project.

Map 1



LEGEND

- PROPOSED PUMPING STATION
- PROPOSED MANHOLE
- PROPOSED 15" SANITARY SEWER
- PROPOSED 12" SANITARY SEWER
- PROPOSED 10" SANITARY SEWER
- PROPOSED 8" SANITARY SEWER
- PROPOSED 10" FORCE MAIN
- PROPOSED 6" FORCE MAIN
- PROPOSED 2" LOW PRESSURE
- PROPOSED CONNECTICUT WATER PROJECT
- FOUR CORNERS SANITARY SEWER PROJECT AREA

MANSFIELD, CONNECTICUT

DEPARTMENT OF PUBLIC WORKS

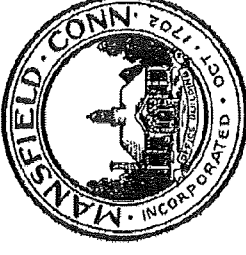
FOUR CORNERS SANITARY SEWER PROJECT

SCALE: 1"=200'

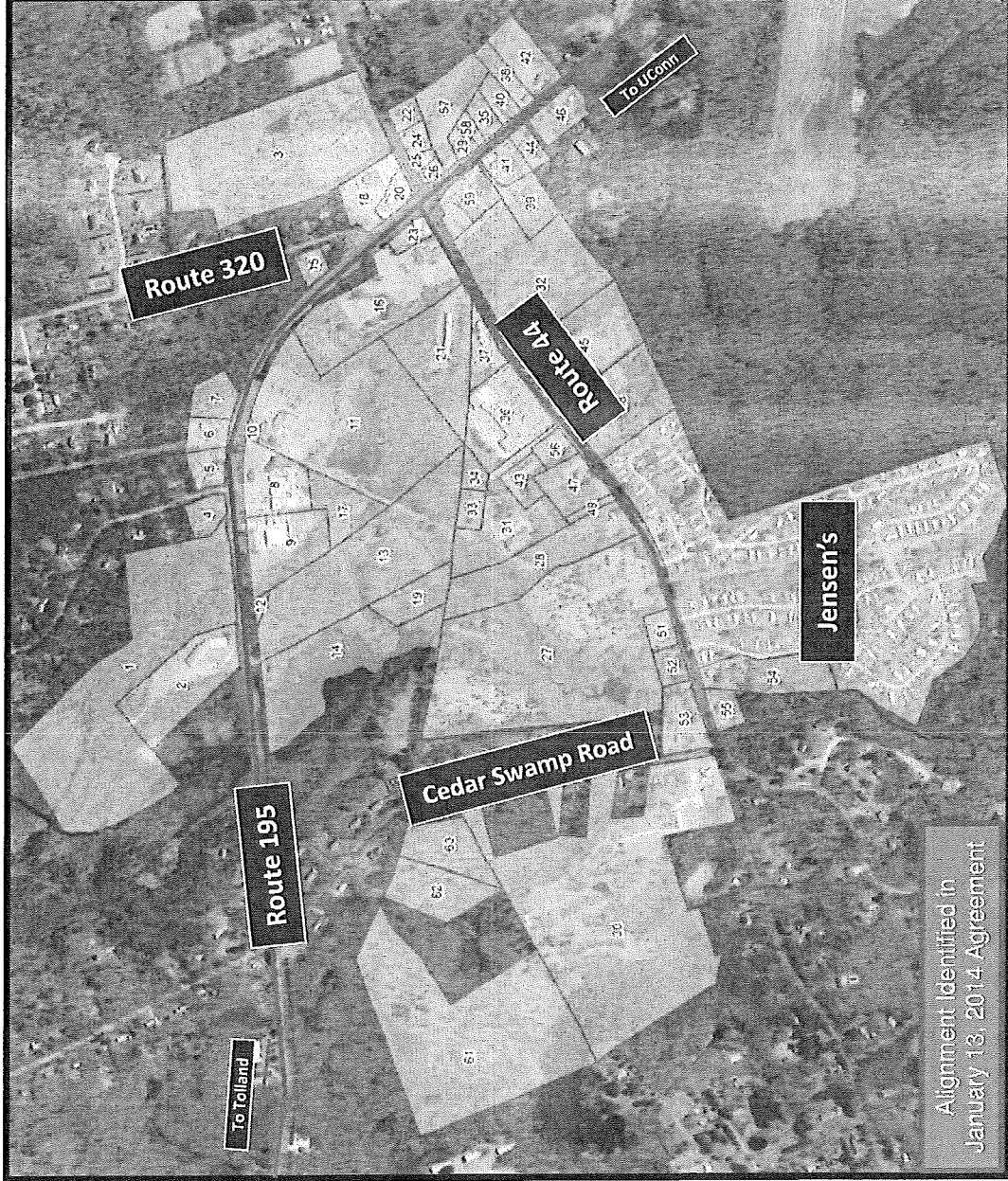
FEBRUARY 2015

Weston & Sampson®

Map 2



Proposed Water Layout



> Proposed Layout

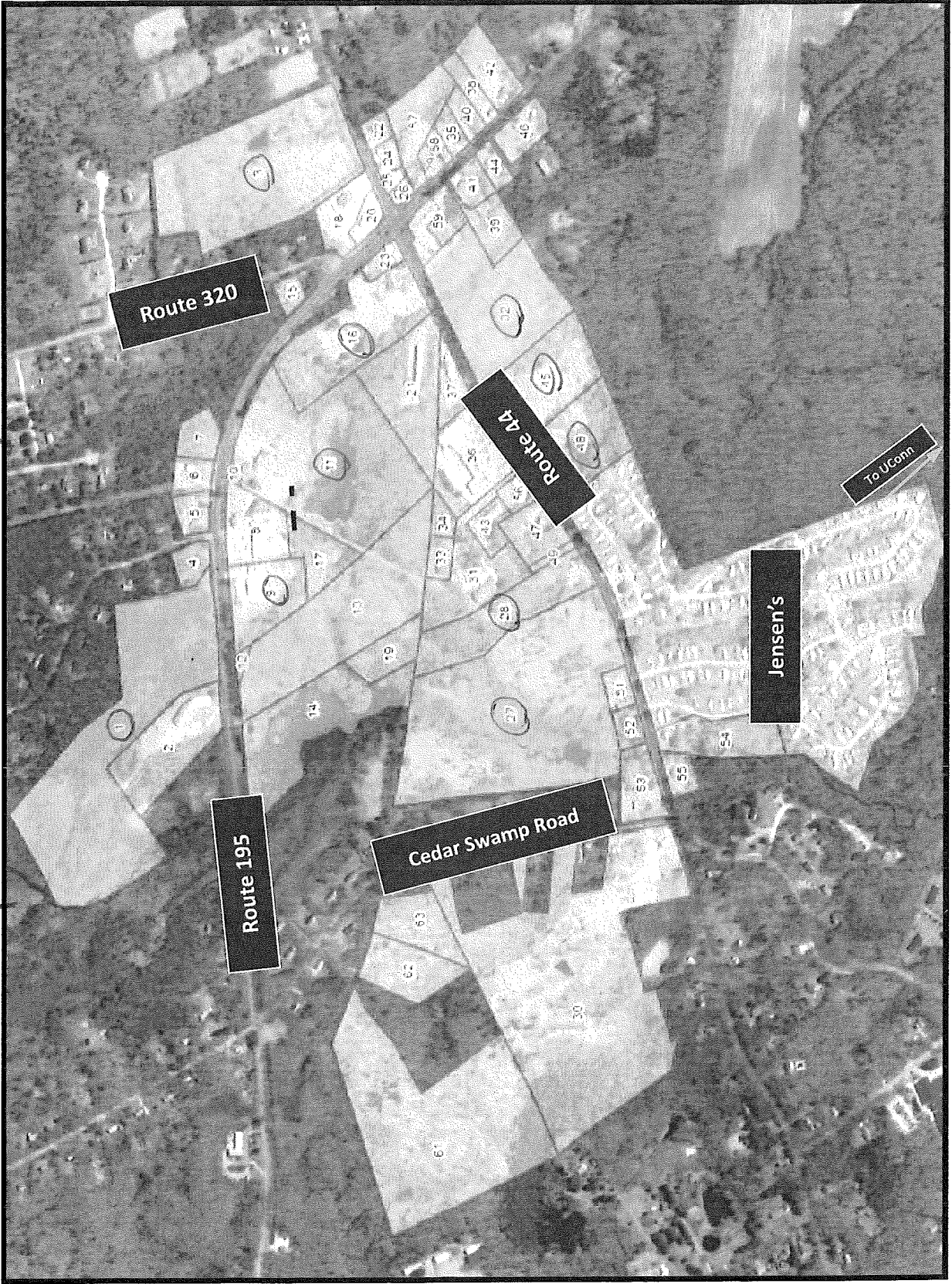
May 20, 2014

Public Informational Session

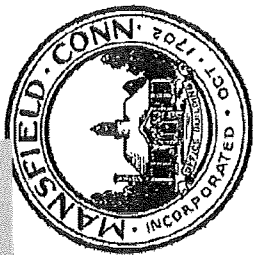
Weston & Sampson

Map 3

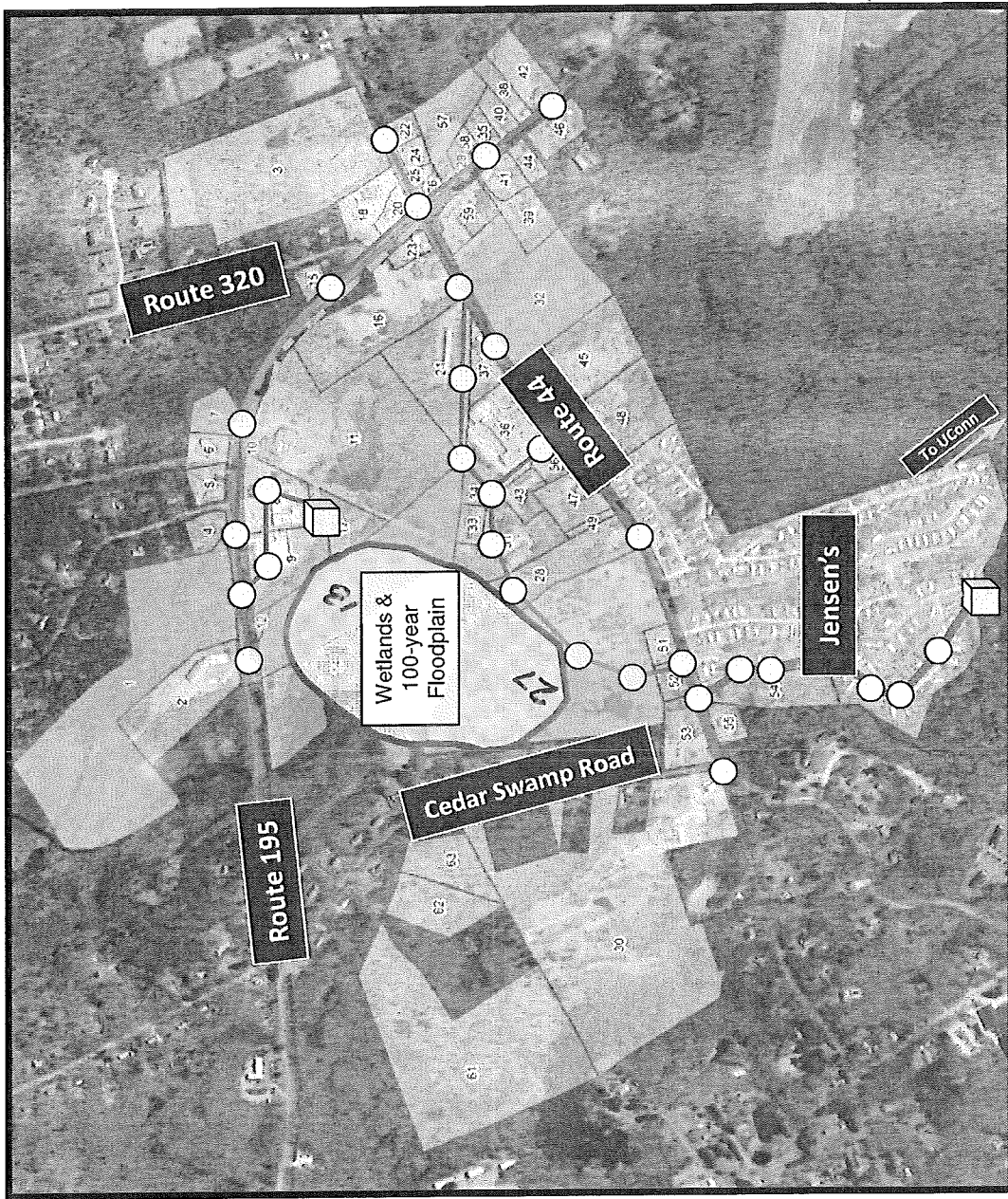
Sewer District



Map 4



Proposed Sewer Layout



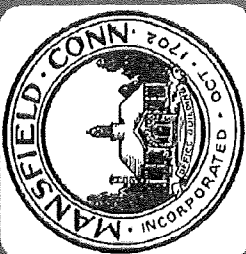
• Storm Water Management
No storm water impoundments

➤ Proposed Layout

Public Informational Session

Weston & Sampson

Maps



Project Area



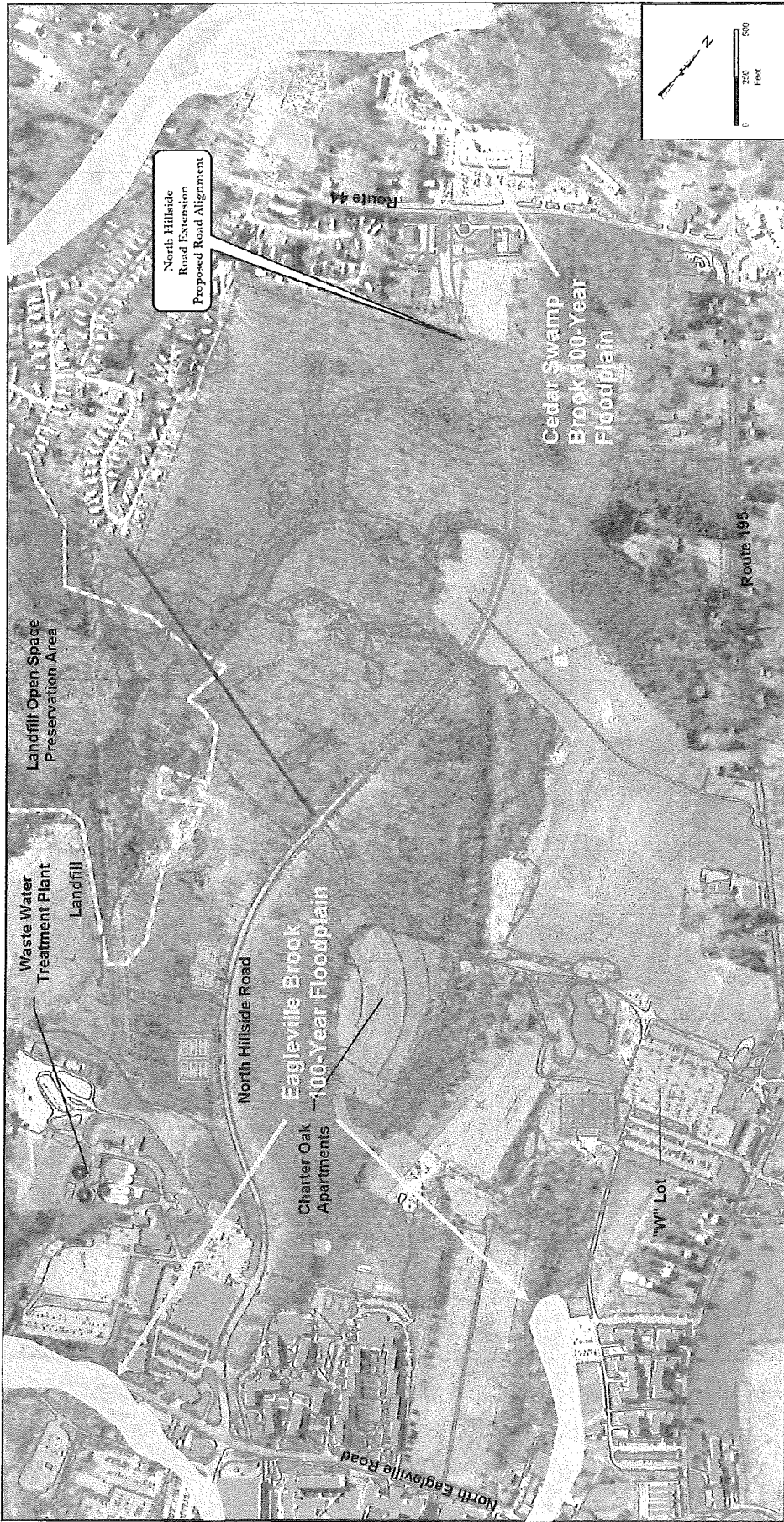
Four Corners Sewer Project

Public Information Session

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Map 6

Figure 4-12. FEMA Flood Zones



Legend

- Proposed Edge of Pavement
- Proposed Bridge
- Water
- Intermittent Water
- Wetland Delineation
- Vernal Pools
- FEMA 100 Year Flood Zone
- Parking Areas, Driveways, & Sidewalks
- UConn - North Campus Master Plan parcels
- Existing Sports Facilities
- Existing Buildings
- Landfill Open Space Preservation Area

Location Map

University of Connecticut

FUSS & O'NEILL
Dedicated to Delivery

Data Sources:
Wetlands and Vernal Pools - Fuss & O'Neill, 2000.
Landfill Open Space - CAE Associates, 2006.
UConn CLEAR Data
Other - UConn GIS Data

Preliminary Four Corners Sewer Assessment

Four Corners Project ID (#)	Street Address	Current Use (2014)	Parcel Area ⁽⁵⁾ (SF)	Zoning	\$3,000,000 Estimated Assessment (Incl. financing costs)	
30, 61, 62, & 63	497	MIDDLE TPKE	Commercial	2,634,941	RAR90	\$183,516.75
47	569	MIDDLE TPKE	Commercial	88,042	PB3	\$64,429.72
48	574	MIDDLE TPKE	Commercial	235,284	PB3	\$54,765.35
56	575	MIDDLE TPKE	Commercial	34,850	PB3	\$39,629.70
36	591	MIDDLE TPKE	Commercial	192,717	PB3	\$137,010.26
45	596	MIDDLE TPKE	Commercial	259,513	PB3	\$79,230.43
37	603	MIDDLE TPKE	Commercial	57,172	PB3	\$57,557.12
16	625	MIDDLE TPKE	Commercial	343,268	PB3	\$170,196.45
25	644	MIDDLE TPKE	Commercial	12,139	PB3	\$15,661.44
24	650	MIDDLE TPKE	Commercial	25,989	PO1	\$31,445.36
22	656	MIDDLE TPKE	Commercial	26,543	PO1	\$31,416.78
59	632	Middle Turnpike	Commercial	178,600	PB3	\$84,073.47
33, 34, 43	16	PROFESSIONAL PARK RD	Commercial	2,802,226	PB3	\$199,372.39
31	34	PROFESSIONAL PARK RD	Commercial	208,256	PB3	\$49,882.47
26	1650	STORRS RD	Commercial	13,299	PB3	\$21,772.89
23	1659	STORRS RD	Commercial	29,064	PB3	\$47,586.77
18 & 20	1660	STORRS RD	Commercial	115,800	PB3	\$90,198.35
11	1717	STORRS RD	Commercial	724,044	PB3	\$144,352.72
8	1733	STORRS RD	Commercial	135,127	PB3	\$99,046.19
5	1734	STORRS RD	Commercial	42,638	PO1	\$45,542.55
9	1753	STORRS RD	Commercial	168,756	PB3	\$102,328.60
2	1768	STORRS RD	Commercial	238,440	PO1	\$83,848.13
21	611	MIDDLE TPKE	Multi-Family	245,781	PB3	\$168,338.86
60		MIDDLE TPKE	Multi-Family	2,199,800	RAR90	\$894,495.44
53	505	MIDDLE TPKE	Public	89,696	RAR90	\$45,027.28
6	1722	STORRS RD	Public	43,928	PO1	\$43,542.16
55	504	MIDDLE TPKE	Residential	39,058	RAR90	\$27,723.94
54	520	MIDDLE TPKE	Residential	148,843	RAR90	\$21,785.92
52	521	MIDDLE TPKE	Residential	35,195	RAR90	\$29,579.38
51	527	MIDDLE TPKE	Residential	33,907	RAR90	\$28,634.73
28	555	MIDDLE TPKE	Residential	245,704	PB3	\$31,035.32
3	661	MIDDLE TPKE	Residential	697,358	PO1	\$63,587.82
42	1620	STORRS RD	Residential	93,056	RAR90	\$26,926.97
46	1621	STORRS RD	Residential	64,022	RAR90	\$40,239.82
38	1630	STORRS RD	Residential	43,718	RAR90	\$14,899.38
44	1631	STORRS RD	Residential	29,942	RAR90	\$18,103.56
40	1632	STORRS RD	Residential	35,175	RAR90	\$18,539.09
41	1637	STORRS RD	Residential	46,906	RAR90	\$27,106.57
39	1641	STORRS RD	Residential	78,251	RAR90	\$17,146.72
14	1775	STORRS RD	Residential	362,396	FH	\$62,710.59
58	1640	Storrs Road	Residential	17,860	RAR90	\$9,889.41
57	1646	Storrs Road	Residential	126,330	RAR90	\$18,059.22
4	9	TIMBER DR	Residential	42,892	PO1	\$29,643.66
15	15	WILLINGTON HILL RD	Residential	27,040	RAR90	\$21,771.58
35		STORRS RD	Telecommunications	29,698	RAR90	\$27,454.51
27	541	MIDDLE TPKE	Unimproved Land	1,082,597	RAR90	\$108,538.53
32		MIDDLE TPKE	Unimproved Land	422,399	PB3	\$149,359.08
49		MIDDLE TPKE	Unimproved Land	13,753	PB3	\$13,129.64
1		STORRS RD	Unimproved Land	937,965	PO1	\$128,972.14
7		STORRS RD	Unimproved Land	58,059	RAR90	\$29,826.84
10		STORRS RD	Unimproved Land	5,258	PB3	\$17,979.72
12 & 13		STORRS RD	Unimproved Land	554,896	RAR90	\$45,083.97
29		STORRS RD	Unimproved Land	16,870	RAR90	\$17,188.72

Notes:

- 1) These assessments are preliminary.
- 2) Significant assumptions were made in the development of these preliminary assessments and should not be considered final
- 3) These assessments were estimated based on a \$3,000,000 construction apportionment (including financing costs) from the WPCA
- 4) The WPCA shall apportion costs of the project following completion of construction
- 5) Parcel Area per 2009 GIS parcel lines

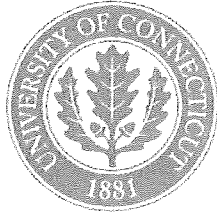
PRELIMINARY
August 2014

Document 7

Wetland Mitigation Monitoring Report 5

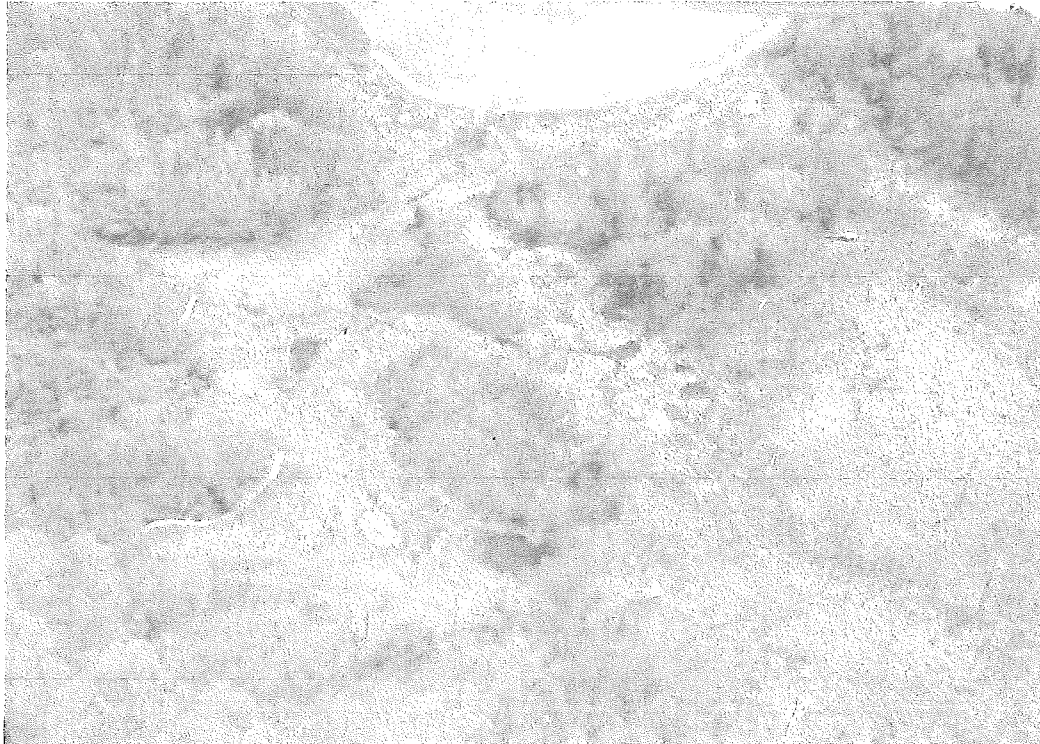
U. S. Army Corps of Engineers Permit NAE 2004-661

2012



Landfill Closure Project # 900748

University of Connecticut
Storrs, Connecticut



MA MASON & ASSOCIATES, INC.
Environmental Consulting & Projects
771 Plainfield Pike, North Scituate, Rhode Island 02857 Telephone (401) 647-3835

In association with

**HALEY
ALDRICH** HALEY & ALDRICH, INC.
106 Corporate Place, Suite 105 Telephone
Rocky Hill, Connecticut 06067 (860) 290-3131

WETLAND MITIGATION MONITORING REPORT 5 - 2012

LANDFILL CLOSURE PROJECT # 900748

UNIVERSITY OF CONNECTICUT, STORRS, CT

U.S. Army Corps of Engineers Permit NAE 2004-661

December 2012

Prepared for:

University of Connecticut

Prepared by:

Mason & Associates, Inc.
771 Plainfield Pike
North Scituate, Rhode Island 02857

In Association with:

Haley & Aldrich, Inc.
100 Corporate Place, Suite 105
Rocky Hill, Connecticut 06067-1803

(Special Conditions continued from Page 2)

If the permit is issued after the construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract as a change order. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

2. The permittee shall execute and record a conservation easement with the registry of deeds for the Town of Mansfield and the State of Connecticut for approximately 60.3 acres of land as described in the "WETLAND MITIGATION PLAN REMEDIAL ACTION PLAN IMPLEMENTATION UCONN LANDFILL AND FORMER CHEMICAL PITS UNIVERSITY OF CONNECTICUT, STORRS, CT" dated June 2004, and in the "MITIGATION PLAN SUPPLEMENTAL MATERIALS," dated November 12, 2004, and depicted on the preliminary plan entitled, "REMEDIAL ACTION PLAN IMPLEMENTATION LANDFILL AND FORMER CHEMICAL PITS, SITE PLAN" dated October 22, 2004. Before recording these documents a draft copy of the conservation easement based on the enclosed model must be sent to the Corps of Engineers for approval, in writing. Upon receipt of Corps approval, the permittee shall then execute and record it, within 90 days, with the registry of deeds having jurisdiction over the locales where the site or sites are located. Copies of the executed and recorded document must be sent to the Corps of Engineers, Regulatory Division, Chief, Policy Analysis and Technical Support Branch with a copy to the Project Manager identified below at 696 Virginia Road, Concord, MA 01742-2751, no later than 10 days after the date of recording.

The conservation easement or deed restriction shall enable the site or sites to be protected in perpetuity from any future development. The conservation easement or deed restriction shall expressly allow for the creation, restoration, remediation and monitoring activities required by this permit on the site or sites. It shall prohibit all other filling, clearing, and other disturbances (including vehicle access) on these sites except for activities explicitly authorized by the Corps of Engineers in these approved documents.

3. Remedial excavation activities and associated in wetland disturbances shall only be conducted outside of a seasonal vernal pool indicator species migratory and reproduction time period that shall be defined in coordination with a qualified herpetologist.

Mr. William Paulson (52 Middle turnpike, Storrs-Phone: 860-429-1271). Below are Mr. Paulson's questions on the project:

-How will the capital cost of the project be distributed amongst users? What is the estimated benefit assessments that will be levied once sewers are installed?. What are the estimated costs of operation (O&M)?.

-Will properties that can demonstrate that they have a code compliant septic system be require to tie into sewers or pay a benefit assessment?, Will the town grant a waiver or deferral for these properties? How does the WPCA propose to manage properties with code compliant systems once sewers are installed?.



APPENDIX B

Natural Diversity Data Base Correspondence



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

March 20, 2015

Jessica E. Pica
Milone & Macbroom, Inc.
99 Realty Drive
Cheshire, CT 06410
jessicap@miloneandmacbroom.com

Project: Four Corners Sanitary Sewer Project at the Intersection of Route 195 and Route 44 in Mansfield.
NDDB Determination No.: 201501912

Dear Jessica E. Pica,

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding the area delineated on the map provided for the proposed Four Corners Sanitary Sewer Project at the Intersection of Route 195 and Route 44 in Mansfield., Connecticut. I do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from your proposed activity at the site based upon the information contained within the NDDB. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits. This determination is good for one year. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by March 20, 2016.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

A handwritten signature in cursive script that reads "Dawn M. McKay".

Dawn M. McKay
Environmental Analyst 3



Connecticut Department of
 Energy & Environmental Protection
 Bureau of Natural Resources
 Wildlife Division

CPPU USE ONLY	
App #:	_____
Doc #:	_____
Check #:	No fee required
Program:	Natural Diversity Database Endangered Species
Hardcopy	_____ Electronic _____

Request for Natural Diversity Data Base (NDDDB) State Listed Species Review

Please complete this form in accordance with the [instructions](#) (DEEP-INST-007) to ensure proper handling of your request.

There are no fees associated with NDDB Reviews.

Part I: Preliminary Screening & Request Type

<p>Before submitting this request, you must review the most current Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the DEEP website. These maps are updated twice a year, usually in June and December.</p> <p>Does your site, including all affected areas, fall in an NDDB Area according to the map instructions: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Enter the date of the map reviewed for pre-screening: <u>December 2014</u></p>	
This form is being submitted for a :	
<input checked="" type="checkbox"/> <i>New NDDDB request</i> <input type="checkbox"/> <i>Renewal/Extension of a NDDDB Request, without modifications and within one year of issued NDDDB determination (no attachments required)</i> <small>[CPPU Use Only - NDDDB-Listed Species Determination # 1736]</small>	<input type="checkbox"/> <i>New Safe Harbor Determination (optional) must be associated with an application for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities</i> <input type="checkbox"/> <i>Renewal/Extension of an existing Safe Harbor Determination</i> <input type="checkbox"/> With modifications <input type="checkbox"/> Without modifications (no attachments required) <small>[CPPU Use Only - NDDDB-Safe Harbor Determination # 1736]</small>
Enter NDDDB Determination Number for Renewal/Extension:	Enter Safe Harbor Determination Number for Renewal/Extension:

Part II: Requester Information

If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the name shall be stated **exactly as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of the State's database CONCORD. (www.concord-sots.ct.gov/CONCORD/index.jsp)*

If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the [Request to Change company/Individual Information](#) to the address indicated on the form.

1. Requester*

Company Name: **Milone & MacBroom, Inc.**

Contact Name: **Jessica Pica**

Address: **99 Realty Drive**

City/Town: **Cheshire**

State: **CT**

Zip Code: **06410**

Business Phone: **203-271-1773**

ext.

E-mail: **jpica@mminc.com

**By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes

a) Requester can best be described as:

Individual Federal Agency State agency Municipality Tribal

business entity (if a business entity complete i through iii):

i) Check type corporation limited liability company limited partnership

limited liability partnership statutory trust Other:

ii) Provide Secretary of the State Business ID #: 0160851 This information can be accessed at the

Secretary of the State's database (CONCORD). (www.concord-sots.ct.gov/CONCORD/index.jsp)

iii) Check here if your business is **NOT** registered with the Secretary of State's office.

b) Acting as (Affiliation), pick one:

Property owner Consultant Engineer Facility owner Applicant

Biologist Pesticide Applicator Other representative:

2. List Primary Contact to receive Natural Diversity Data Base correspondence and inquiries, if different from requester.

Company Name:

Contact Person:

Title:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.

**E-mail:

Part III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

<p>1. SITE NAME AND LOCATION</p> <p>Site Name or Project Name: Four Corners Sanitary Sewer Project</p> <p>Town(s): Mansfield</p> <p>Street Address or Location Description: Approximately 500 acres surrounding the intersection of Routes 195 and 44</p> <p>Size in acres, or site dimensions: 500</p> <p>Latitude and longitude of the center of the site in decimal degrees (e.g., 41.23456 -71.68574):</p> <p>Latitude: 41.82744 Longitude: -72.26652</p> <p>Method of coordinate determination (check one):</p> <p><input type="checkbox"/> GPS <input type="checkbox"/> Photo interpolation using CTECO map viewer <input checked="" type="checkbox"/> Other (specify): ArcGIS</p> <p>2a. Describe the current land use and land cover of the site. The current land uses in this area are a mix of residential, commercial, and open space.</p> <p>b. Check all that apply and enter the size in acres or % of area in the space after each checked category.</p> <table><tr><td><input checked="" type="checkbox"/> Industrial/Commercial <u>25%</u></td><td><input checked="" type="checkbox"/> Residential <u>30%</u></td><td><input type="checkbox"/> Forest <u>45%</u></td></tr><tr><td><input type="checkbox"/> Wetland _____</td><td><input type="checkbox"/> Field/grassland _____</td><td><input type="checkbox"/> Agricultural _____</td></tr><tr><td><input type="checkbox"/> Water _____</td><td><input type="checkbox"/> Utility Right-of-way _____</td><td></td></tr><tr><td><input type="checkbox"/> Transportation Right-of-way _____</td><td><input type="checkbox"/> Other (specify): _____</td><td></td></tr></table>	<input checked="" type="checkbox"/> Industrial/Commercial <u>25%</u>	<input checked="" type="checkbox"/> Residential <u>30%</u>	<input type="checkbox"/> Forest <u>45%</u>	<input type="checkbox"/> Wetland _____	<input type="checkbox"/> Field/grassland _____	<input type="checkbox"/> Agricultural _____	<input type="checkbox"/> Water _____	<input type="checkbox"/> Utility Right-of-way _____		<input type="checkbox"/> Transportation Right-of-way _____	<input type="checkbox"/> Other (specify): _____	
<input checked="" type="checkbox"/> Industrial/Commercial <u>25%</u>	<input checked="" type="checkbox"/> Residential <u>30%</u>	<input type="checkbox"/> Forest <u>45%</u>										
<input type="checkbox"/> Wetland _____	<input type="checkbox"/> Field/grassland _____	<input type="checkbox"/> Agricultural _____										
<input type="checkbox"/> Water _____	<input type="checkbox"/> Utility Right-of-way _____											
<input type="checkbox"/> Transportation Right-of-way _____	<input type="checkbox"/> Other (specify): _____											

Part IV: Project Information

<p>1. PROJECT TYPE:</p> <p>Choose Project Type: Utility construction/modification , If other describe: _____</p>
<p>2. Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, explain.</p>

Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used. Include a description of steps that will be taken to minimize impacts to any known listed species.

The Four Corners Sanitary Sewer Project encompasses an approximate 500-acre area near the intersection of Routes 195 and 44 in northern Mansfield. The Town is proposing to extend public sewer service to approximately 61 parcels in this area. The proposed action is the construction and operation of approximately 22,000 feet of sewer piping inclusive of collection system, a trunk sewer, and a force main; two submersible pump stations; and related equipment and appurtenances. The vast majority of construction work will occur within existing roadways and on previously developed land.

4. If this is a renewal or extension of an existing Safe Harbor request *with* modifications, explain what about the project has changed.

5. Provide a contact for questions about the project details if different from Part II primary contact.

Name:

Phone:

E-mail:

Part V: Request Requirements and Associated Application Types

Check *one* box from either Group 1, Group 2 *or* Group 3, indicating the appropriate category for this request.

<p>Group 1. If you check one of these boxes, complete Parts I – VII of this form and submit the required attachments A and B.</p> <ul style="list-style-type: none"><input type="checkbox"/> Preliminary screening was negative but an NDDB review is still requested<input type="checkbox"/> Request regards a municipally regulated or unregulated activity (no state permit/certificate needed)<input type="checkbox"/> Request regards a preliminary site assessment or project feasibility study<input type="checkbox"/> Request relates to land acquisition or protection<input type="checkbox"/> Request is associated with a <i>renewal</i> of an existing permit, with no modifications
<p>Group 2. If you check one of these boxes, complete Parts I – VII of this form and submit required attachments A, B, and C.</p> <ul style="list-style-type: none"><input type="checkbox"/> Request is associated with a <i>new</i> state or federal permit application<input type="checkbox"/> Request is associated with modification of an existing permit<input type="checkbox"/> Request is associated with a permit enforcement action<input type="checkbox"/> Request regards site management or planning, requiring detailed species recommendations<input checked="" type="checkbox"/> Request regards a state funded project, state agency activity, or CEPA request
<p><input type="checkbox"/> Group 3. If you are requesting a Safe Harbor Determination, complete Parts I-VII and submit required attachments A, B, and D. Safe Harbor determinations can only be requested if you are applying for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities</p>
<p>If you are filing this request as part of a state or federal permit application(s) enter the application information below.</p> <p>Permitting Agency and Application Name(s): _____</p> <p>State DEEP Application Number(s), if known: _____</p> <p>State DEEP Enforcement Action Number, if known: _____</p> <p>State DEEP Permit Analyst(s)/Engineer(s), if known: _____</p>
<p>Is this request related to a previously submitted NDDB request? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, provide the previous NDDB Determination Number(s), if known: _____</p>

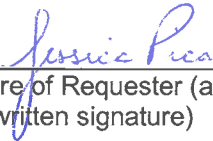
Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all new requests and Safe Harbor renewals/extensions with modifications.** Renewals/Extensions with no modifications do not need to submit any attachments. Attachments C and D are supplied at the end of this form.

<input checked="" type="checkbox"/> Attachment A:	Overview Map: an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site.
<input checked="" type="checkbox"/> Attachment B:	Detailed Site Map: fine scaled map showing site boundary and area of work details on aerial imagery with relevant landmarks labeled. (Site and work boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document)
<input checked="" type="checkbox"/> Attachment C:	Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C) <input checked="" type="checkbox"/> Section i: Supplemental Site Information and supporting documents <input checked="" type="checkbox"/> Section ii: Supplemental Project Information and supporting documents
<input type="checkbox"/> Attachment D:	Safe Harbor Report Requirements, Group 3 (attached, DEEP-APP-007D)

Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

<p>"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief."</p>	
 Signature of Requester (a typed name will substitute for a handwritten signature)	3/11/15 Date
Jessica Pica Name of Requester (print or type)	Water Resources Engineer Title (if applicable)
Signature of Preparer (if different than above)	Date
Name of Preparer (print or type)	Title (if applicable)

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT
 DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
 79 ELM STREET
 HARTFORD, CT 06106-5127

Or email request to: deep.nddbrequest@ct.gov

Attachment C: Supplemental Information, Group 2 requirement

Section i: Supplemental Site Information

1. Existing Conditions

Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted and labeled on the site plan that must be submitted. Photographs of current site conditions may be helpful to reviewers.

Existing conditions within the project area include developed commercial and residential areas, roadways, driveways, and undeveloped land. Sewer lines will be largely be installed within the roadway right-of-way and on properties that have been previously developed. The exception is a proposed 10-inch force main that is planned to run from the southern terminus of Rolling Hills Community to North Hillside Road.

- Site Photographs (optional) attached
- Site Plan/sketch of existing conditions attached

2. Biological Surveys

Has a biologist visited the site and conducted a biological survey to determine the presence of any endangered, threatened or special concern species Yes No

If yes, complete the following questions and submit any reports of biological surveys, documentation of the biologist's qualifications, and any NDDB survey forms.

Biologist(s) name: _____

Habitat and/or species targeted by survey: _____

Dates when surveys were conducted: _____

- Reports of biological surveys attached
- Documentation of biologist's qualifications attached
- [NDDB Survey forms](#) for any listed species observations attached

Section ii: Supplemental Project Information

1. Provide a schedule for all phases of the project including the year, the month and/or season that the proposed activity will be initiated and the duration of the activity.

Pending successful completion of the CEPA process and procurement of required permits, the project is anticipated to be constructed in late 2015 into 2016. The anticipated duration of construction is six months.

2. Describe and quantify the proposed changes to existing conditions and describe any on-site or off-site impacts. In addition, provide an annotated site plan detailing the areas of impact and proposed changes to existing conditions.

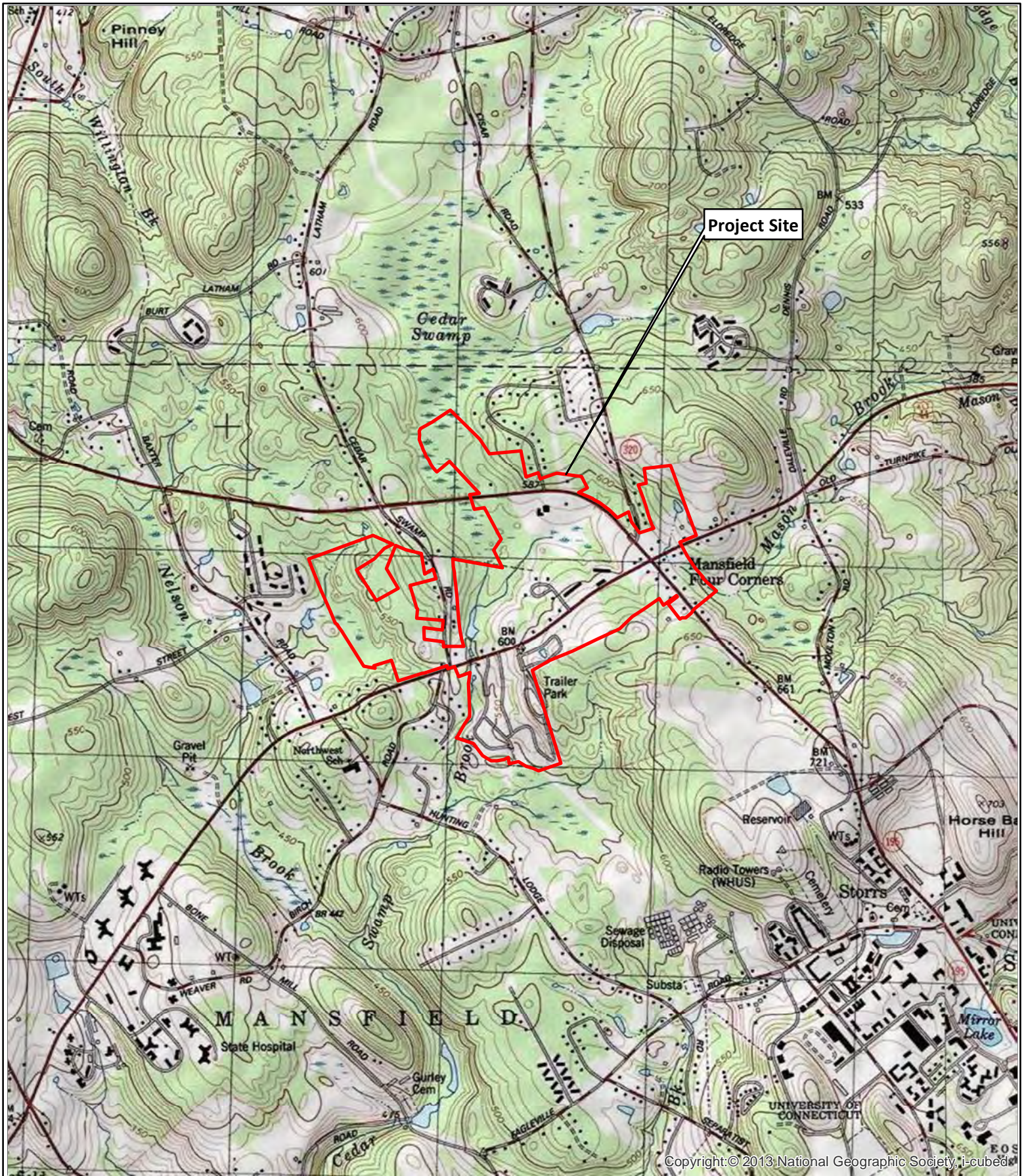
The primary change to existing conditions will be that sanitary sewer service will be available to properties along a portion of Route 195 and Route 44 within the proposed service area. This is consistent with the Town of Mansfield's Plan of Conservation and Development.

- Annotated Site Plan attached

Attachment D: Safe Harbor Report Requirements

Submit a report, as Attachment D, that synthesizes and analyzes the information listed below. Those providing synthesis and analysis need appropriate qualifications and experience. A request for a safe harbor determination shall include:

- 1. Habitat Description and Map(s), including GIS mapping overlays, of a scale appropriate for the site, identifying:**
 - wetlands, including wetland cover types;
 - plant community types;
 - topography;
 - soils;
 - bedrock geology;
 - floodplains, if any;
 - land use history; and
 - water quality classifications/criteria.
- 2. Photographs** - The report should include photographs of the site taken from the ground and also all reasonably available aerial or satellite photographs and an analysis of such photographs.
- 3. Inspection** - A visual inspection(s) of the site should be conducted, preferably when the ground is visible, and described in the report. This inspection can be helpful in confirming or further evaluating the items noted above.
- 4. Biological Surveys** - The report should include all biological surveys of the site where construction activity will take place that are reasonably available to a registrant. A registrant shall notify the Department's Wildlife Division of biological studies of the site where construction activity will take place that a registrant is aware of but are not reasonably available to the registrant.
- 5. Based on items #1 through 4 above, the report shall include a Natural Resources Inventory of the site of the construction activity.** This inventory should also include a review of reasonably available scientific literature and any recommendations for minimizing adverse impacts from the proposed construction activity on listed species or their associated habitat.
- 6. In addition, to the extent the following is available at the time a safe harbor determination is requested, a request for a safe harbor determination shall include and assess:**
 - Information on Site Disturbance Estimates/Site Alteration information
 - Vehicular Use
 - Construction Activity Phasing Schedules, if any; and
 - Alteration of Drainage Patterns



Copyright: © 2013 National Geographic Society, i-cubed

SOURCE(S):
USA USGS Topo Map

Attachment A: USGS Topographic Map

LOCATION:
Mansfield, CT

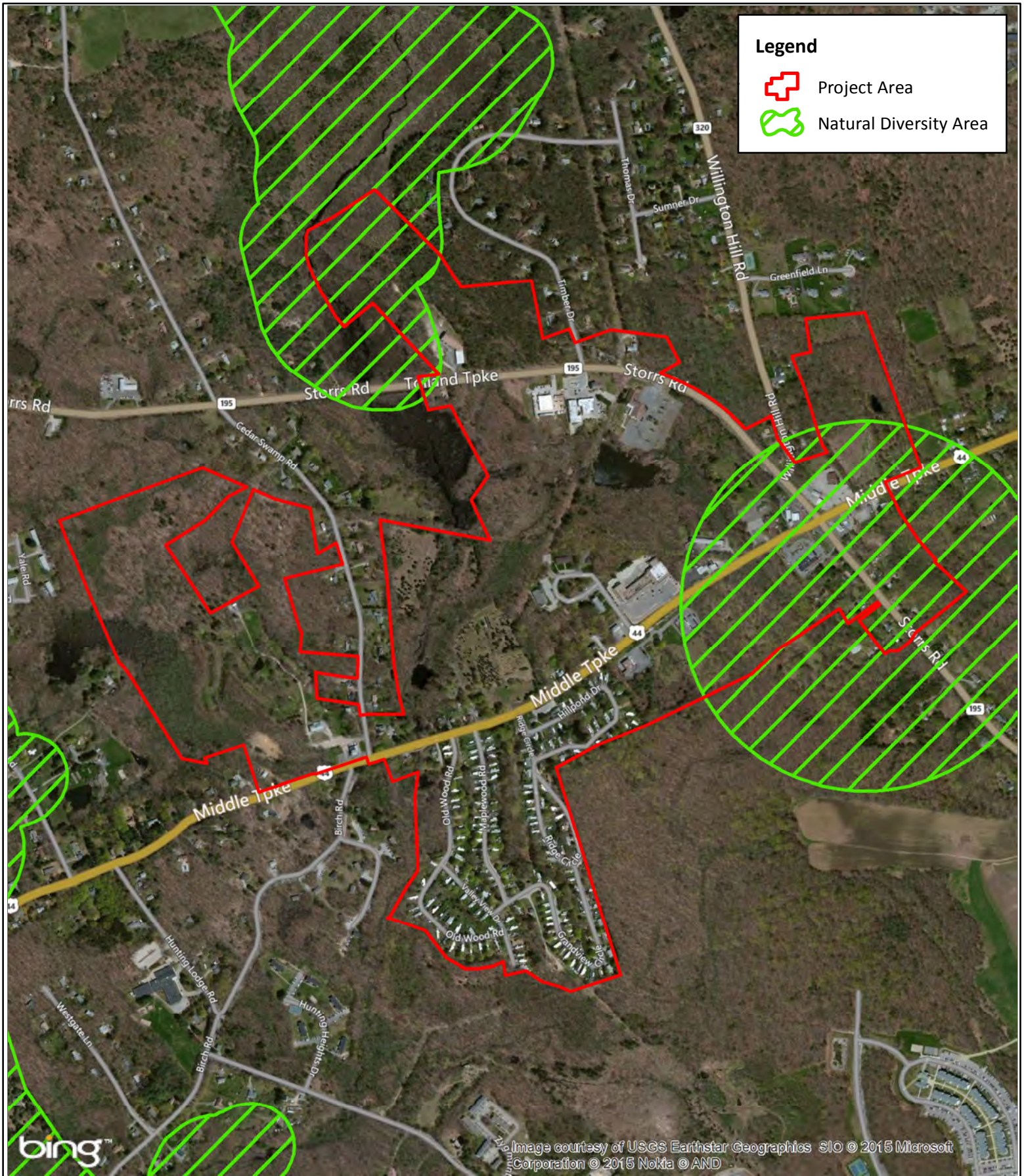



Mansfield Four Corners Sewer Project

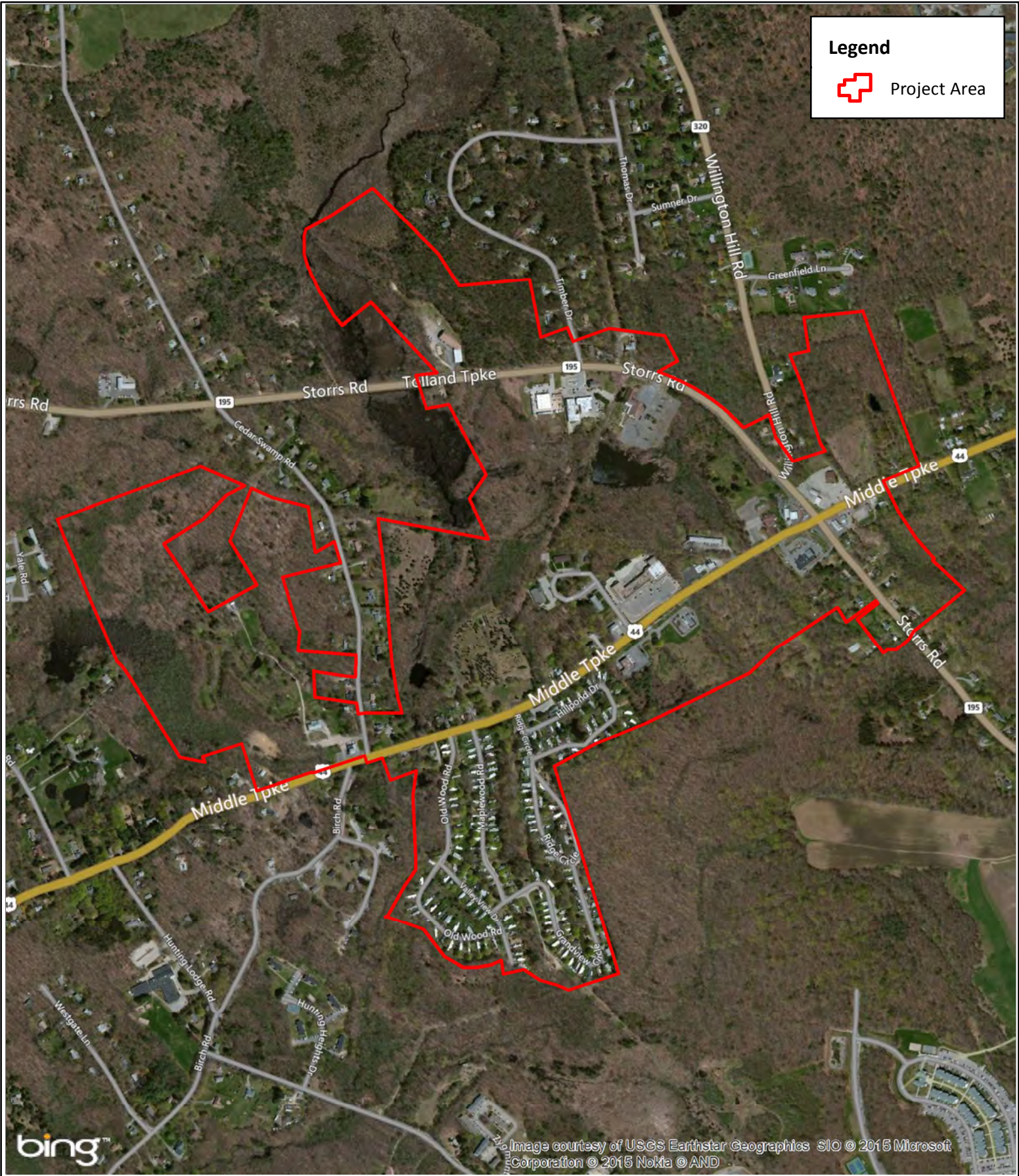
MXD: Y:\2111-11\GIS\Maps\NDD8-A.mxd

Map By: JEP
MMI#: 2111-11
Original: 3/11/2015
Revision: 3/3/2015
Scale: 1 inch = 2,000 feet

 **MILONE & MACBROOM**
99 Realty Drive Cheshire, CT 06410
(203) 271-1773 Fax: (203) 272-9733
www.miloneandmacbroom.com



<p>SOURCE(S): Bing Maps Hybrid CT DEEP NDDB Dec2014</p>	<p>Attachment B: Detailed Site Map</p>	<p>LOCATION: Mansfield, CT</p>
<p>N ↑ MXD: Y:\2111-11\GIS\Maps\NDDB-B.mxd</p>	<p>Mansfield Four Corners Sewer Project</p>	<p>Map By: JEP MMI#: 2111-11 Original: 3/11/2015 Revision: 3/3/2015 Scale: 1 inch = 900 feet</p> <p> MILONE & MACBROOM 99 Realty Drive Cheshire, CT 06410 (203) 271-1773 Fax: (203) 272-9733 www.miloneandmacbroom.com</p>



SOURCE(S):
Bing Maps Hybrid

Attachment C: Existing Conditions Map

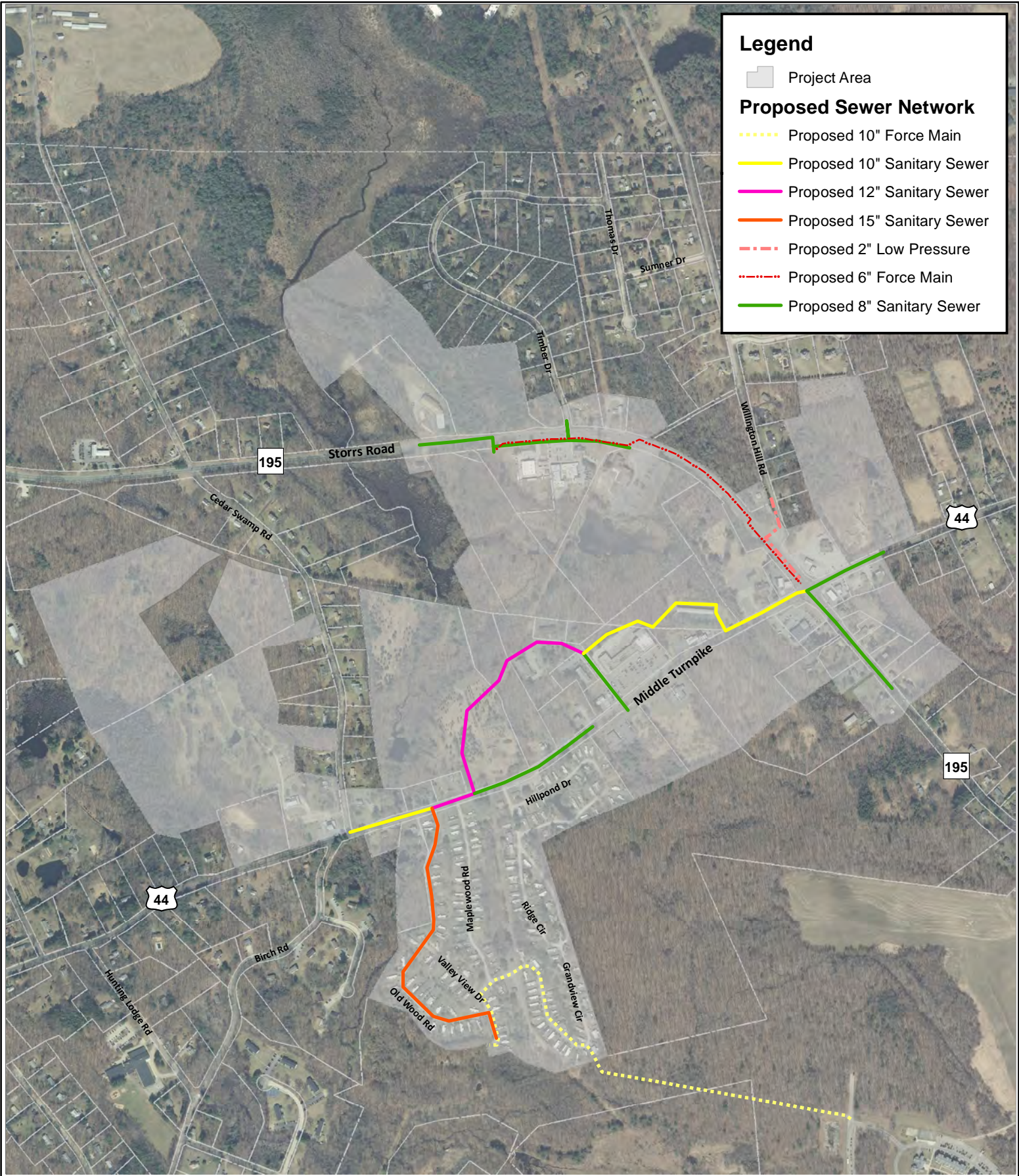
LOCATION:
Mansfield, CT



Mansfield Four Corners Sewer Project

Map By: JEP
MMI#: 2111-11
Original: 3/11/2015
Revision: 3/3/2015
Scale: 1 inch = 900 feet

MILONE & MACBROOM
 99 Realty Drive Cheshire, CT 06410
 (203) 271-1773 Fax: (203) 272-9733
www.miloneandmacbroom.com



SOURCE(S):
CT ECO 2012 Orthoimagery

Attachment C: Site Plan

LOCATION:
Mansfield, CT



Mansfield Four Corners Sewer Project

MXD: Y:\2111-11\GIS\Maps\NDDB-Cii.mxd

Map By: JEP
MMI#: 2111-11
Original: 3/11/2015
Revision: 3/3/2015
Scale: 1 inch = 875 feet

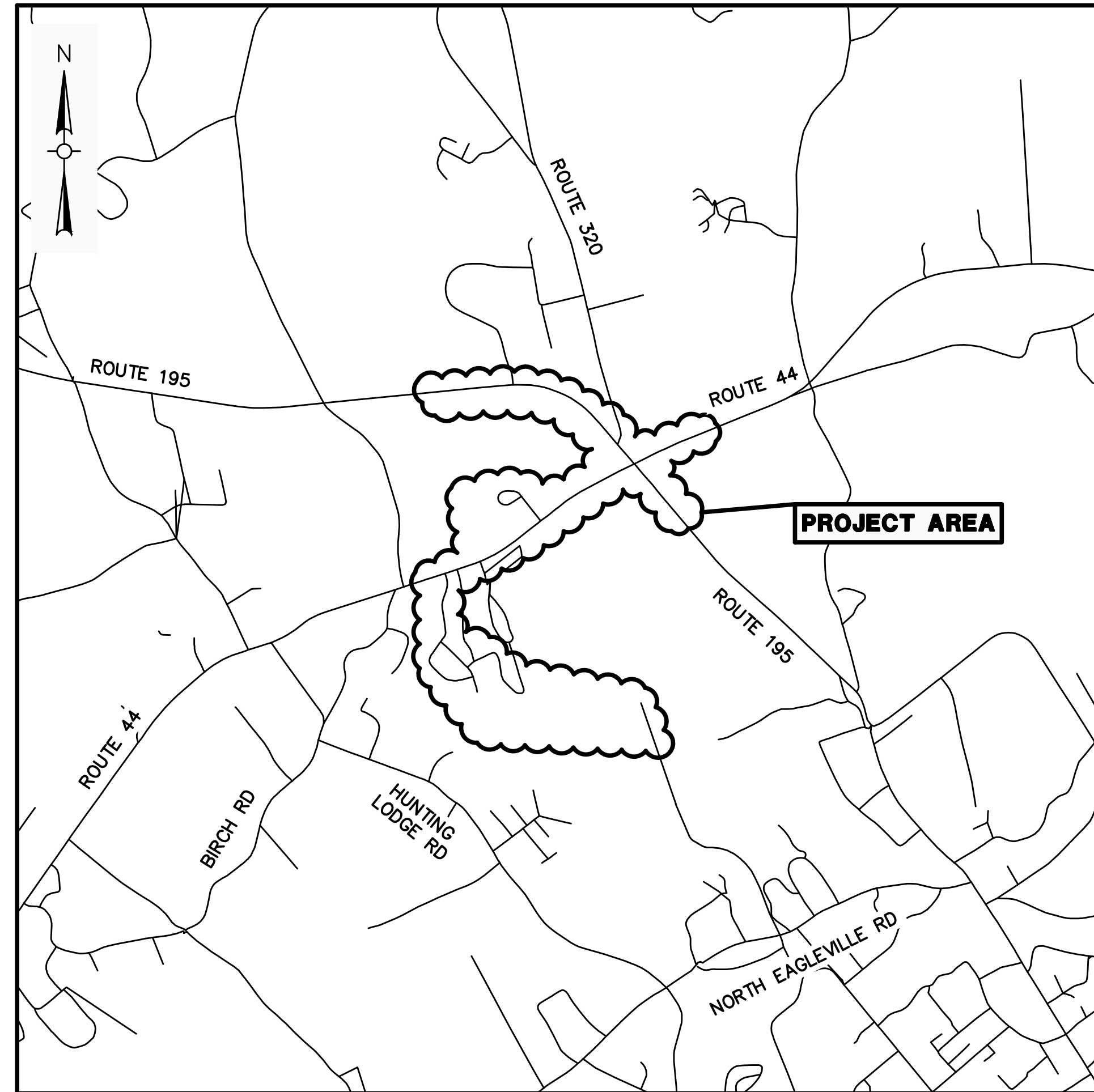


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APPENDIX C

Soil Boring Results



**MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY
SEWER PROJECT**

AUGUST 2014

Weston & Sampson[®]

273 Dividend Road, Rocky Hill, CT 06067
Phone: (860) 513-1473 Fax: (860) 513-1483

**FOR REVIEW ONLY
08-22-14**

LEGEND

DESCRIPTION	EXISTING	PROPOSED
SANITARY SEWER	S	8" S PVC
FORCE MAIN		6" FM PVC
WATER MAIN	W	8" W DI
TEMPORARY WATER		4" W
STORM DRAIN	D	18" D RCP
GAS	G	4" G
ELECTRIC	E	E
TELEPHONE	T	T
HOUSE CONNECTION		SS
WATER SERVICE	WS	WS
GRINDER PUMP	GP	GP
SANITARY SEWER MANHOLE	SMH	SMH
STORM DRAIN MANHOLE	DMH	DMH
ELECTRICAL MANHOLE	EMH	
TELEPHONE MANHOLE	TMH	
AIR RELEASE VALVE MANHOLE		ARMH
FORCE MAIN CLEANOUT MANHOLE		FMMH
CLEANOUT		CO
CATCH BASIN		
HYDRANT		
TEMPORARY HYDRANT		
GATE VALVE		
CHECK VALVE		
BUTTERFLY VALVE		
BALL VALVE		
CURB STOP		
REDUCER		
CAP OR PLUG		
GAS GATE VALVE		
UTILITY POLE		
GUY POLE		
GUY WIRE		
OVERHEAD WRES		
LIGHT POST		
EDGE OF PAVEMENT		
EDGE OF UNPAVED ROAD		
CURB		
SIDEWALK		
STONE WALL		
RETAINING WALL	RET WALL	RET WALL
WIRE FENCE		
CHAIN LINK FENCE		
DECIDUOUS TREE		
EVERGREEN TREE		
TREE LINE		
SURVEY MARKER		
CONTROL POINT		
BENCH MARK		
PROPERTY LINE		
EASEMENT LINE		
CONTOUR		56
SPOT ELEVATIONS	x100.2	x101.5
BUILDING/BUILDING NUMBER	#35	
FLOOR ELEVATION	FF=56.7	
SILL ELEVATION	S=56.7	
LIMIT OF WORK		
WETLAND/WETLAND FLAG		
EDGE OF WATER		
DRAINAGE DITCH/SWALE		
RIP RAP		
BOLLARD	OB	
SIGN		
GUIDE RAIL		
PERCOLATION TEST	PT1	
TEST PIT	TP1	
BORING	B1	B4
PROBE	P-1	P-1
GROUNDWATER MONITORING WELL	WSE-1	GW-1
HAY BALES		
SILT FENCE		
ROCK OUTCROP		

NOTE: ITEMS SHOWN IN THE LEGEND MAY NOT BE PRESENT IN THESE PLANS

ABBREVIATIONS

AC	ASBESTOS CEMENT PIPE, TRANSITE
ACOMP	ASPHALT COATED CORRUGATED METAL PIPE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BC	BITUMINOUS CONCRETE
BIT	BITUMINOUS
BLDG	BUILDING
BM	BENCH MARK
CATV	CABLE TELEVISION
CB	CATCH BASIN
CC	CONCRETE CURB
CI	CAST IRON
C	CENTERLINE
CMP	CORRUGATED METAL PIPE
CNO	COULD NOT OPEN
CONC	CONCRETE
CDOT	CONNECTICUT DEPARTMENT OF TRANSPORTATION
CU FT	CUBIC FEET
CY	CUBIC YARD
D	STORM DRAIN
DI	DROP INLET, DUCTILE IRON
DIA, Ø	DIAMETER
Dinv	DEPTH TO INVERT OF EXISTING PIPE
DMH	DRAIN MANHOLE
E	ELECTRIC, EAST
EA	EACH
ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EX	EXISTING
FM	FORCE MAIN
FT	FEET, FOOT
G	NATURAL GAS
GALV	GALVANIZED
GC	GRANITE CURB
GM	GAS MAIN
GS	GAS SERVICE
HC	HOUSE CONNECTION
HDD	HORIZONTAL DIRECTIONAL DRILLING
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH PRESSURE
HYD	FIRE HYDRANT
INV	INVERT
IP	INSIDE DIAMETER
IP	IRON PIPE
LF	LINEAR FEET
LS	LUMP SUM
MAX	MAXIMUM
MB	MAIL BOX
MECH	MECHANICAL
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MWT	MERIDEN-WATERBURY TURNPIKE
N	NORTH
NF	NOT FOUND
NO OR #	NUMBER
PE	POLYETHYLENE
PL	PROPERTY LINE
PVC	POLYVINYL CHLORIDE
PR	PROPOSED
PVMT	PAVEMENT
RC	REINFORCED CONCRETE
ROW	RIGHT-OF-WAY
S	SEWER, SOUTH
SCAV	SEWER COMBINATION AIR VALVE STRUCTURE
SERV	SERVICE
SF	SQUARE FEET
SM	SEWER MAIN
SPEC	SPECIFICATIONS
SQ FT	SQUARE FEET
SS	SEWER SERVICE
STA	STATION
SW	SIDEWALK
T	TELEPHONE
TBM	TEMPORARY BENCH MARK
TNPK	TURNPIKE
TR	TRAFFIC, TRAFFIC CONDUIT
TYP	TYPICAL
UP	UTILITY POLE
VC	VITRIFIED CLAY
VERT	VERTICAL
W	WATER, WEST
WM	WATER MAIN
WS	WATER SERVICE

CONSTRUCTION NOTES:

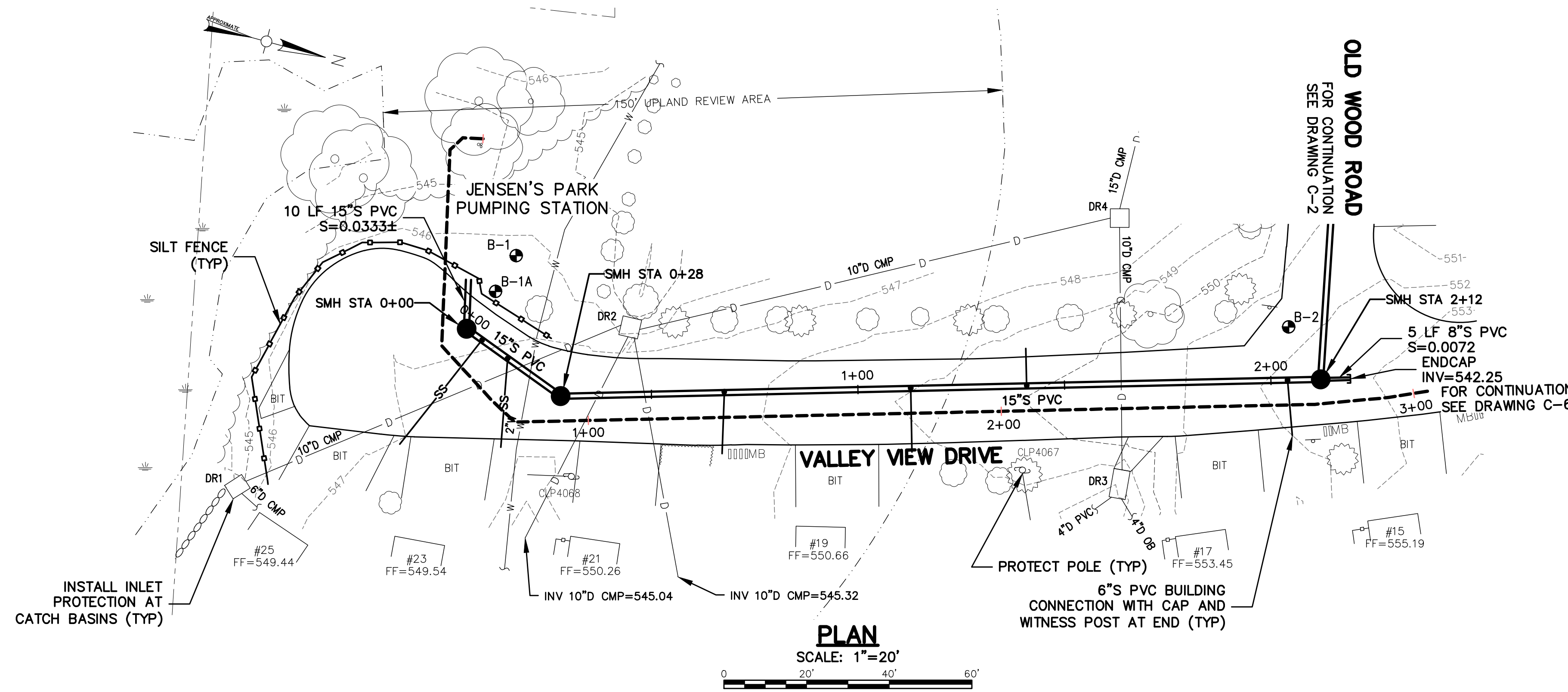
- THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" (CBYD) AT 1-800-922-4455 AT LEAST 72 HOURS, SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO EXCAVATING AT ANY LOCATION. A COPY OF THE CBYD PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE OWNER PRIOR TO EXCAVATION.
- LOCATIONS OF EXISTING PIPES, CONDUITS, UTILITIES, FOUNDATIONS AND OTHER UNDERGROUND OBJECTS ARE NOT WARRANTED TO BE CORRECT AND THE CONTRACTOR SHALL HAVE NO CLAIM ON THAT ACCOUNT SHOULD THEY BE OTHER THAN SHOWN.
- TEST PITS TO LOCATE EXISTING UTILITIES MAY BE ORDERED BY THE ENGINEER.
- FENCES, MAIL BOXES, SIGNS, CURBS, LIGHT POLES, ETC. SHALL BE REMOVED AND REPLACED AS NECESSARY TO PERFORM THE WORK. UNLESS OTHERWISE INDICATED, ALL SUCH WORK SHALL BE INCIDENTAL TO CONSTRUCTION OF THE PROJECT.
- ALL PAVEMENT OUTSIDE OF THE LIMITS SHOWN WHICH IS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.
- ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND PAYMENT LIMITS SHALL BE RESTORED AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL MAINTAIN SIDE SLOPES AND DRAINAGE SWALES DURING CONSTRUCTION TO PREVENT PONDING AND EROSION.
- THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, AND EQUIPMENT ON DRAINAGE STRUCTURES OR WITHIN 100 FEET OF WETLANDS.
- THE CONTRACTOR SHALL INSTALL THE EROSION CONTROL DEVICES BEFORE BEGINNING OTHER WORK ON SITE.
- THE CONTRACTOR SHALL PROVIDE INLET PROTECTION ON ALL EXISTING CATCH BASINS THROUGHOUT THE DURATION OF THE PROJECT.
- THE CONTRACTOR SHALL NOTIFY CONNECTICUT WATER (860-XXX-XXXX) AT LEAST 72 HOURS PRIOR TO EXCAVATING NEAR WATERLINES.
- ALL STREET EXCAVATIONS SHALL BE COMPLETELY CLOSED AT THE END OF EACH WORKING DAY BY BACKFILLING. COVERING WITH STEEL PLATES MAY BE ALLOWED IF APPROVED BY THE ENGINEER.
- WHERE ENCOUNTERED, UNSUITABLE MATERIAL SHALL BE REMOVED TO A DEPTH OF AT LEAST 12" BELOW THE BOTTOM OF THE TRENCH, UNLESS OTHERWISE SPECIFIED.
- DURING THE PROCESS OF WORK, THE CONTRACTOR SHALL CONDUCT OPERATIONS AND MAINTAIN THE AREA OF CONSTRUCTION ACTIVITIES, INCLUDING SWEEPING AND SPRINKLING OF STREETS AS NECESSARY OR AS REQUIRED, TO MINIMIZE CREATION AND DISPERSION OF DUST.
- A TRAFFIC CONTROL PLAN SHALL BE FOLLOWED AS STATED IN THE SPECIFICATIONS. SIGNAGE SHALL BE PROVIDED AS NECESSARY OR AS REQUIRED.
- WHERE EXISTING FENCES ARE TO BE REMOVED AND RESET, A TEMPORARY CONSTRUCTION FENCE SHALL BE ERECTED AFTER REMOVAL FOR THE PROTECTION OF THE PUBLIC.
- WATER MAINS AND FITTINGS SHOWN BASED ON PROPOSED DESIGN PROVIDED BY CONNECTICUT WATER.
- SEWER TRENCHES MAY BE EXCAVATED WIDER THAN THE 'LIMIT OF EXCAVATION AND PAYMENT FOR EARTH EXCAVATION' ABOVE THE 'LINE OF NARROW TRENCH LIMIT.' ANY SUCH ADDITIONAL EXCAVATION SHALL BE AT THE CONTRACTOR'S EXPENSE AND SHALL NOT BE MEASURED FOR PAYMENT.
- BELOW THE 'LINE OF NARROW TRENCH LIMIT' THE TRENCH SHOULD NOT BE EXCAVATED BEYOND THE TRENCH WIDTH 'W'. IF MATERIAL IS LOOSENEED OR REMOVED BEYOND THE ABOVE MENTIONED LIMITS, THE CONTRACTOR WILL BE REQUIRED TO PROVIDE CRUSHED STONE FOR THE FULL WIDTH OF THE TRENCH AT NO ADDITIONAL COST TO THE OWNER.
- SHEETING TO BE LEFT IN PLACE SHALL BE USED WHERE SHOWN ON THE DRAWINGS OR WHERE DIRECTED BY THE ENGINEER. IT SHALL BE LEFT IN PLACE BELOW A LINE 12 INCHES ABOVE THE TOP OF THE PIPE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- OPENINGS FOR PIPE IN PRECAST MANHOLE BASES SHALL BE CAST IN THE REQUIRED LOCATIONS DURING MANHOLE MANUFACTURE. FIELD CUT OPENINGS WILL NOT BE PERMITTED UNLESS APPROVED BY THE ENGINEER.
- FORM BRICK INVERTS IN MANHOLES WITH BRICK ON EDGE TO A DEPTH OF 0.8 INSIDE DIAMETER OF PIPE AND FORM A 1 INCH SLOPED BENCH WITH BRICK FLAT. INVERT SHALL BE SLOPED UNIFORMLY BETWEEN INLET AND OUTLET PIPE AND SHALL BE FORMED AND FILLED AS REQUIRED TO DIRECT THE FLOW AS INDICATED AND TO PREVENT DEPOSITION OF SOLIDS.
- IN PAVED AREAS THE TOP OF THE MANHOLE COVER SHALL BE SET FLUSH WITH THE PAVED SURFACE. IN OTHER AREAS THE TOP OF THE COVER SHALL EXTEND 6 INCHES ABOVE FINISHED GRADE, OR AS SHOWN ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER.
- SEWER CHIMNEY AND BUILDING CONNECTION LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
- PROTECTION OF WATER SUPPLIES - WHENEVER A SEWER MUST CROSS UNDER A WATER MAIN, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN. WHEN THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THE ABOVE REQUIREMENT, THE WATER MAIN SHALL BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER TO PROVIDE THIS SEPARATION OR THE CONTRACTOR SHALL CONSTRUCT THE NEW SEWER OF CLASS 150 PRESSURE PIPE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE WATER MAIN. ONE FULL LENGTH OF CLASS 150 PRESSURE PIPE SEWER SHOULD BE CENTERED ON THE WATER MAIN AS MUCH AS POSSIBLE. THE SEWER CONSTRUCTED OF THE PRESSURE PIPE MUST BE PRESSURE TESTED TO ASSURE WATER TIGHTNESS.
- ALL STREET EXCAVATIONS SHALL BE COMPLETELY CLOSED AT THE END OF EACH WORKING DAY BY BACKFILLING OR COVERING WITH STEEL PLATES.
- SEWER MAINS SHALL BE INSULATED IN ACCORDANCE WITH THE SPECIFICATIONS WHEN INSTALLED WITHIN FIVE FEET OF A STRUCTURE, WHERE COVER ON THE PIPE IS LESS THAN 4'-6" OR AS REQUIRED BY THE ENGINEER.
- ALL DOT HIGHWAY LINE MONUMENTATION AND PRIVATE PROPERTY MONUMENTATION WITHIN THE PROJECT LIMITS MUST BE DELINEATED AND PROTECTED FROM DAMAGE OR MOVEMENT. ANY COST ASSOCIATED WITH RESETTING OF THE MONUMENTATION SHALL BE AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL COMPLETE ALL LAYOUTS, SURVEYS, ETC. REQUIRED FOR CONSTRUCTION OF THE PROJECT AS SHOWN AND AS SPECIFIED.
- ALL WORK PERFORMED WITHIN STATE HIGHWAY LIMITS SHALL CONFORM TO THE PERMIT ISSUED FOR THIS PROJECT.

- THE CONTRACTOR SHALL VERIFY UTILITY CROSSINGS PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY CONFLICTS.
- UTILITY INFORMATION, TREES, TOPOGRAPHIC INFORMATION, EDGE OF PAVEMENT, UTILITY POLES, AND LOCATIONS OF EXISTING ABOVE GROUND STRUCTURES FROM FIELD SURVEY PREPARED BY GESICK AND ASSOCIATES, P.C.
- WETLANDS DELINEATED BY (NAME) AND FIELD LOCATED BY GESICK AND ASSOCIATES, P.C..

DRAWING INDEX

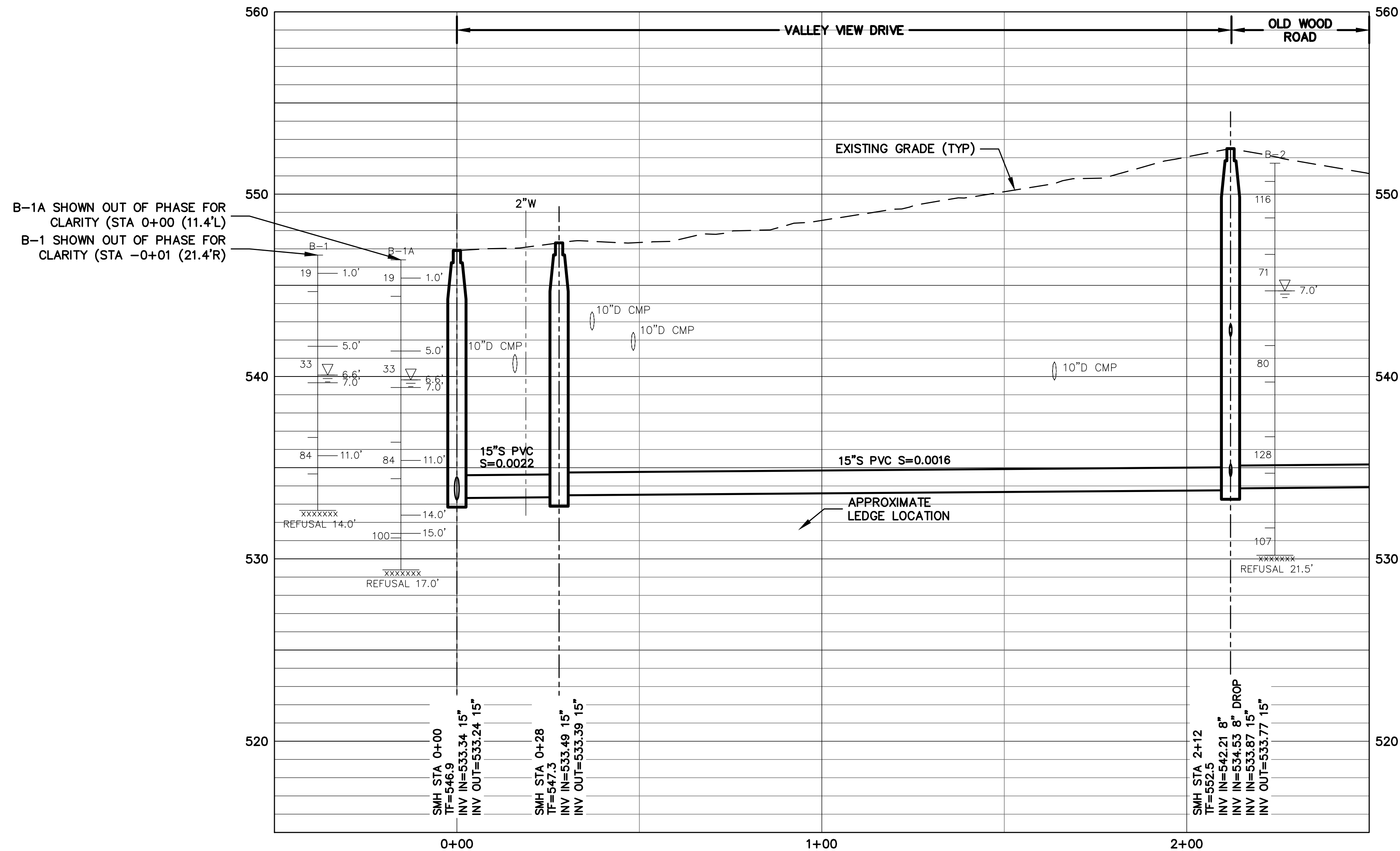
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1	--	COVER
2	G-1	LEGEND, ABBREVIATIONS, NOTES AND DRAWING INDEX
3	C-1	JENSEN'S PARK GRAVITY SEWER STA 0+00 TO 2+12 AND JENSEN'S PARK FORCE MAIN STA 0+00 TO 3+00
4	C-2	JENSEN'S PARK GRAVITY SEWER STA 2+12 TO 7+50
5	C-3	JENSEN'S PARK GRAVITY SEWER STA 7+50 TO 12+00
6	C-4	JENSEN'S PARK GRAVITY SEWER STA 12+00 TO 16+94
7	C-5	JENSEN'S PARK GRAVITY SEWER STA 16+94 TO 22+31
8	C-6	JENSEN'S PARK FORCE MAIN STA 3+00 TO 12+75
9	C-7	JENSEN'S PARK FORCE MAIN STA 12+75 TO 24+50
10	C-8	JENSEN'S PARK FORCE MAIN STA 24+50 TO 35+54
11	C-9	ROUTE 44 SEWER STA 0+00 TO 7+50
12	C-10	ROUTE 44 CROSS-COUNTRY SEWER STA 0+00 TO 10+75
13	C-11	ROUTE 44 CROSS-COUNTRY SEWER STA 10+75 TO 21+35
14	C-12	ROUTE 44 CROSS-COUNTRY EAST SEWER STA 0+00 TO 11+50
15	C-13	ROUTE 44 CROSS-COUNTRY EAST SEWER STA 11+50 TO 21+50
16	C-14	ROUTE 44 CROSS-COUNTRY EAST SEWER STA 21+50 TO 24+97 AND ROUTE 44 SEWER STA 7+50 TO 12+50
17	C-15	ROUTE 195 SOUTH SEWER STA 0+00 TO 9+00
18	C-16	ROUTE 195 CROSS-COUNTRY SEWER STA 0+00 TO 9+50 AND ROUTE 195 FORCE MAIN STA 0+00 TO 11+25
19	C-17	ROUTE 195 FORCE MAIN STA 11+25 TO 22+50
20	C-18	ROUTE 195 FORCE MAIN STA 22+50 TO 26+61 AND ROUTE 195 WEST SEWER STA 0+00 TO 5+70
21	C-19	ROUTE 44 WEST SEWER STA 0+00 TO 6+00 AND TIMBER DRIVE SEWER STA 0+00 TO 1+30
22	D-1	DETAILS
23	D-2	DETAILS
24	D-3	DETAILS
25	D-4	DETAILS
26	D-5	DETAILS
27	PS-1	JENSEN'S PARK PUMPING STATION EXISTING AND PROPOSED SITE PLANS
28	PS-2	WILLARD'S PUMPING STATION EXISTING AND PROPOSED SITE PLANS
29	M-1	GENERAL MECHANICAL NOTES
30	M-2	JENSEN'S PARK PUMPING STATION CONSTRUCTION PLAN AND SECTION
31	M-3	WILLARD'S PUMPING STATION CONSTRUCTION PLAN
32	M-4	WILLARD'S PUMPING STATION CONSTRUCTION SECTION
33	M-5	MECHANICAL DETAILS 1

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DRAINAGE SUMMARY

DR 1	INV=540.74 (6\"/>
DR 2	INV=541.52 (10\"/>
DR 3	INV=544.95 (4\"/>
DR 4	INV=539.68 (10\"/>



SANITARY SEWER PROFILE
SCALE: 1"=20' H; 1"=4' V

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					A P P R O V E D

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT

JENSEN'S PARK GRAVITY SEWER STA 0+00 TO 2+12 AND FORCE MAIN STA 0+00 TO 3+00

FILE NAME: _____ JOB NO.: _____ SCALE: _____ AS NOTED _____ DCM _____ DCM _____ WGS _____ DRL _____

C-1

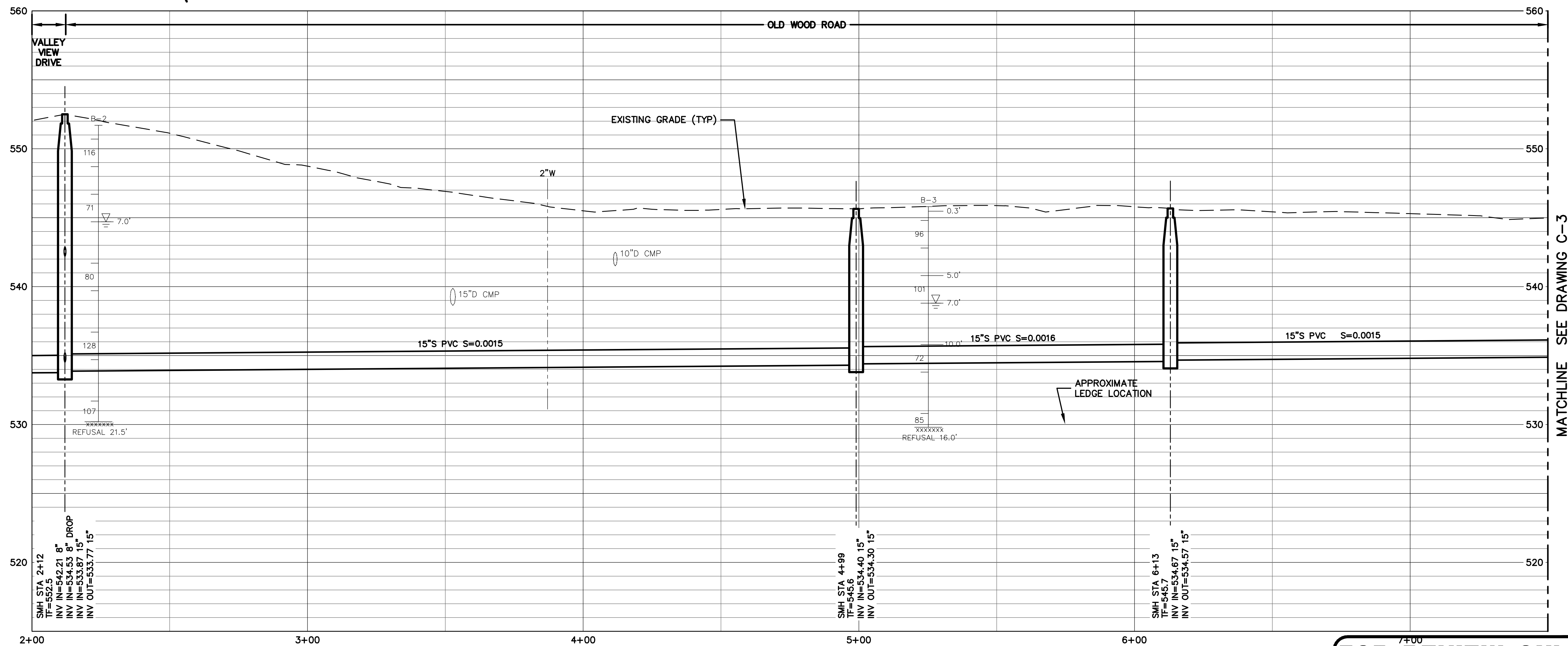
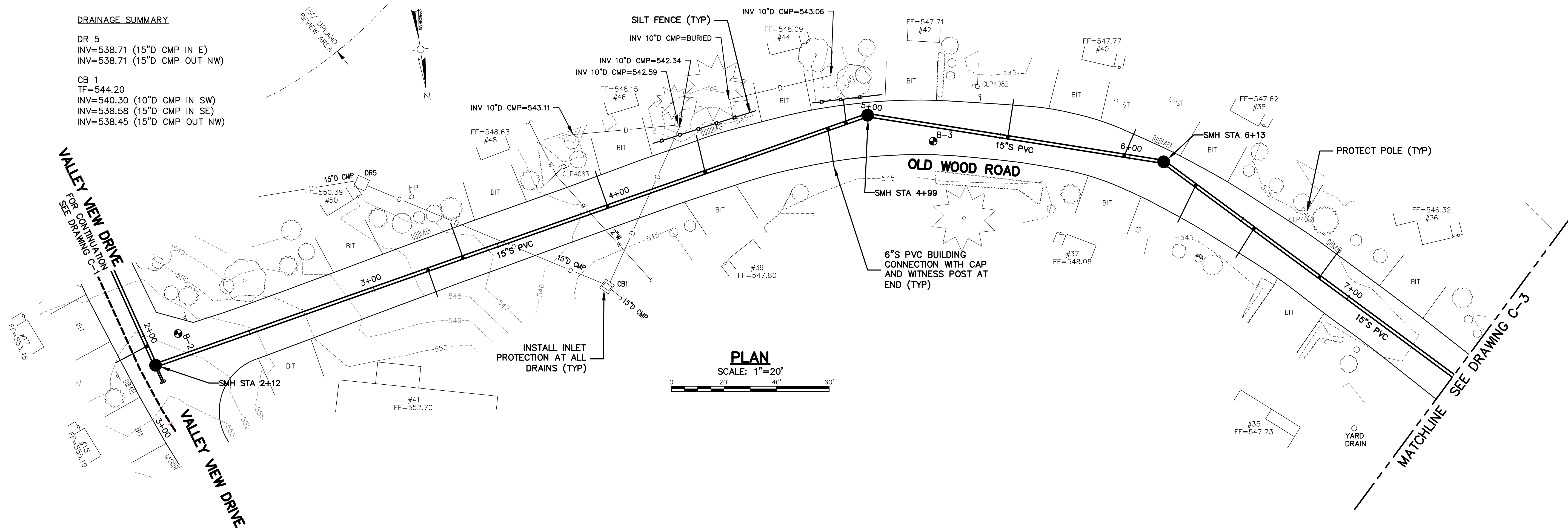
FILE NO.: _____

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DRAINAGE SUMMARY

DR 5
 INV=538.71 (15"D CMP IN E)
 INV=538.71 (15"D CMP OUT NW)

CB 1
 TF=544.20
 INV=540.30 (10"D CMP IN SW)
 INV=538.58 (15"D CMP IN SE)
 INV=538.45 (15"D CMP OUT NW)



SANITARY SEWER PROFILE
 SCALE: 1"=20' H; 1"=4' V

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08-22-14

No.	Date	Dr. By	Ck. By	App. By	Description

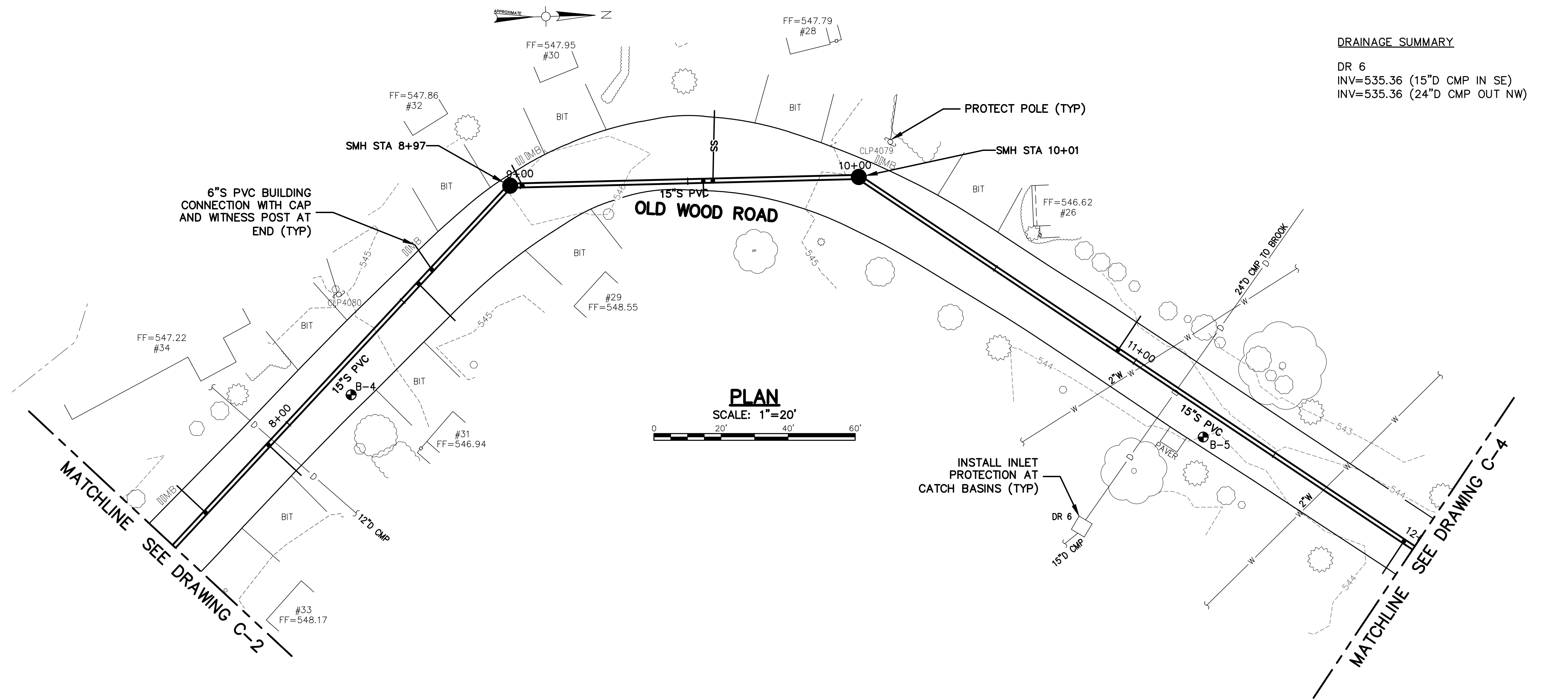
REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

TOWN OF MANSFIELD, CONNECTICUT
 DEPARTMENT OF PUBLIC WORKS
 FOUR CORNERS SANITARY SEWER PROJECT

JENSEN'S PARK GRAVITY SEWER
STA 2+12 TO 7+50

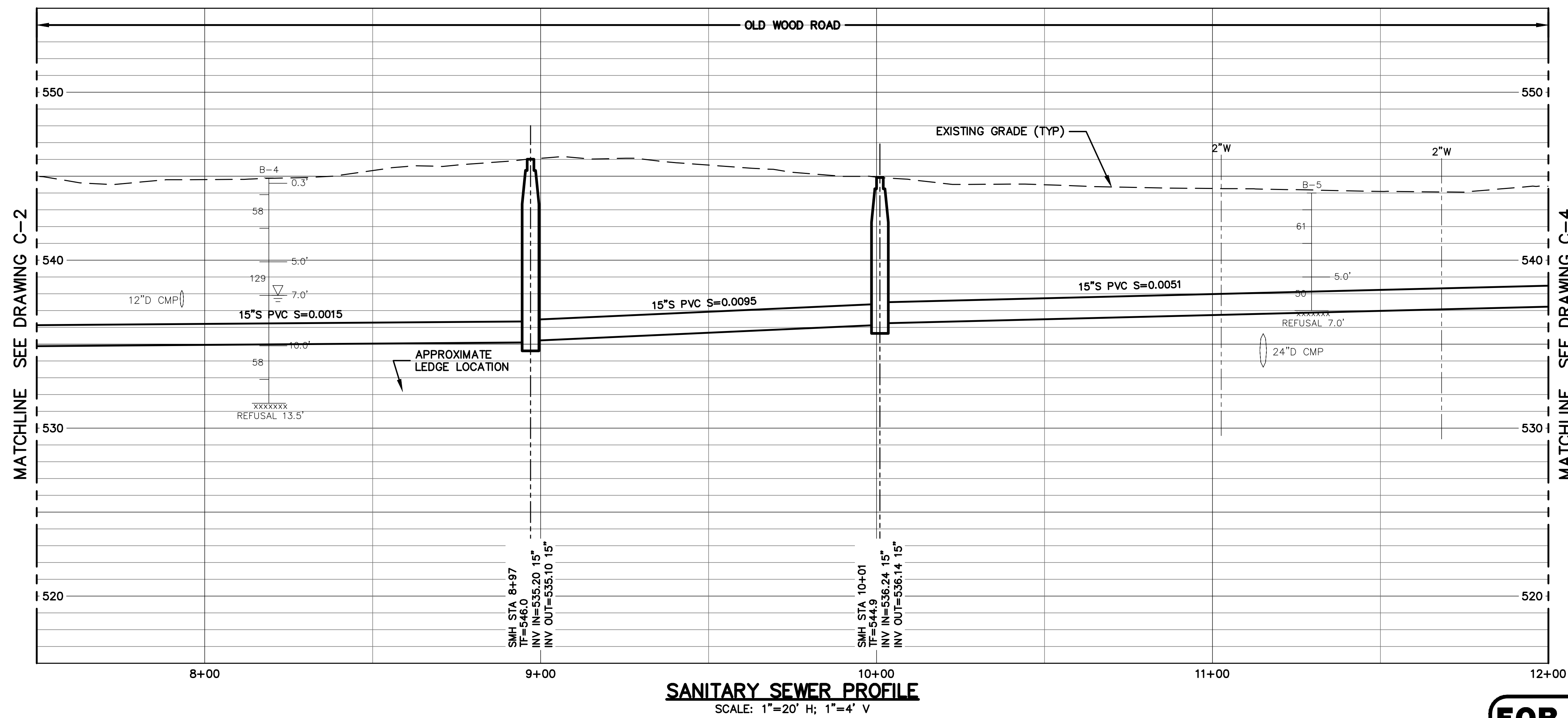
FILE NAME: _____ JOB NO.: _____ SCALE: _____ AS NOTED DCM DCM WGS DRL

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DRAINAGE SUMMARY

DR 6
INV=535.36 (15"D CMP IN SE)
INV=535.36 (24"D CMP OUT NW)



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REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

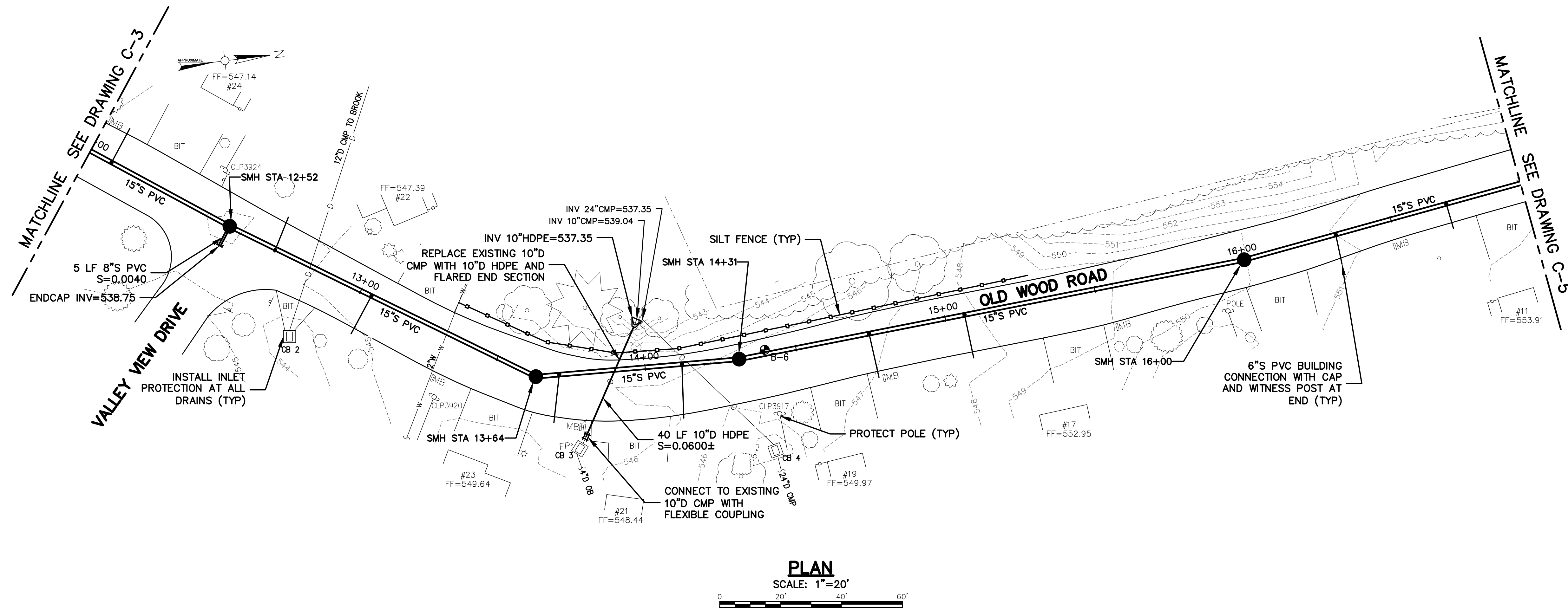
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
JENSEN'S PARK GRAVITY SEWER
STA 7+50 TO 12+00

FILE NO.	SCALE	AS NOTED	DCM	DCM	DCM	CHK BY	APP BY

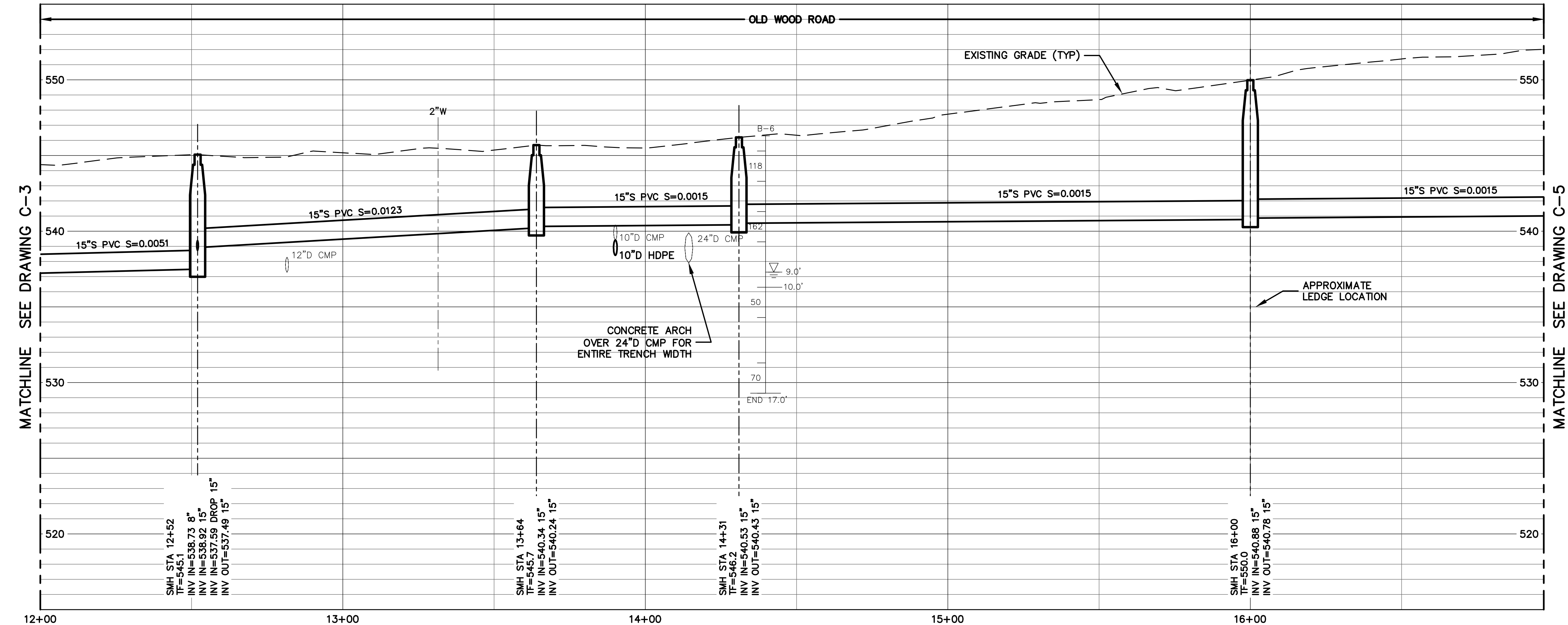
C-3

FILE NO. _____ JOB NO. _____

SHEET 5 OF 33



PLAN
SCALE: 1"=20'



SANITARY SEWER PROFILE
SCALE: 1"=20' H; 1"=4' V

DRAINAGE SUMMARY

CB 2	TF=543.32	INV=537.57 (12"D CMP OUT NW)
CB 3	TF=545.25	INV=540.67 (4"D OB IN E)
		INV=539.96 (10"D CMP OUT NW)
CB 4	TF=544.28	INV=538.97 (24"D CMP IN E)
		INV=538.91 (24"D CMP OUT SW)

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					A P P R O V E D
					REGISTERED PROFESSIONAL ENGINEER
					DATE

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS

FOUR CORNERS SANITARY SEWER PROJECT
**JENSEN'S PARK GRAVITY SEWER
STA 12+00 TO 16+94**

FILE NO. _____ JOB NO. _____ SCALE _____ AS NOTED _____ DCM _____ DCM _____ WGS _____ DRL _____

C-4

FILE NO. _____

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DRAINAGE SUMMARY

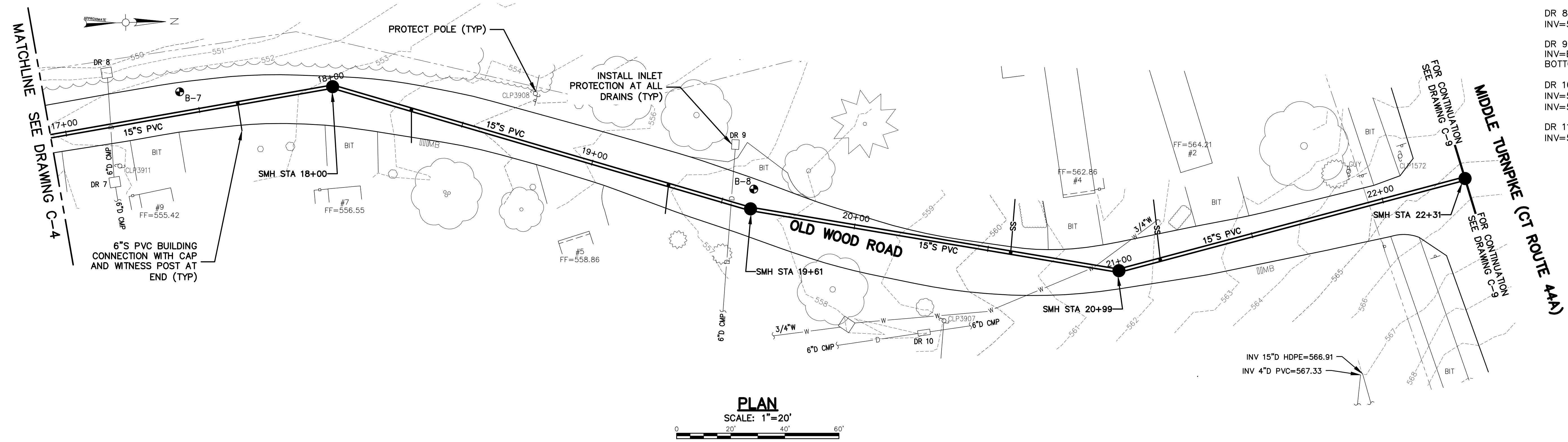
DR 7
INV=545.61 (6"D CMP IN W)
INV=545.05 (6"D CMP OUT E)

DR 8
INV=546.32 (6"D CMP OUT E)

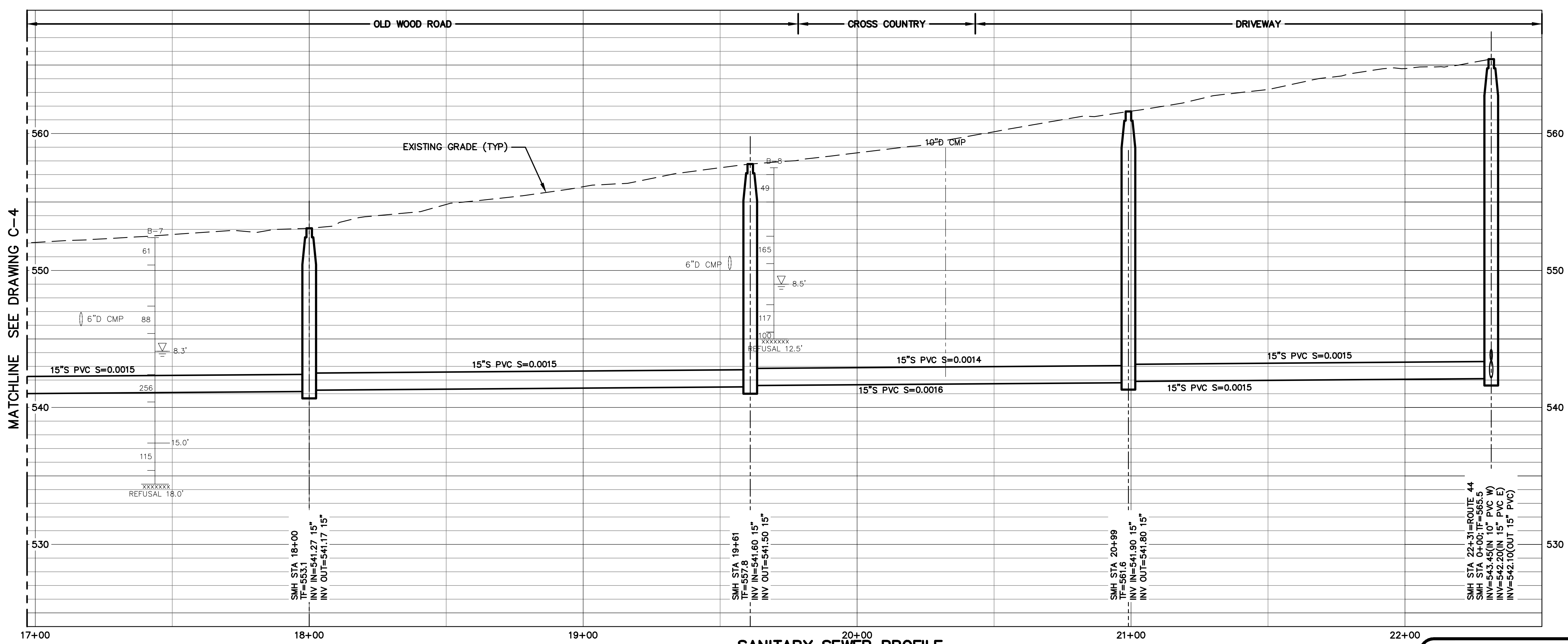
DR 9
INV=BURIED
BOTTOM=551.02

DR 10 (NOT SHOWN)
INV=553.50 (6"D CMP IN N)
INV=548.87 (6"D CMP OUT S)

DR 11
INV=552.42 (10"D CMP OUT S)



PLAN
SCALE: 1"=20'



SANITARY SEWER PROFILE
SCALE: 1"=20' H; 1"=4' V

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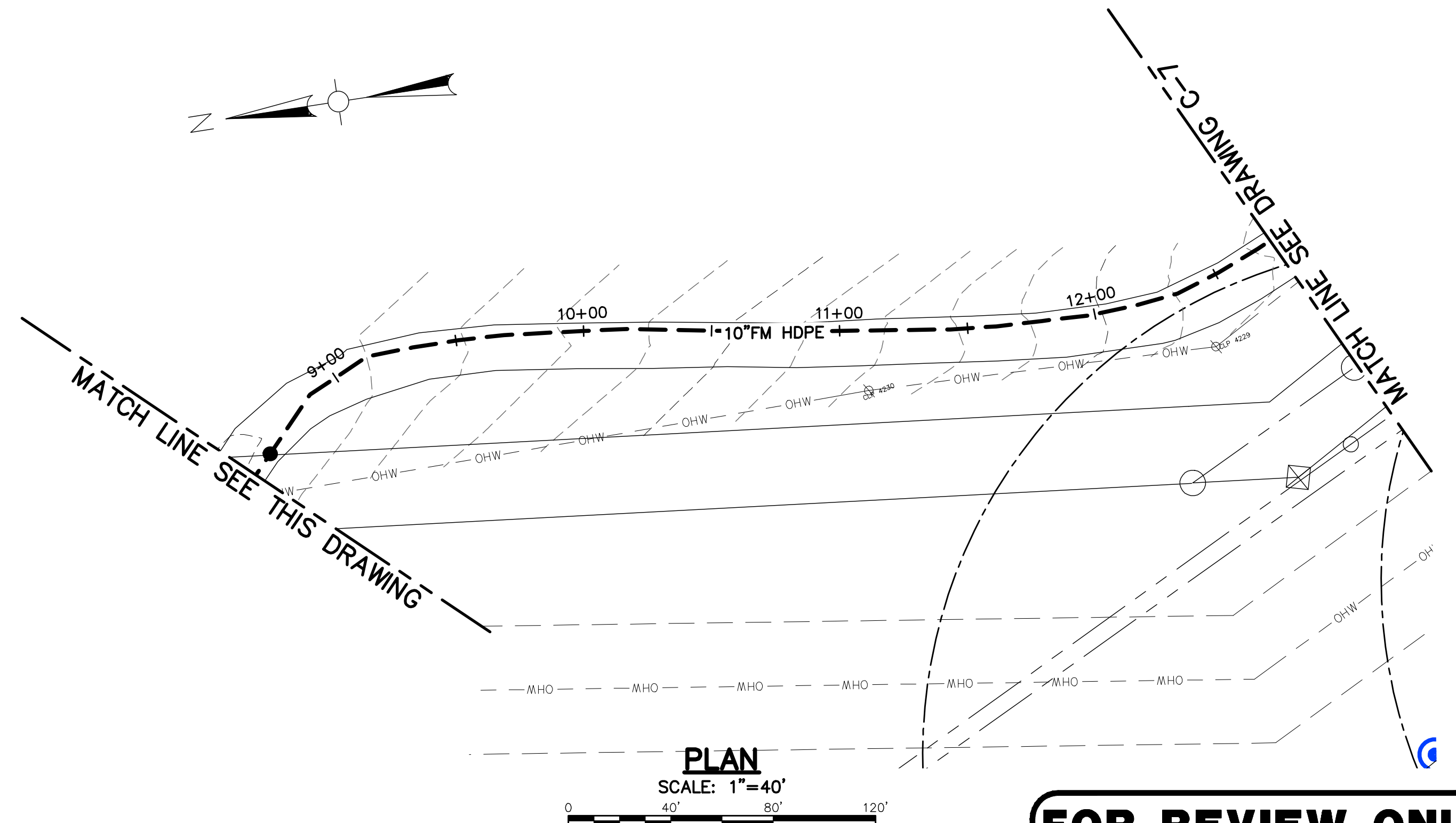
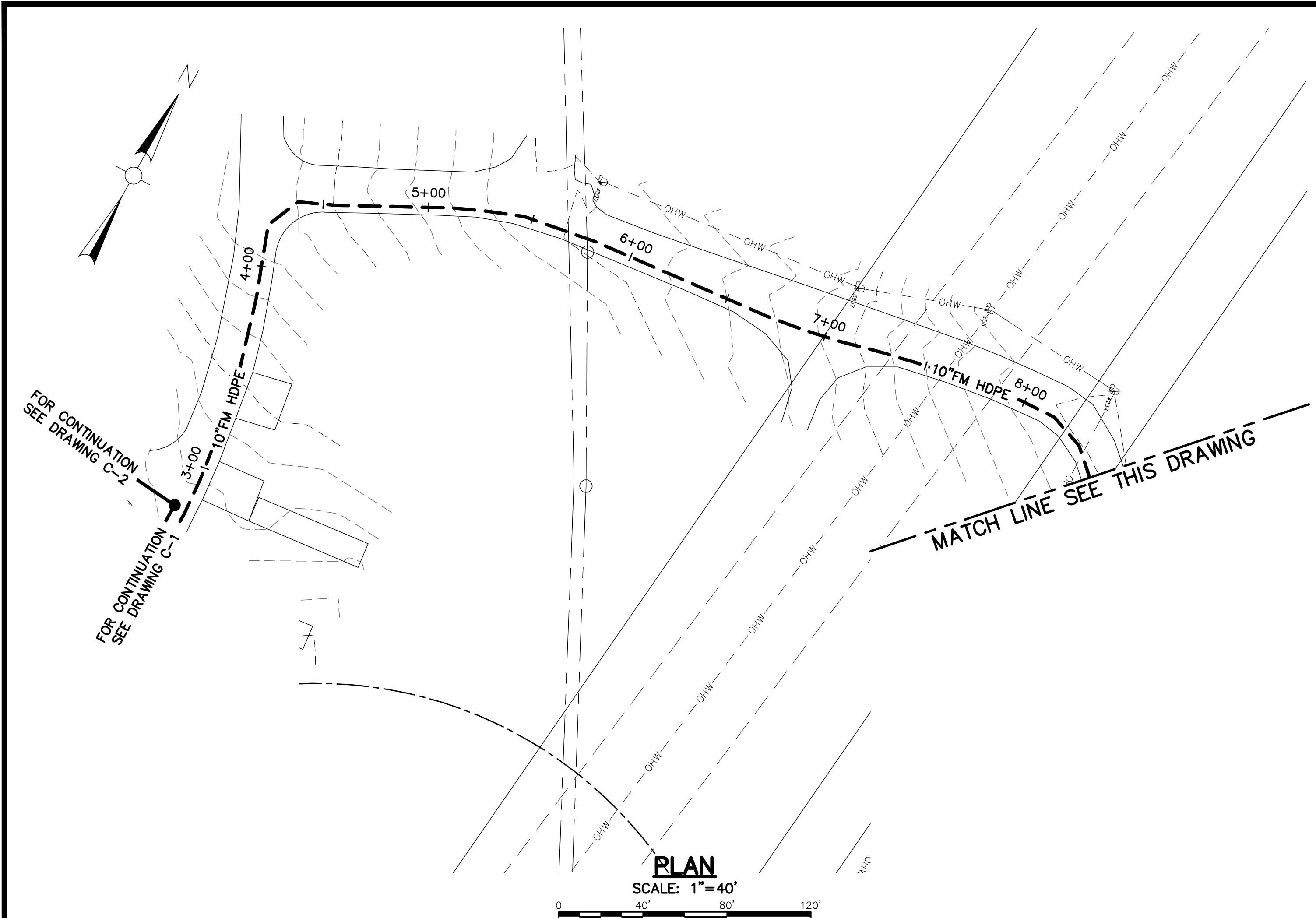
No.	Date	Dr. By	Ck. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

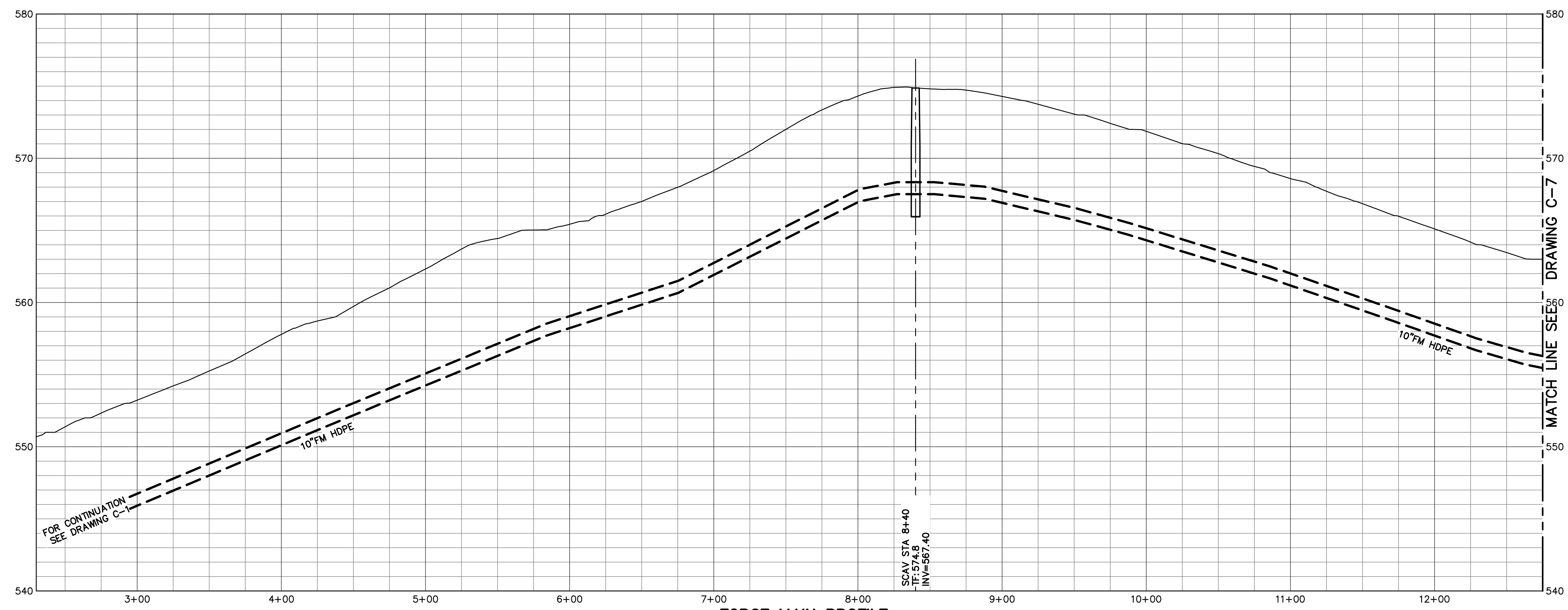
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
**JENSEN'S PARK GRAVITY SEWER
STA 16+94 TO 22+31**

SCALE: _____ AS NOTED
JOB NO. _____
FILE NAME _____
DR. BY _____ DCM
CHK. BY _____ DCM
APP. BY _____ DRL

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FORCE MAIN PROFILE
SCALE: 1"=40' HORIZ, 1"=4' VERT

No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT

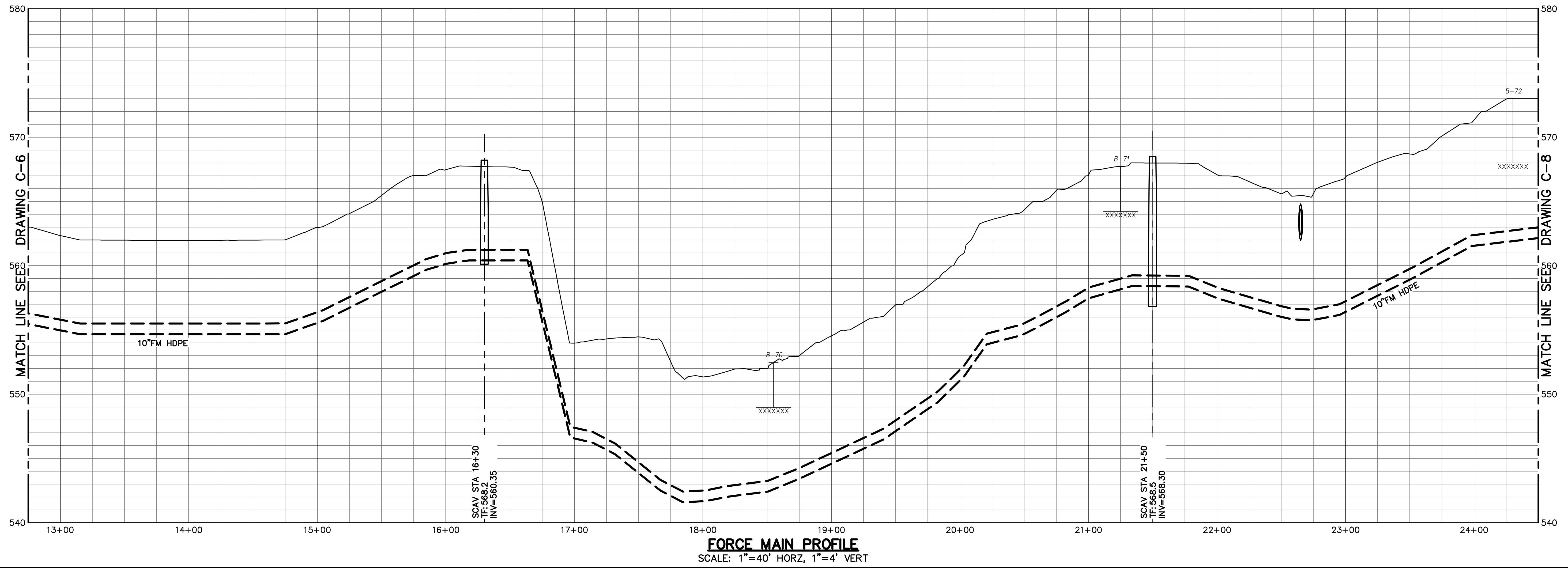
JENSEN'S PARK FORCE MAIN STA 3+00 TO 12+75

FILE NO.	JOB NO.	SCALE	AS NOTED	DR. BY	CHK. BY	APP. BY

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		A	P	P	R
		O	V	E	D
					DATE

REGISTERED PROFESSIONAL ENGINEER

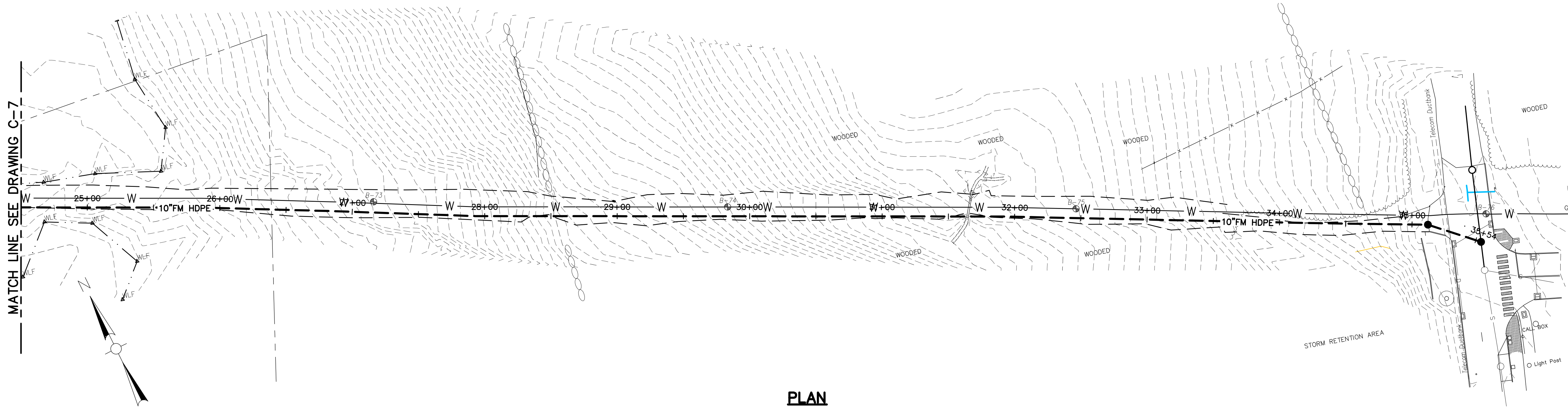
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT

JENSEN'S PARK FORCE MAIN STA 12+75 TO 24+50

FILE NO.	JOB NO.	SCALE	AS NOTED	DR BY	CHK BY	APP BY	DRL
				WCS	WCS	DMD	DRL

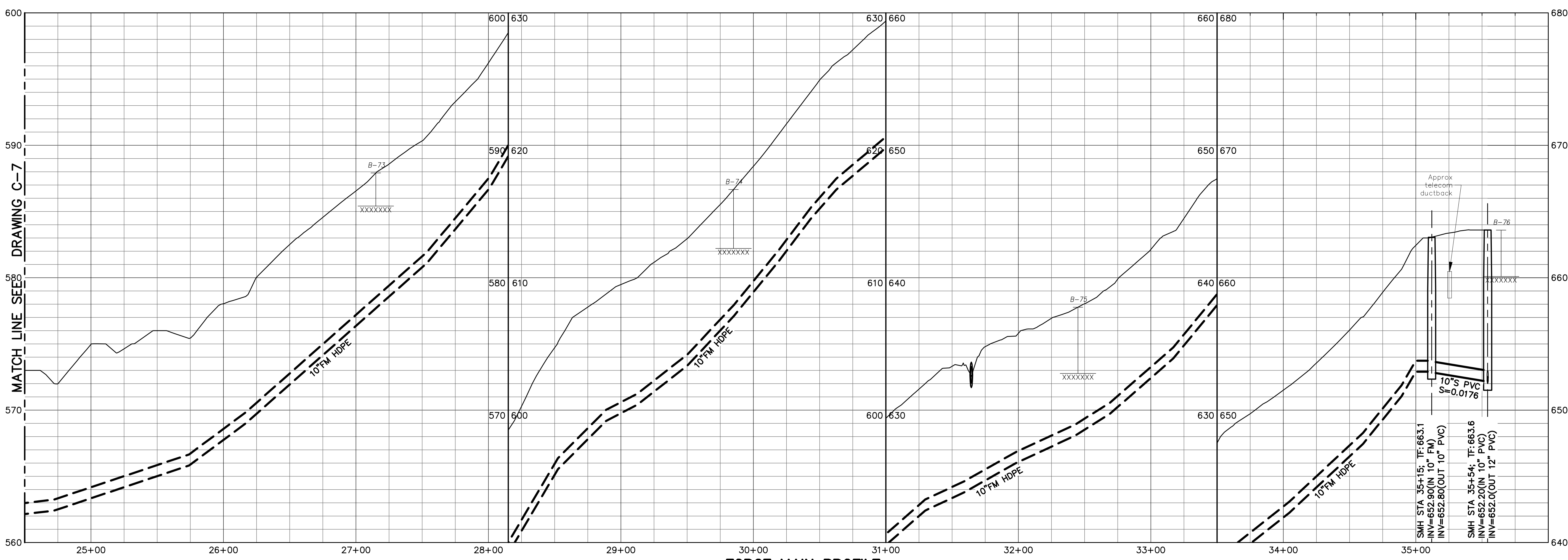
C-7

SHEET 9 OF 33



PLAN
SCALE: 1"=40'

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08-22-14



FORCE MAIN PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT

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MATCH LINE SEE DRAWING C-7

MATCH LINE SEE DRAWING C-7

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REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

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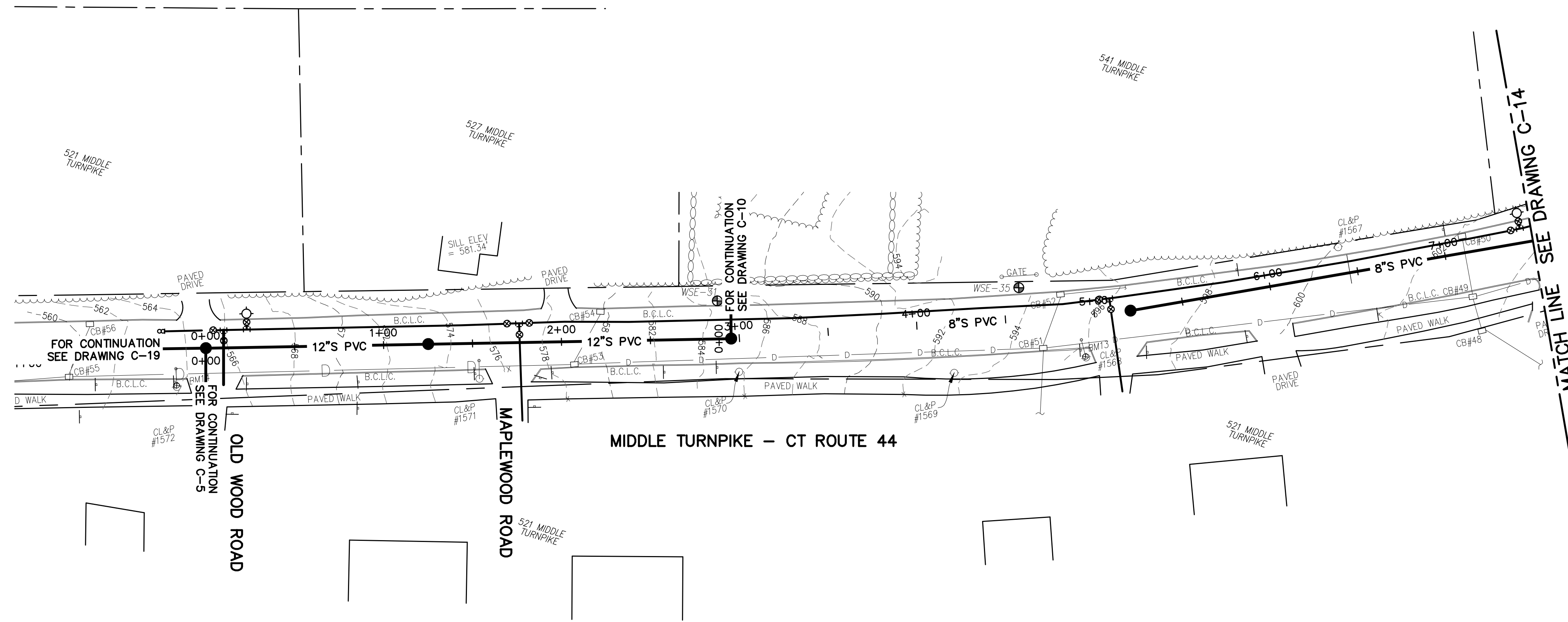
JENSEN'S PARK FORCE MAIN STA 24+50 TO 35+54

FILE NO.	JOB NO.	SCALE	AS NOTED	DR BY	WCS	CHK BY	DMD	APP BY	DRL

C-8

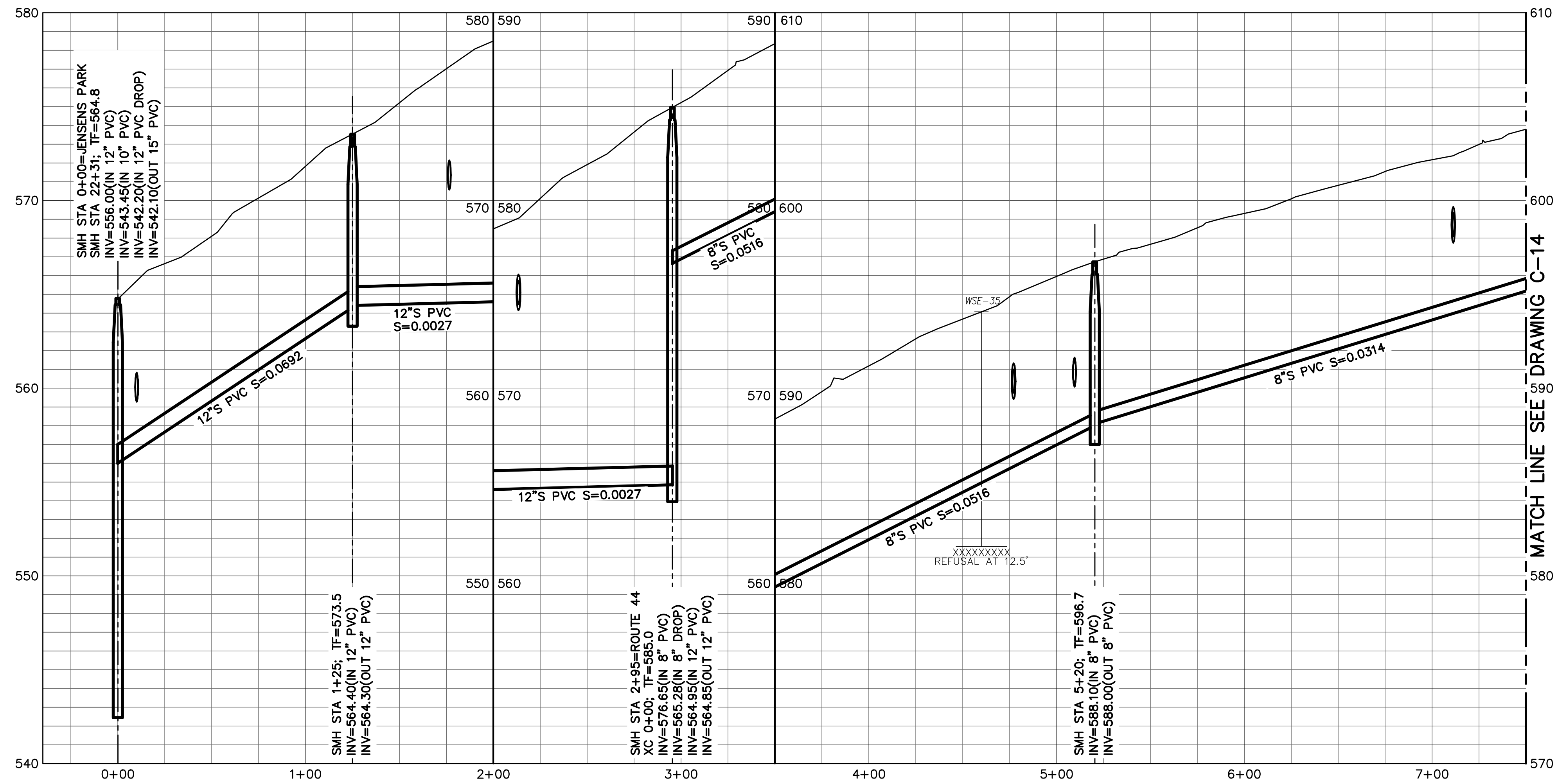
SHEET 10 OF 33

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PLAN

SCALE: 1"=40'



SEWER PROFILE

SCALE: 1"=40' HORZ, 1"=4' VERT

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No.	Date	Dr. By	Chk. By	App. By	Description

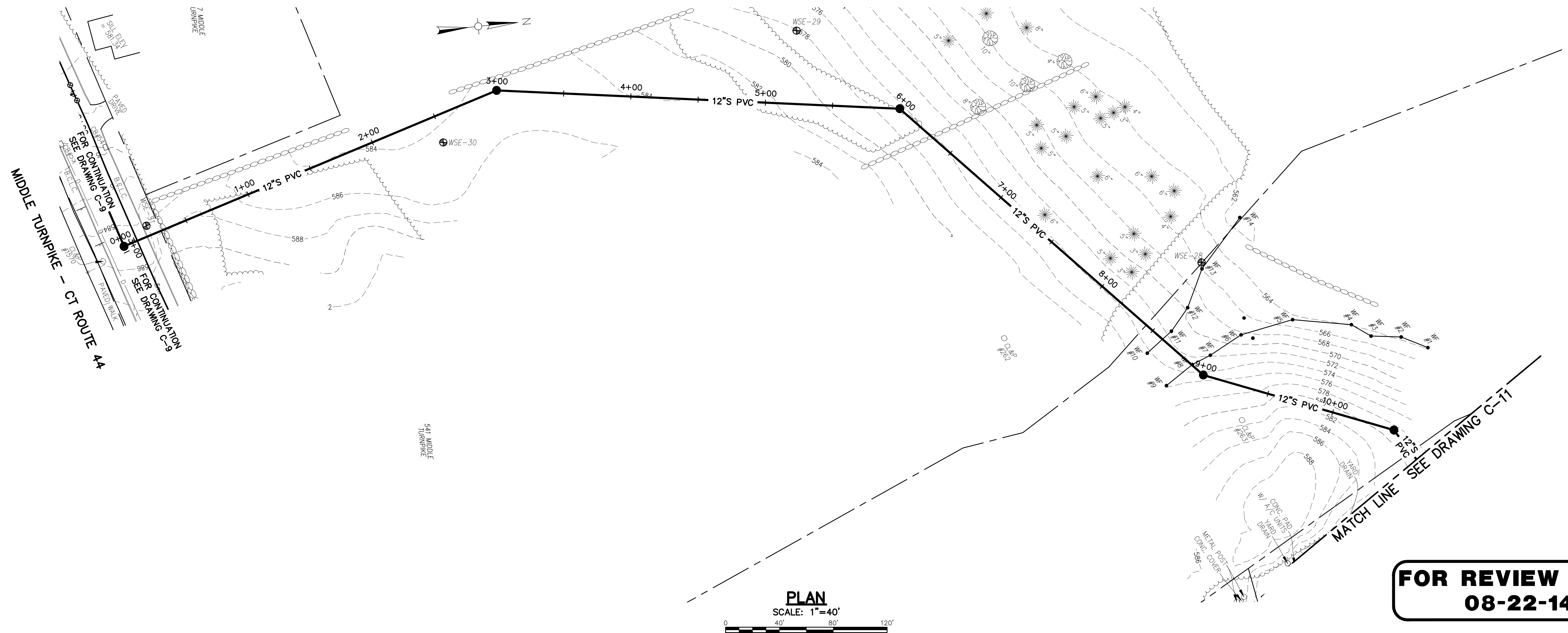
REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

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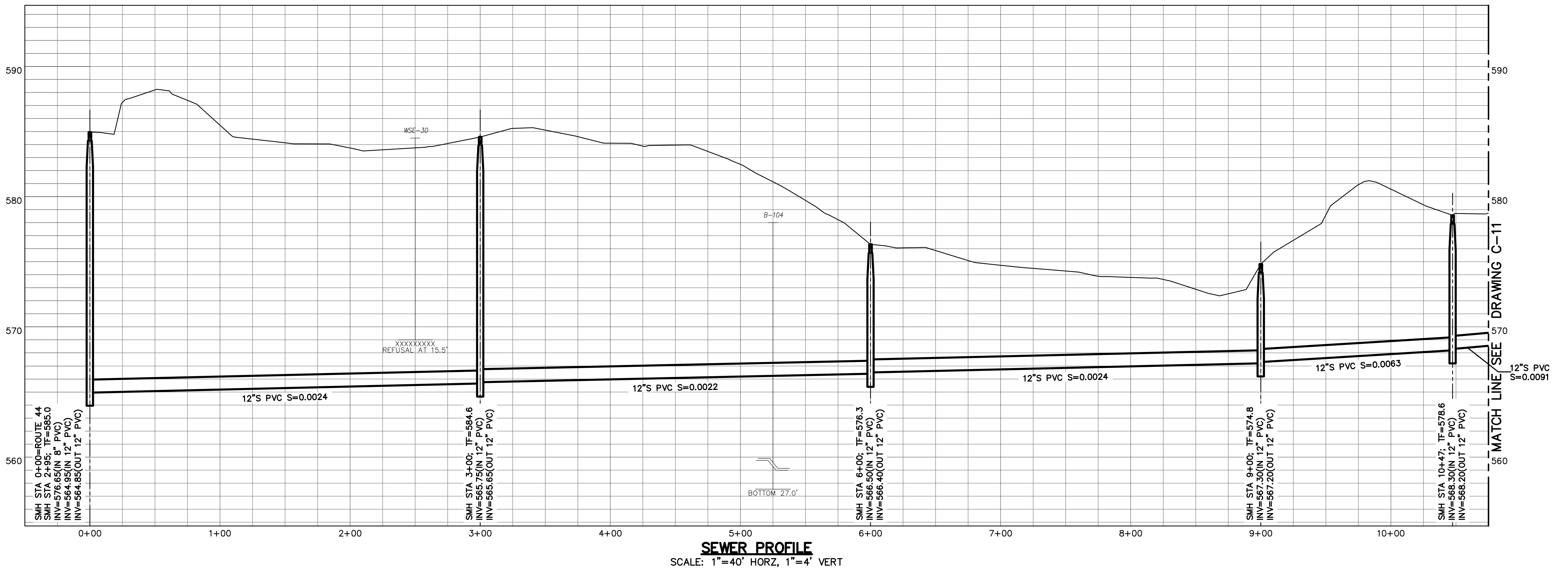
ROUTE 44 SEWER STA 0+00 TO 7+50

FILE NO. _____ JOB NO. _____ SCALE _____ AS NOTED _____ WGS _____ WGS _____ DR BY _____ DMD _____ APP BY _____ DRL _____

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REGISTERED PROFESSIONAL ENGINEER _____

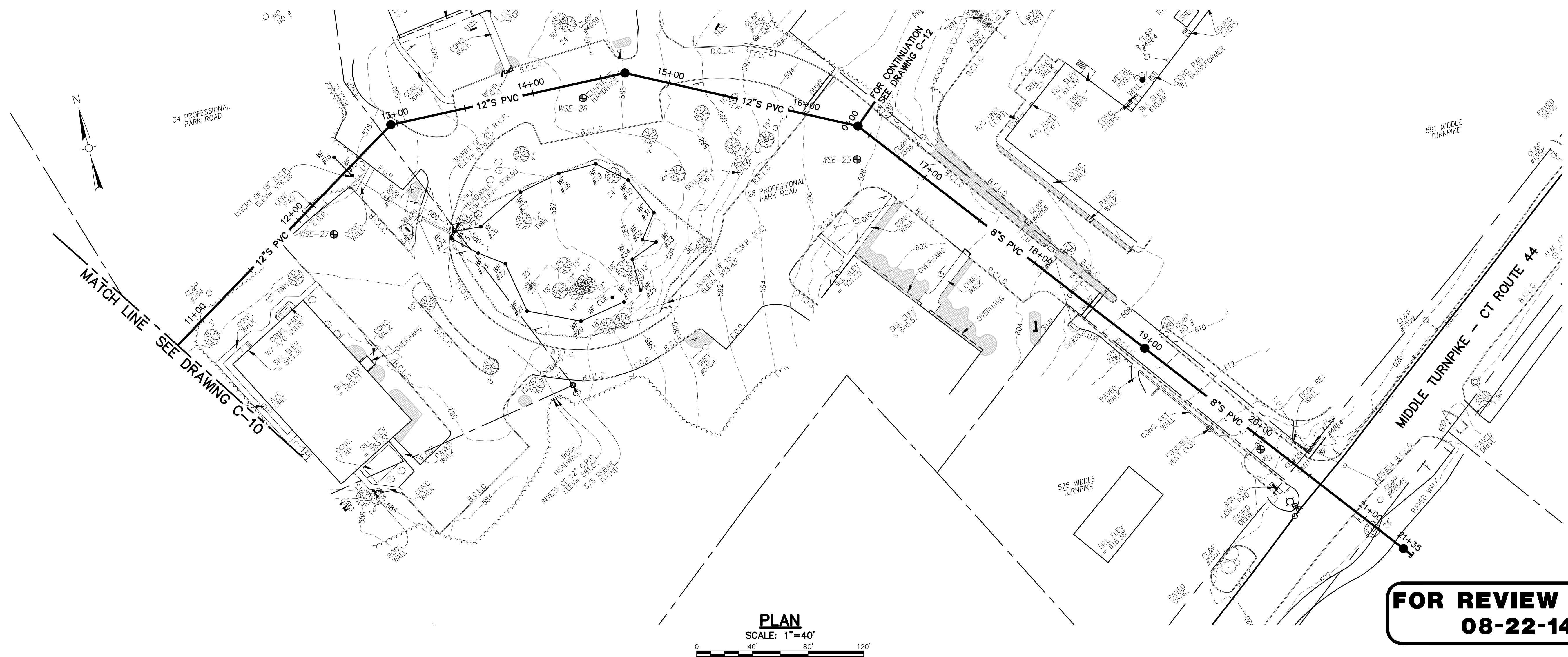
No.	Date	Dr. By	Ck. By	App. By	Description

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
ROUTE 44 CROSS-COUNTRY SEWER
STA 0+00 TO 10+75

FILE NO.	SCALE	AS NOTED	DR. BY	SCALE	CHK. BY	APP. BY

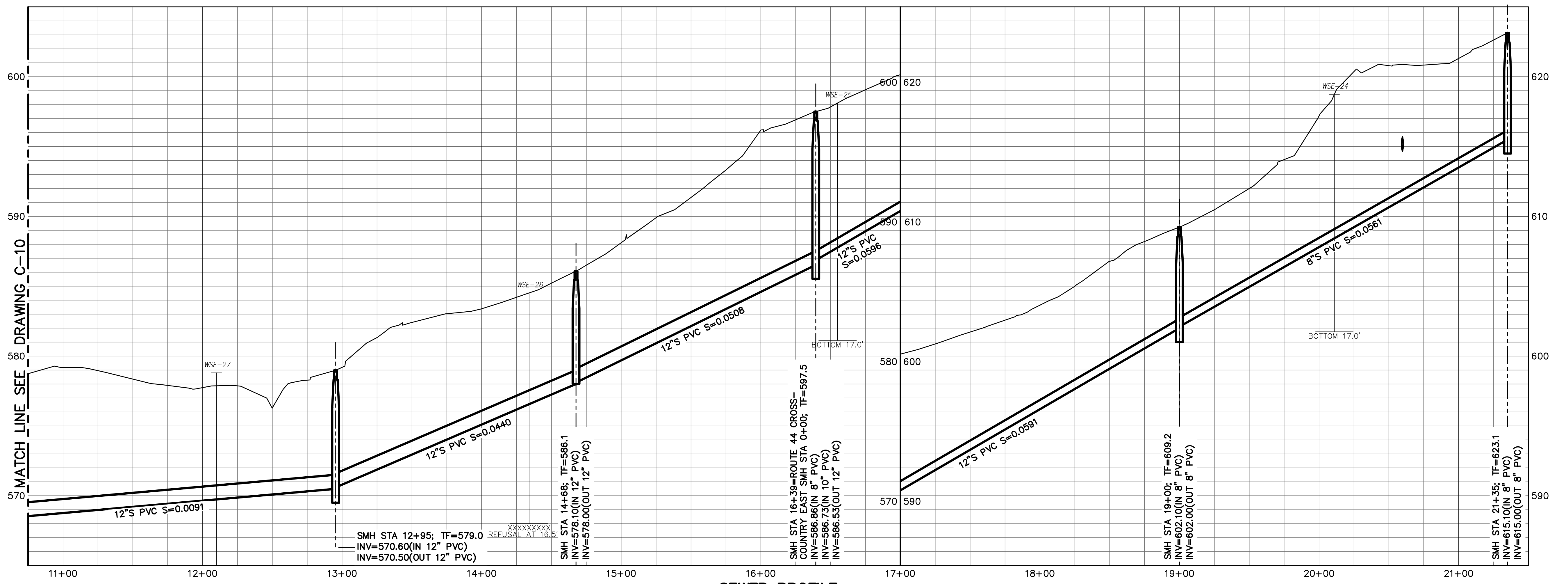
C-10

SHEET 12 OF 33



PLAN
SCALE: 1"=40'

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SEWER PROFILE
SCALE: 1"=40' HORIZ, 1"=4' VERT

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No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
**ROUTE 44 CROSS-COUNTRY SEWER
STA 10+75 TO 21+35**

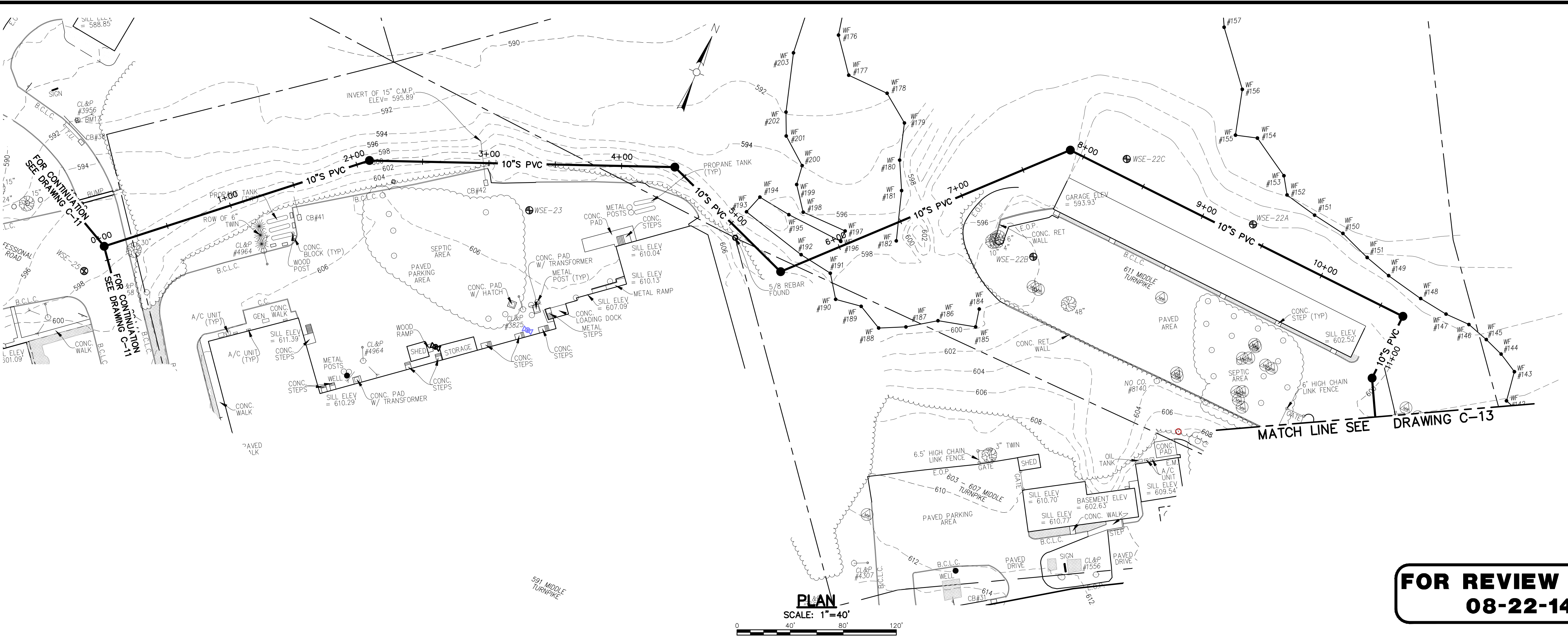
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C-11

FILE NO. _____

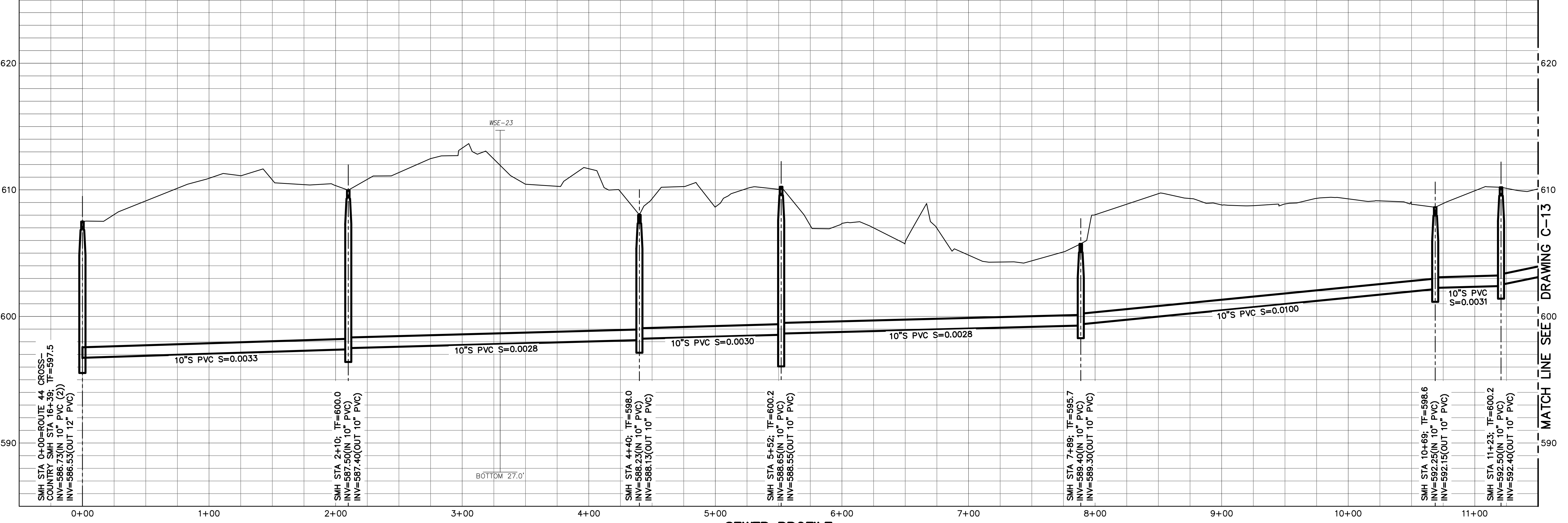
SHEET 13 OF 33

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PLAN
SCALE: 1" = 40'

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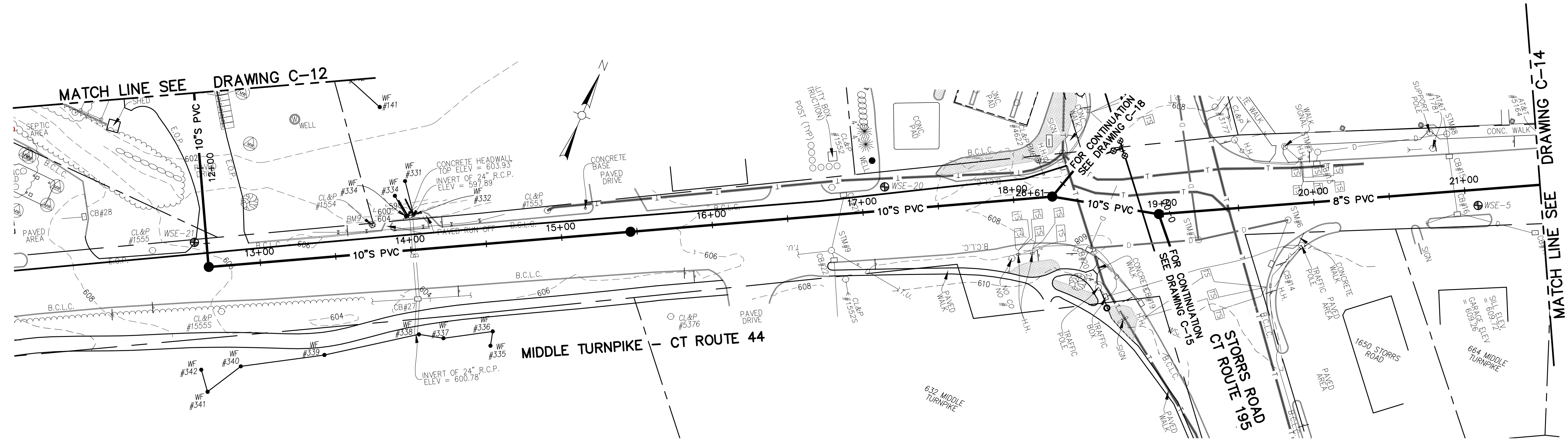
SEWER PROFILE
SCALE: 1" = 40' HORZ, 1" = 4' VERT

No.	Date	Dr. By	Dr. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER
DATE

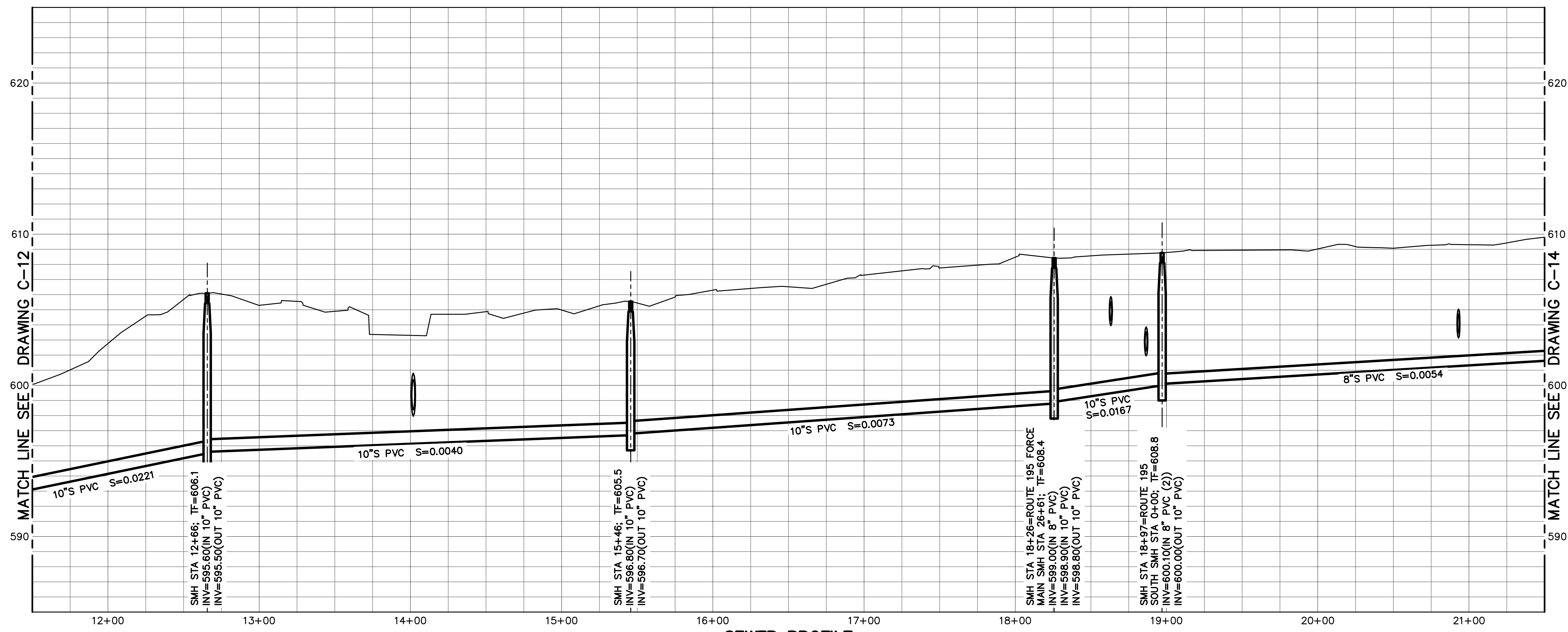
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
ROUTE 44 CROSS-COUNTRY EAST SEWER
STA 0+00 TO 11+50

FILE NO. _____ JOB NO. _____ SCALE _____ AS NOTED _____ WGS _____ WGS _____ DMD _____ APP BY _____ DRL _____



PLAN
SCALE: 1"=40'

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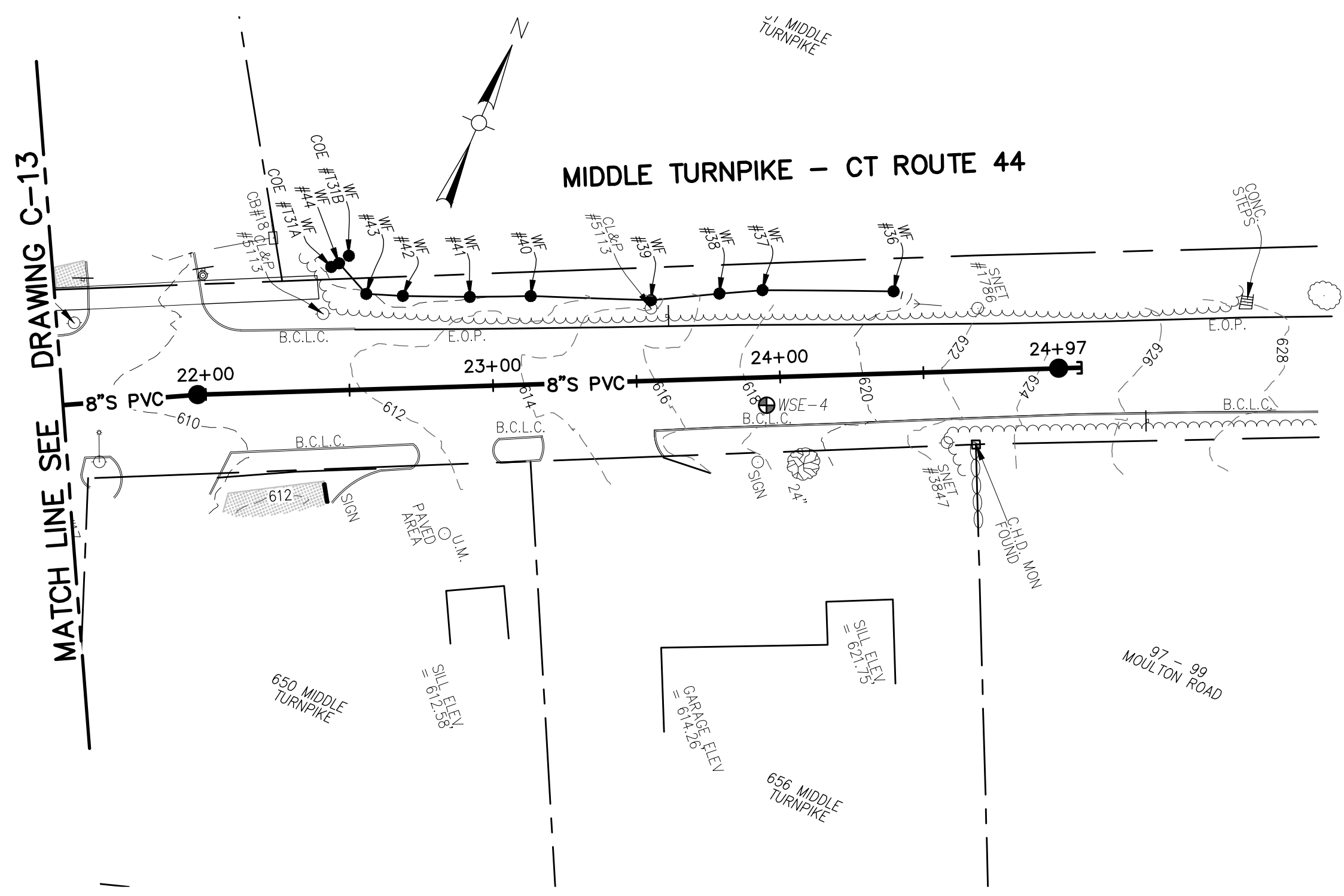
SEWER PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT

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No.	Date	Dr. By	Chk. By	App. By	Description

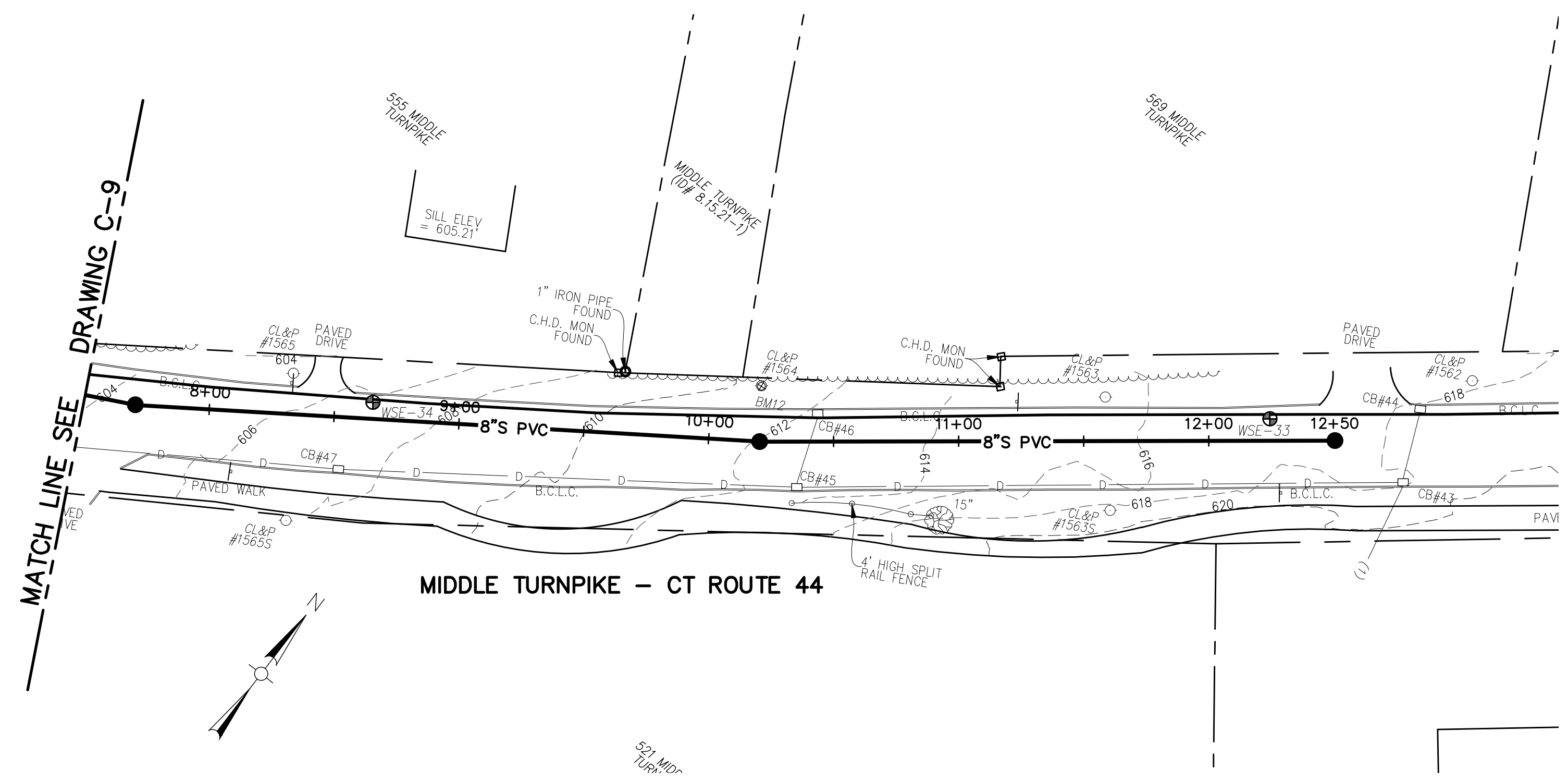
REGISTERED PROFESSIONAL ENGINEER
DATE

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
ROUTE 44 CROSS-COUNTRY EAST SEWER
STA 11+50 TO 21+50



PLAN

SCALE: 1"=40'

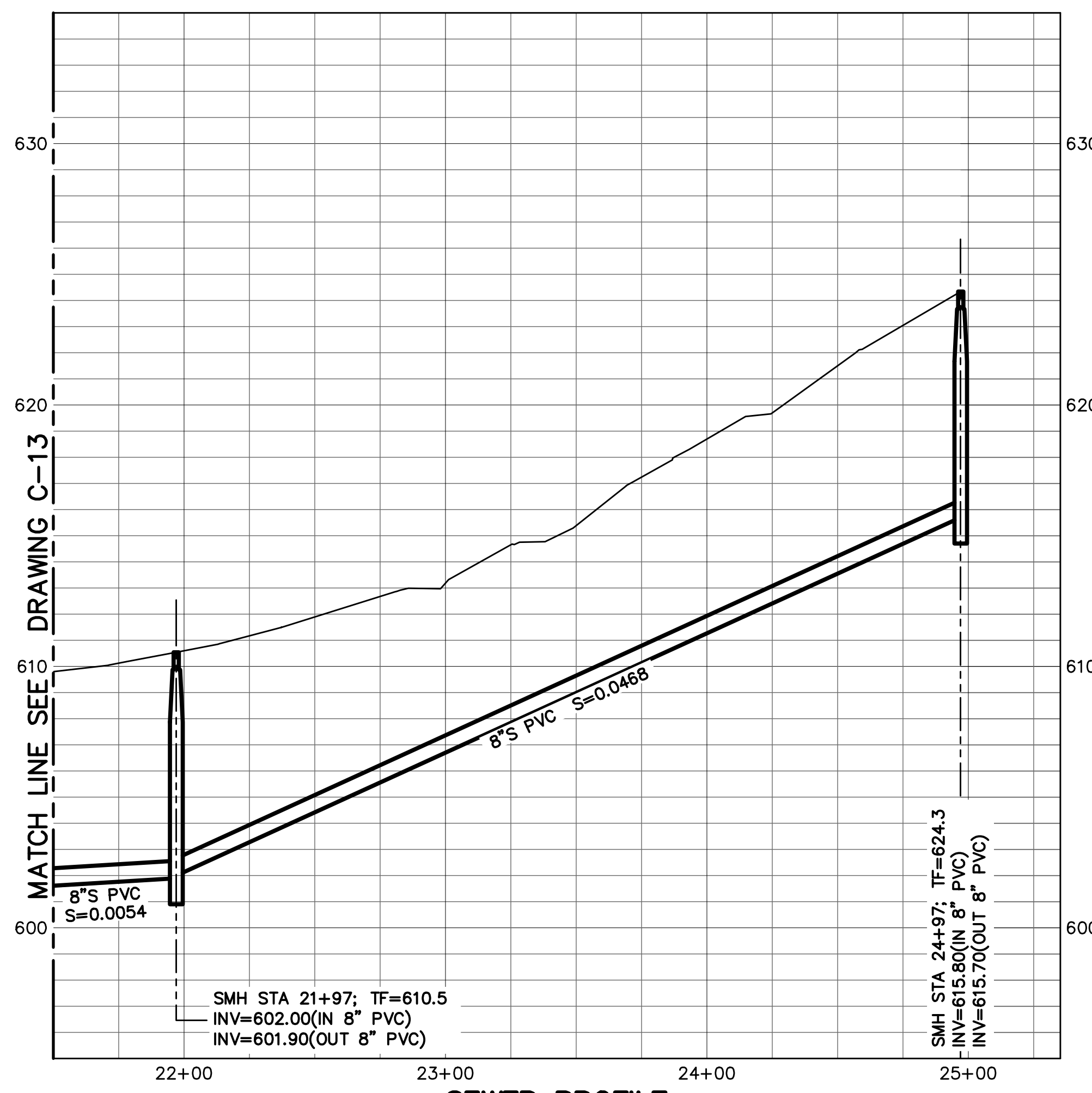


PLAN

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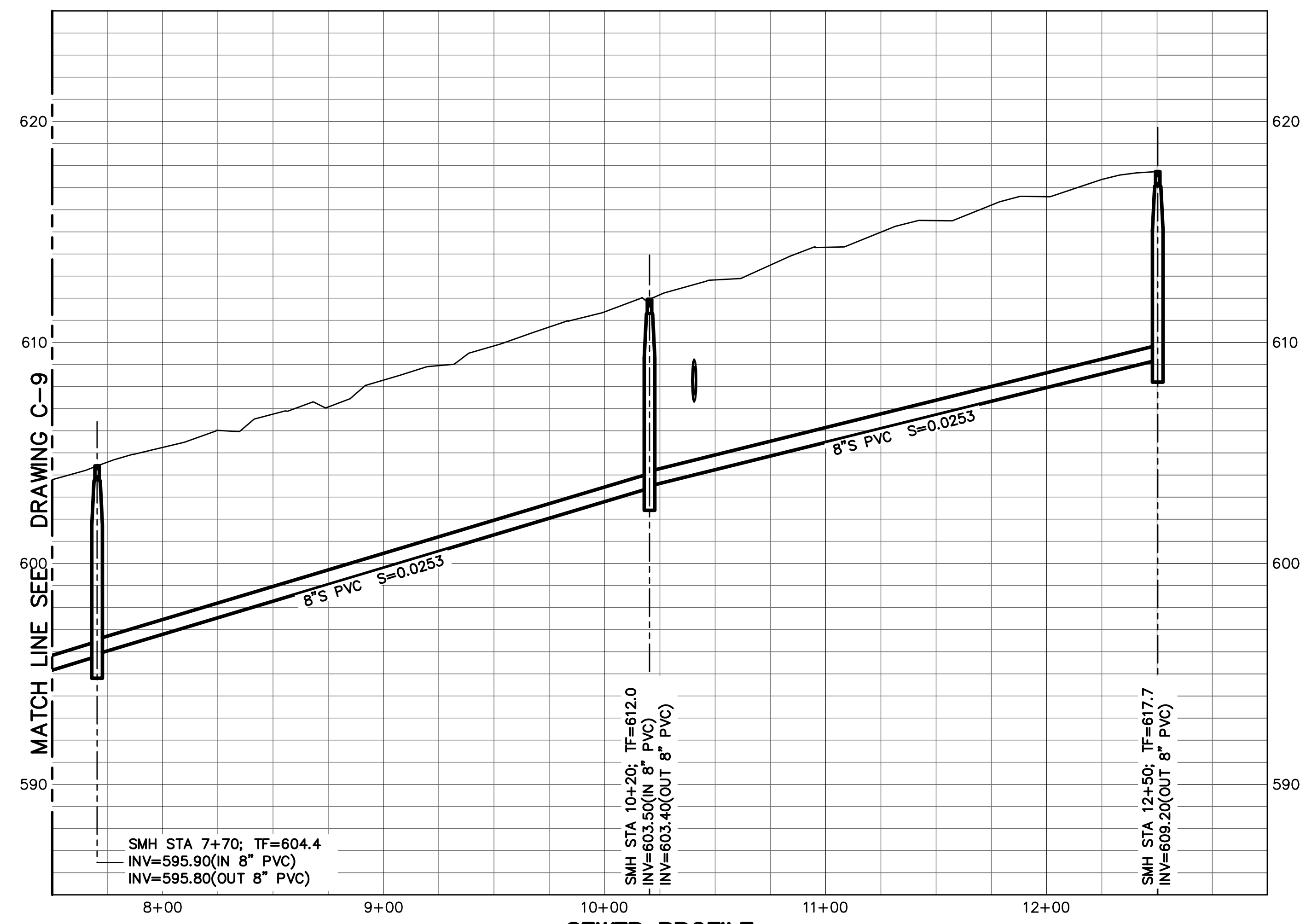


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08-22-14



SEWER PROFILE

SCALE: 1"=40' HORZ, 1"=4' VERT



SEWER PROFILE

SCALE: 1"=40' HORZ, 1"=4' VERT

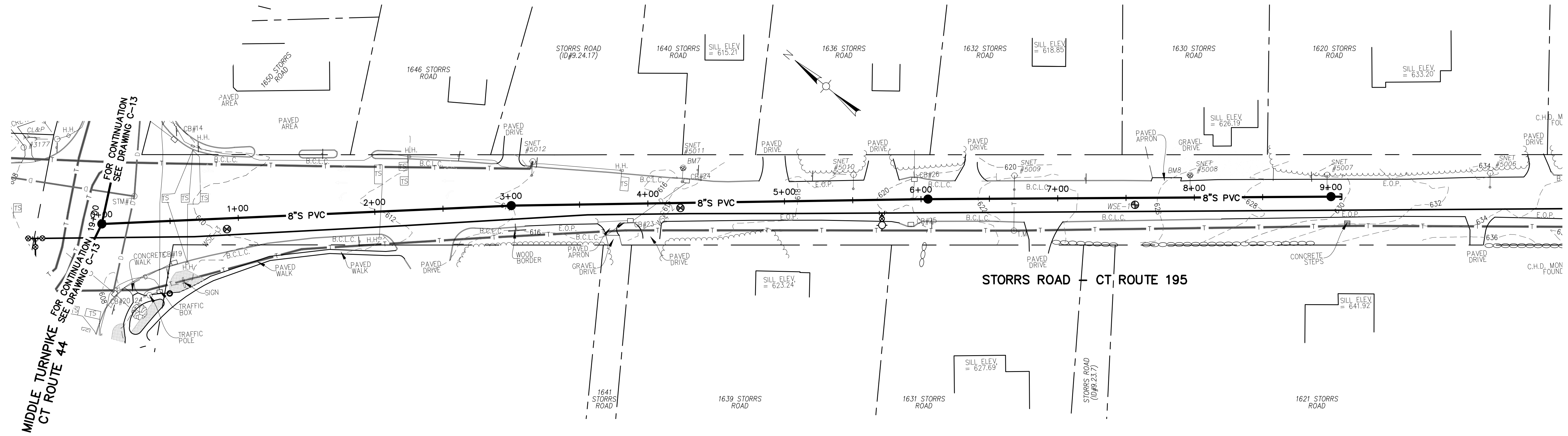
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No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

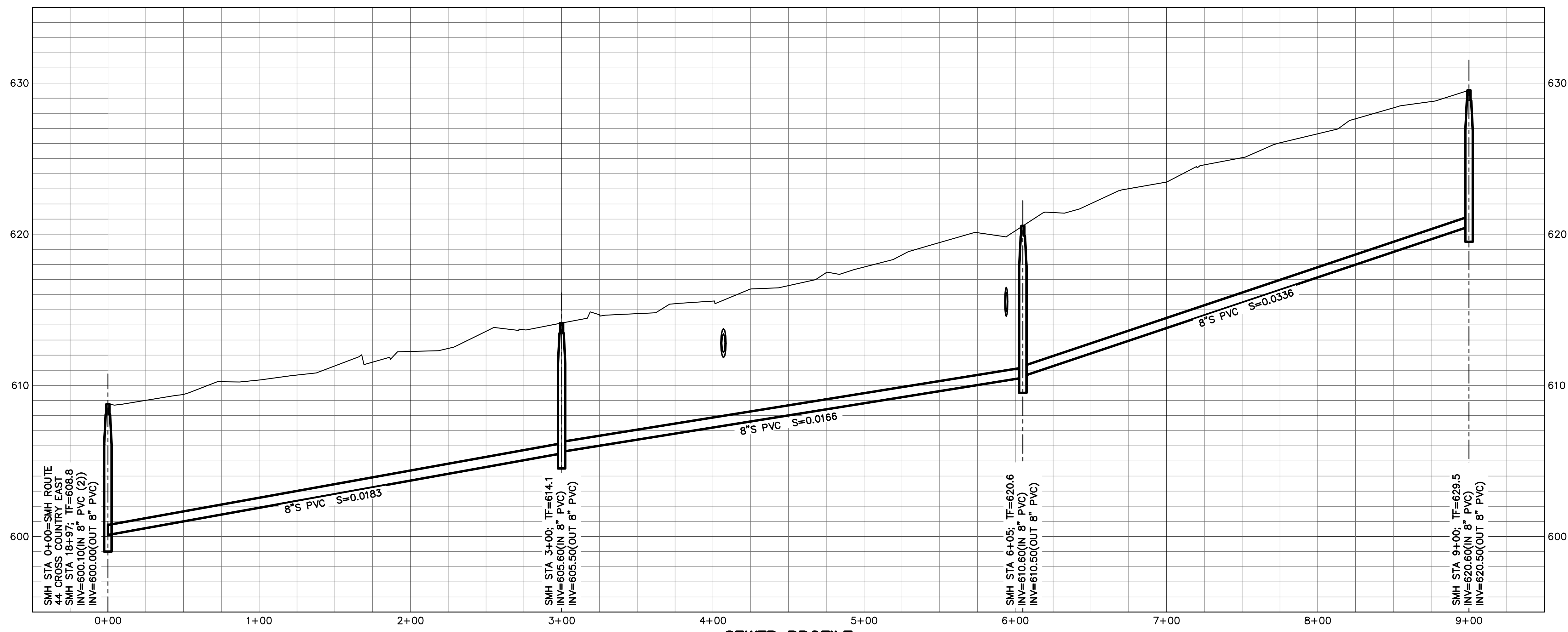
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
ROUTE 44 CROSS-COUNTRY EAST SEWER STA 21+50 TO 24+97 AND ROUTE 44 SEWER STA 7+50 TO 12+50

FILE NO.	SCALE	AS NOTED	DR. BY	WCS	CHK. BY	WCS	DMD	APP. BY	DRL



PLAN
SCALE: 1"=40'

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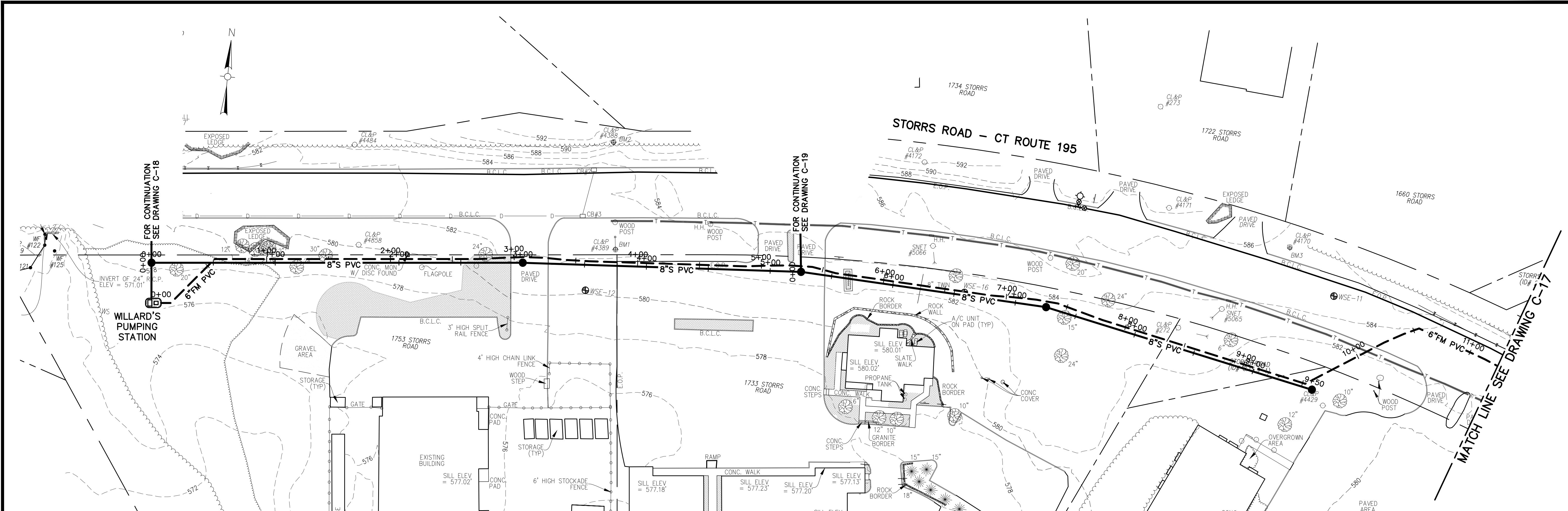
SEWER PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT

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No.	Date	Dr. By	Ck. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER
DATE

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
ROUTE 195 SOUTH SEWER STA 0+00 TO 9+00

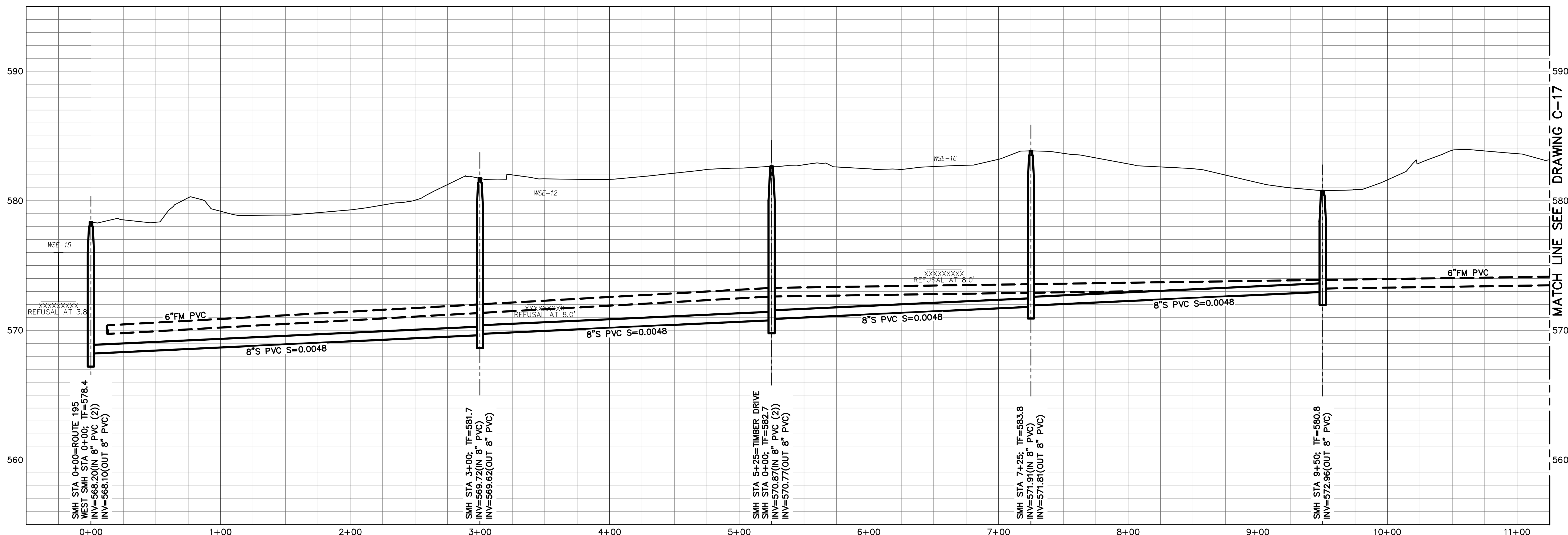


PLAN

SCALE: 1"=40'



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08-22-14



SEWER PROFILE

SCALE: 1"=40' HORZ, 1"=4' VERT

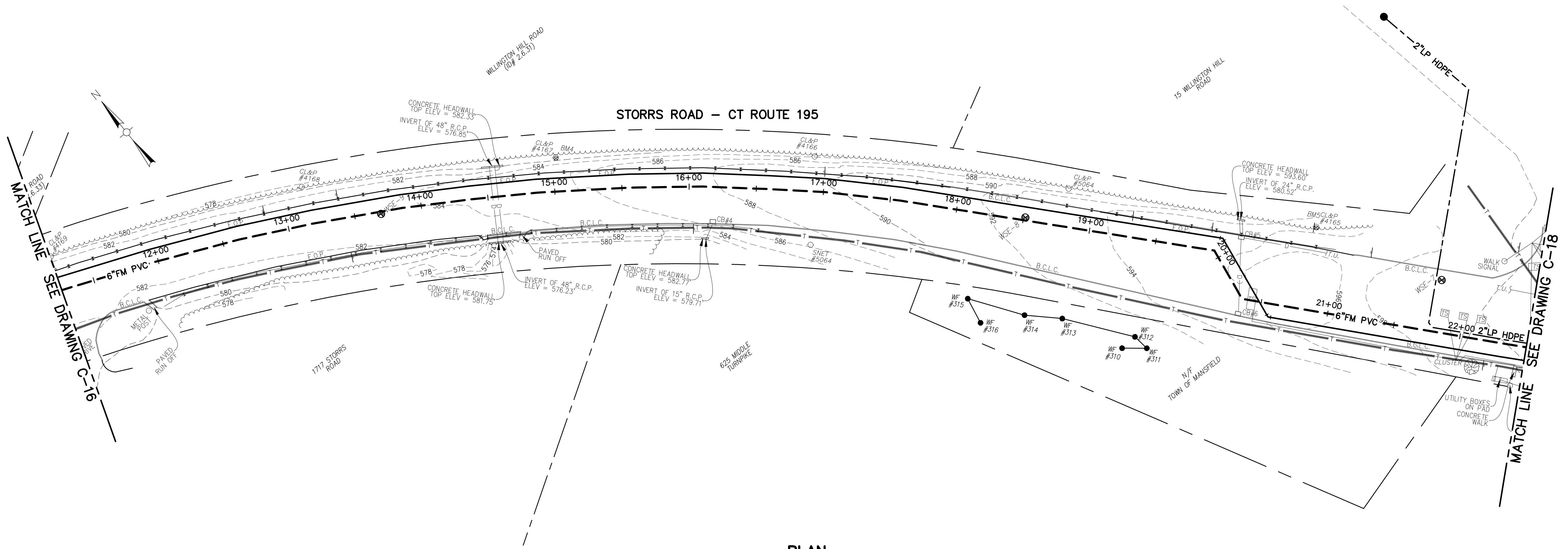
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No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

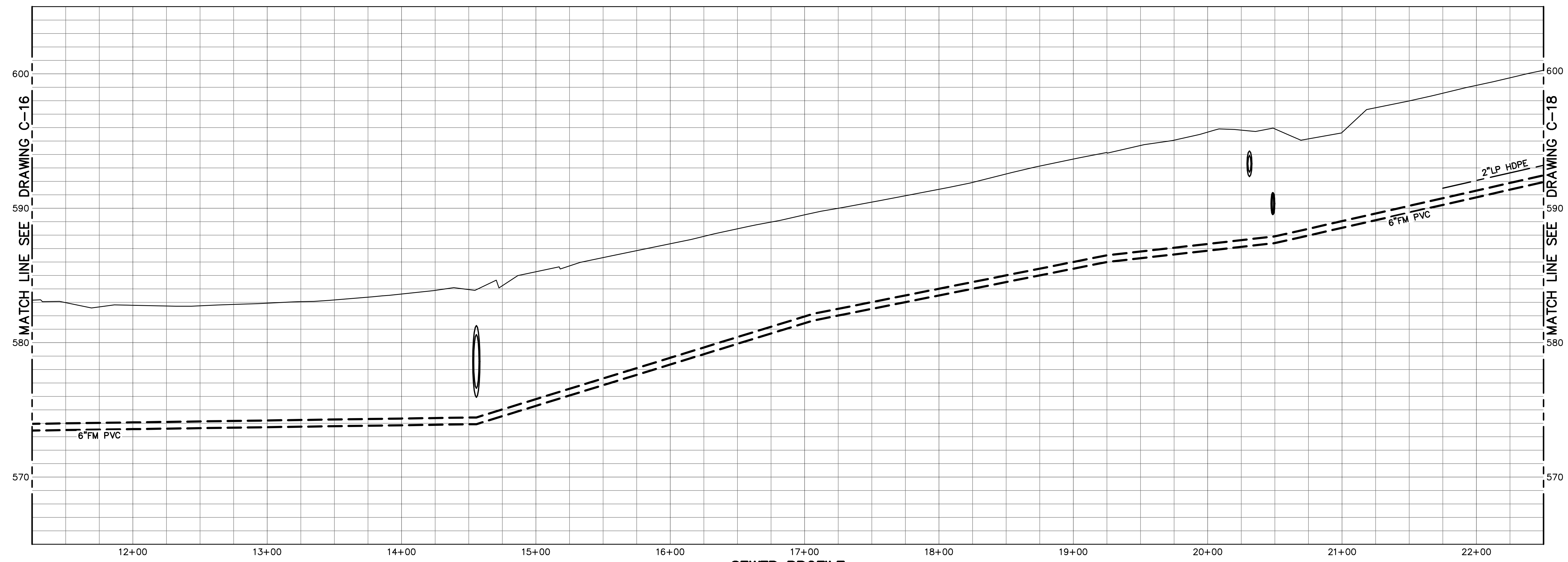
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
**ROUTE 195 CROSS-COUNTRY SEWER STA 0+00 TO 9+50
AND ROUTE 195 FORCE MAIN STA 0+00 TO 11+25**

FILE NO. _____ JOB NO. _____ SCALE _____ AS NOTED _____ WGS _____ WGS _____ DMD _____ DRL _____



PLAN
SCALE: 1"=40'

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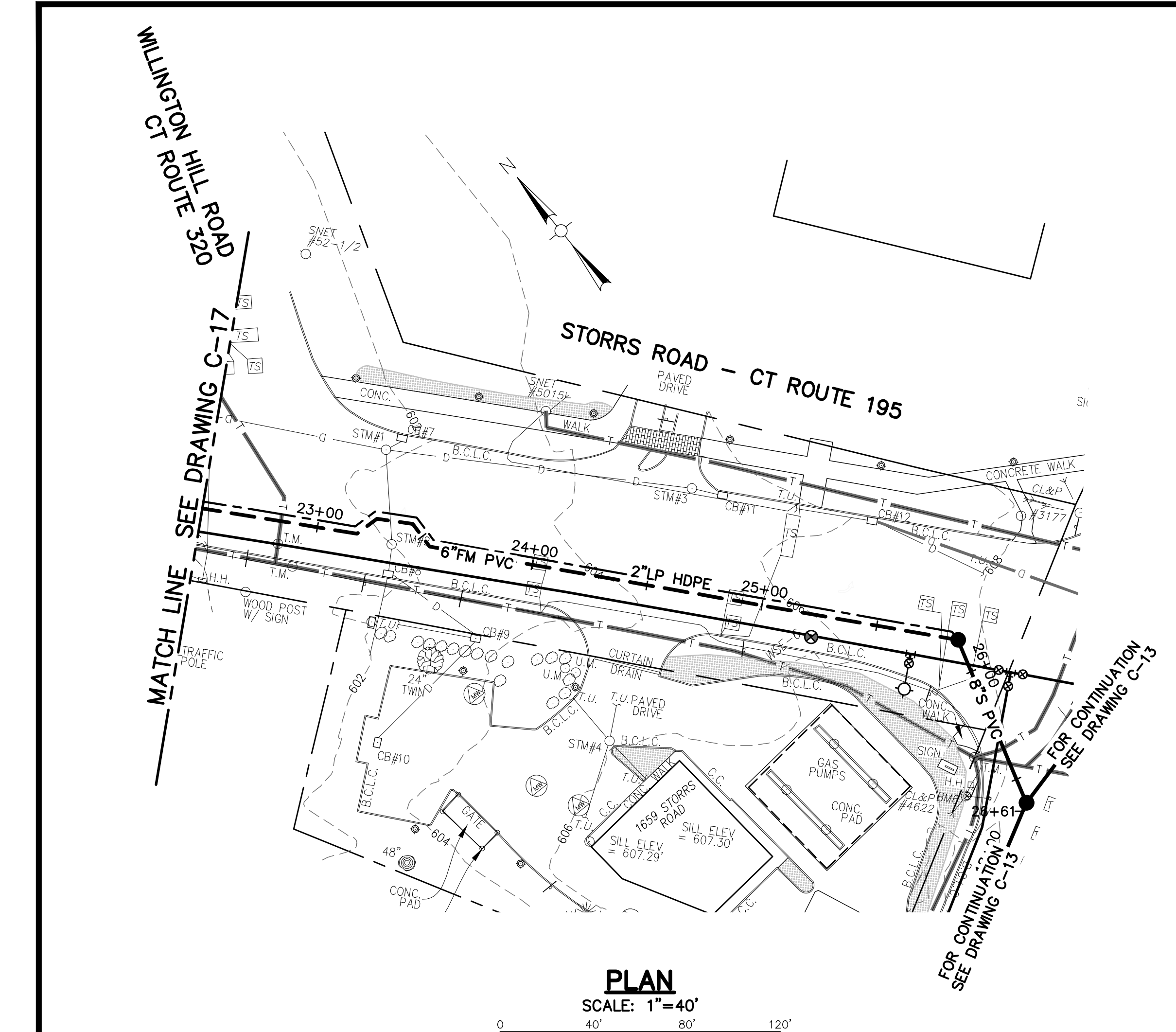
SEWER PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT

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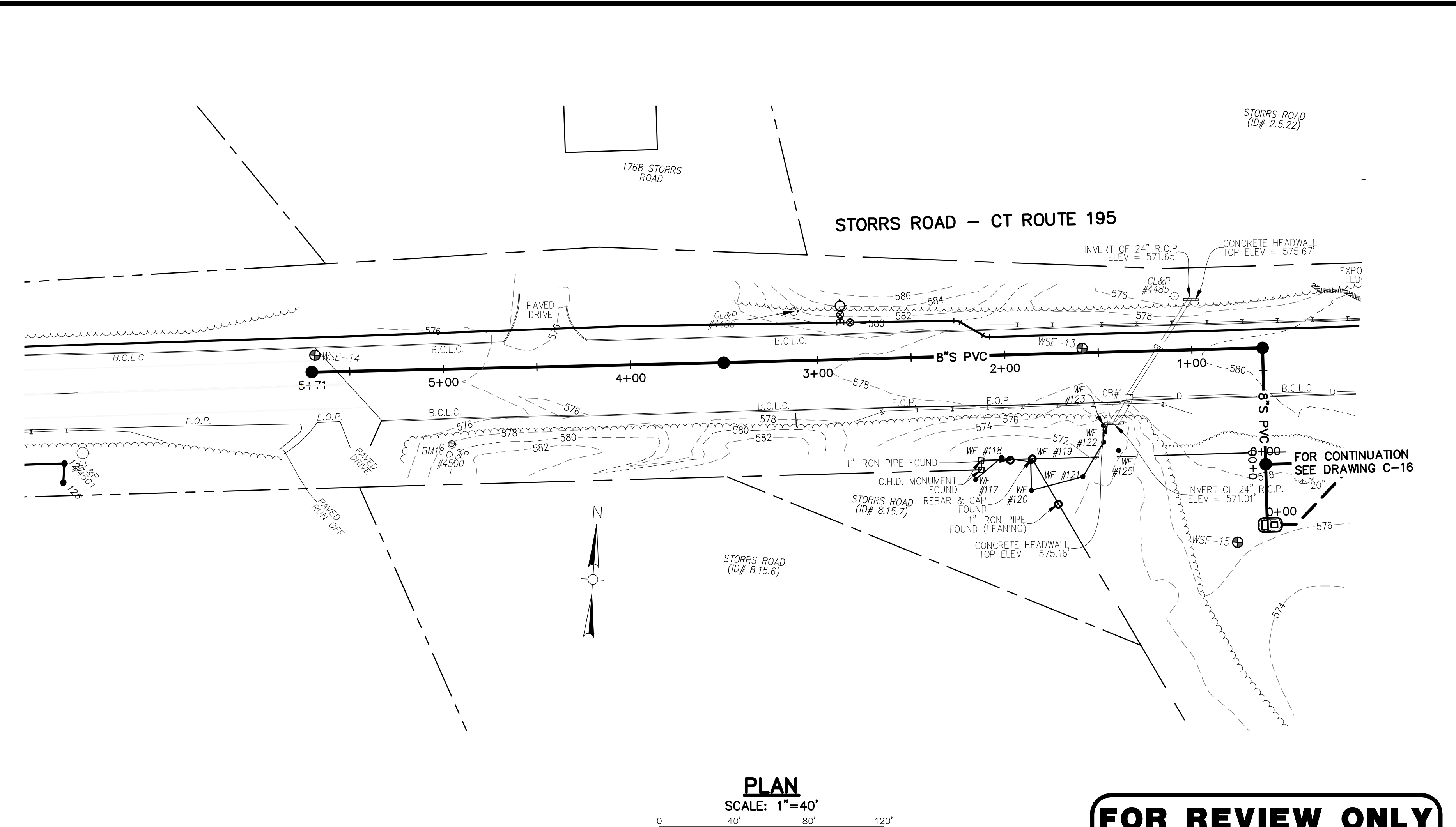
No.	Date	Dr. By	Ck. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

TOWN OF MANSFIELD, CONNECTICUT DEPARTMENT OF PUBLIC WORKS FOUR CORNERS SANITARY SEWER PROJECT					
FILE NO.	JOB NO.	SCALE	AS NOTED	WCS	DRL
ROUTE 195 FORCE MAIN STA 11+25 TO 22+50					

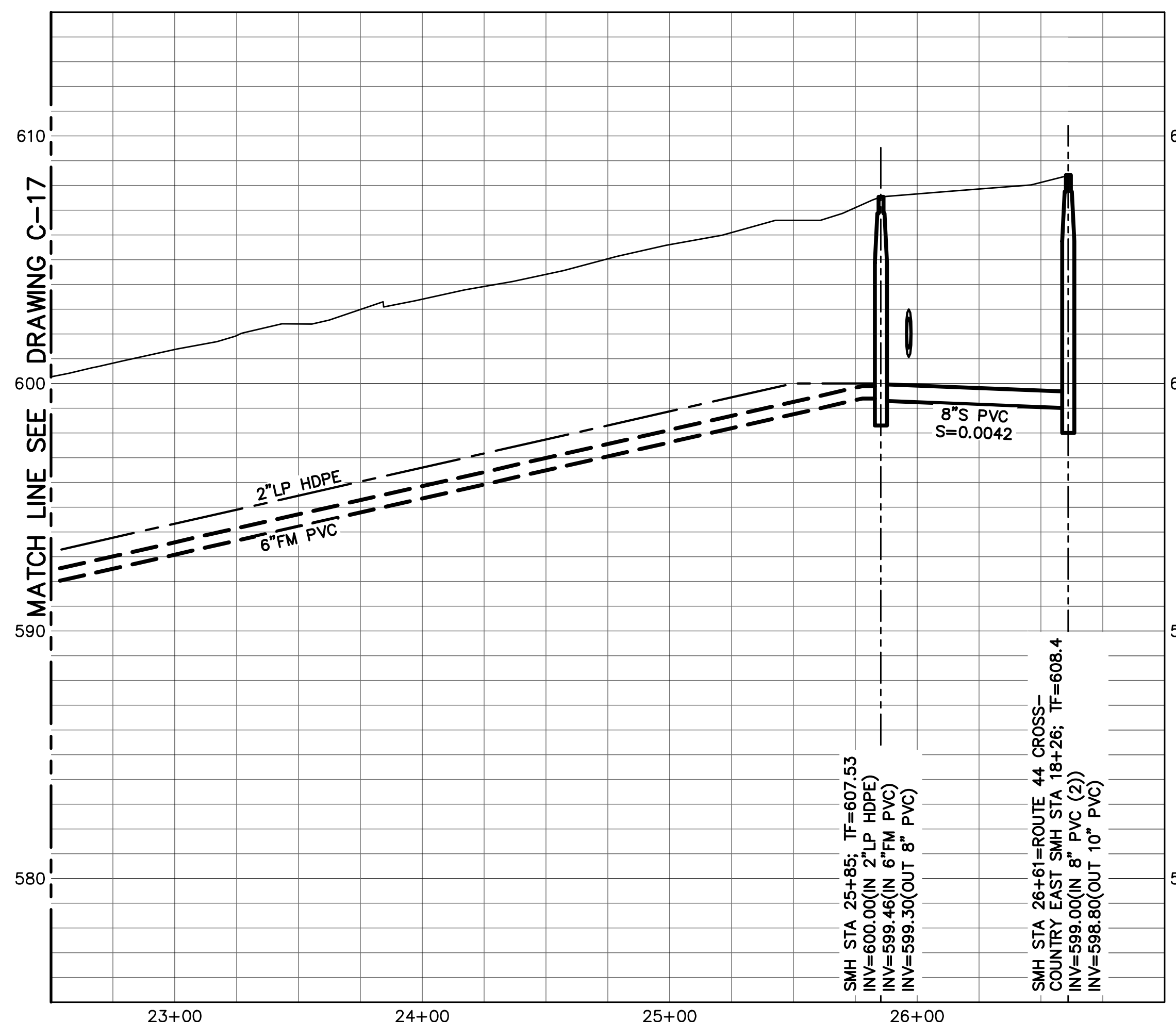


PLAN
SCALE: 1"=40'

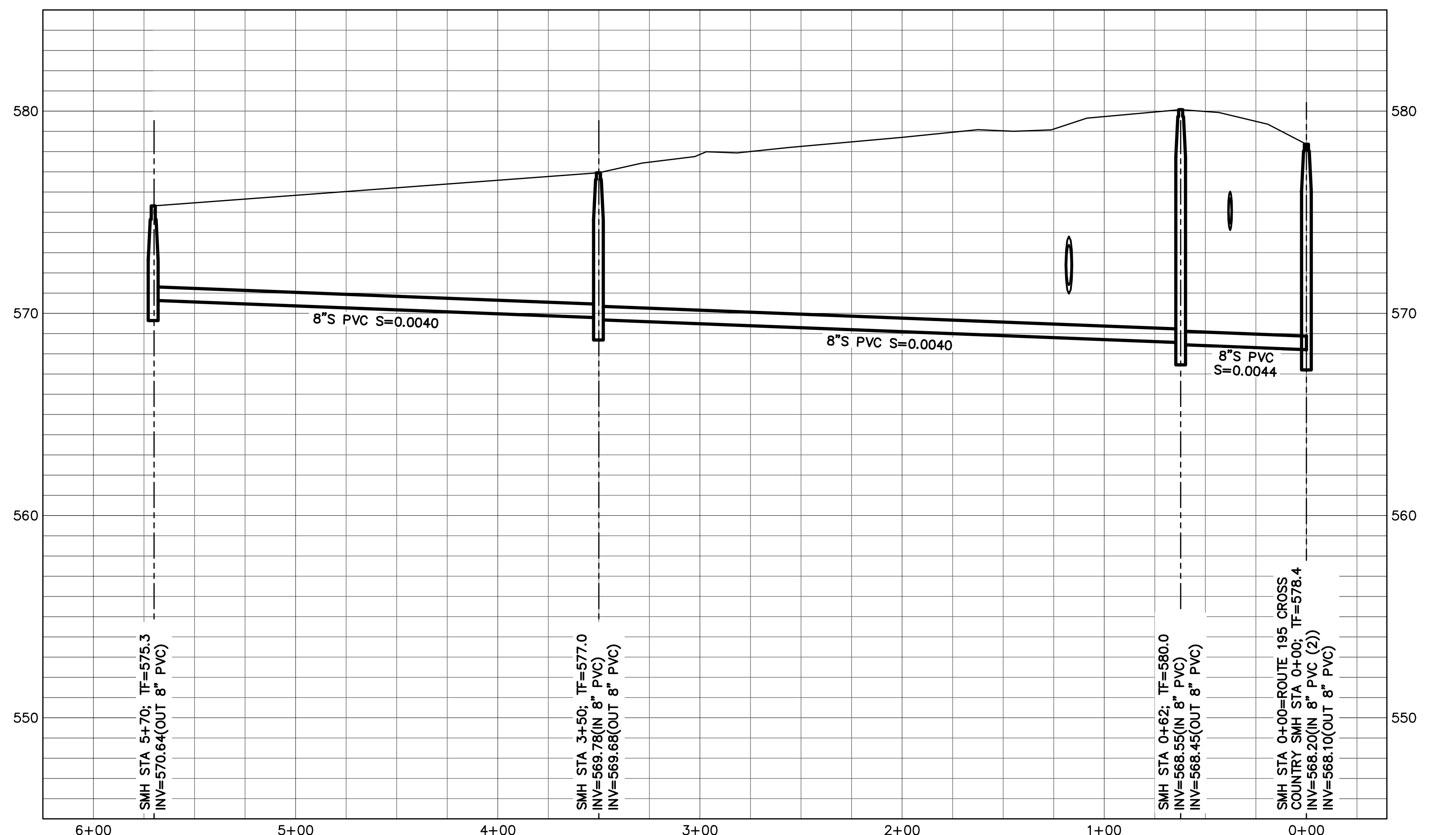


PLAN
SCALE: 1"=40'

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08-22-14



SEWER PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT



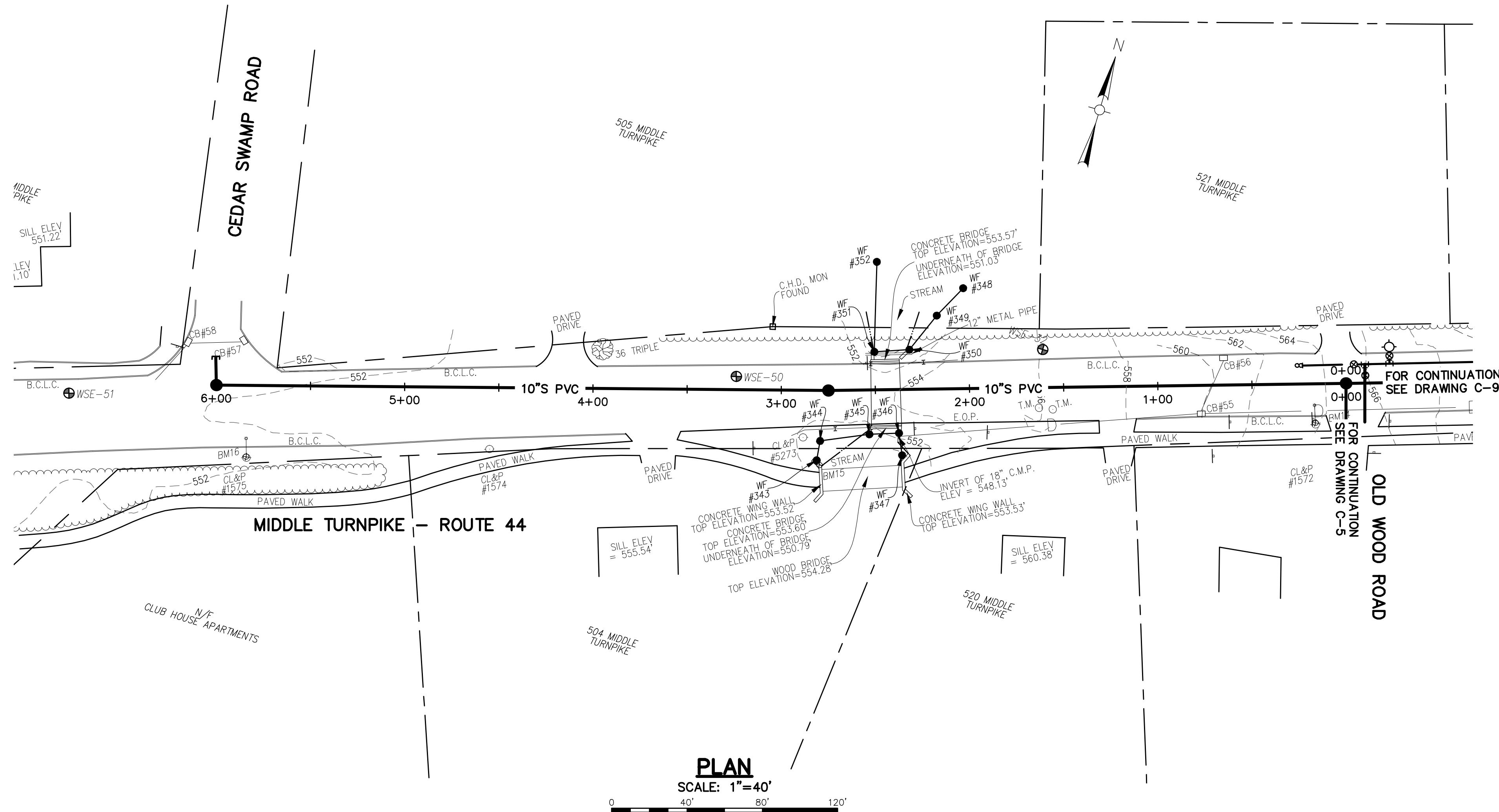
SEWER PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT

C:\Users\jartur\Desktop\four corners sewer\CAD\4 195 and 44 Sewer.dwg

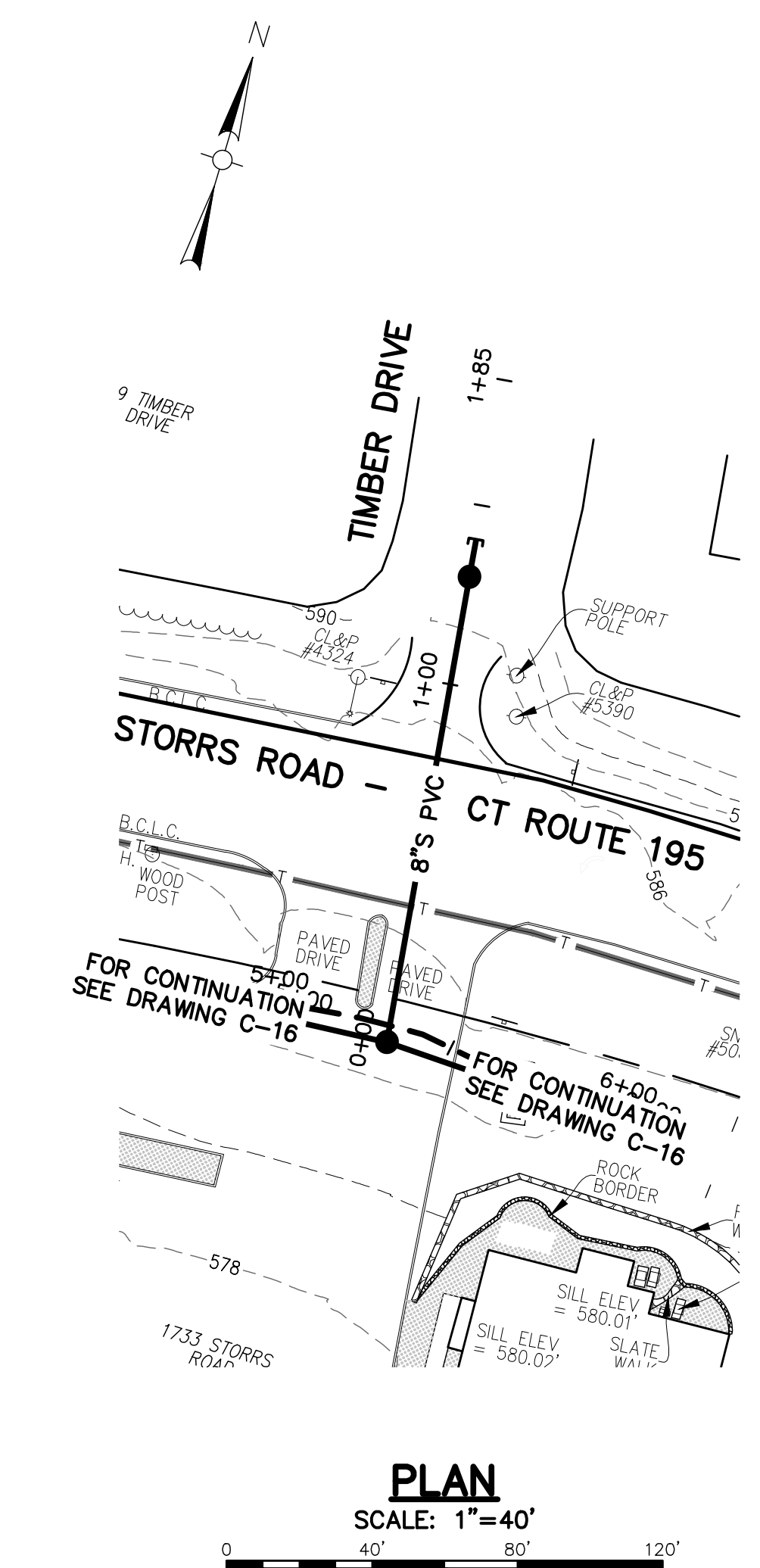
No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER
DATE

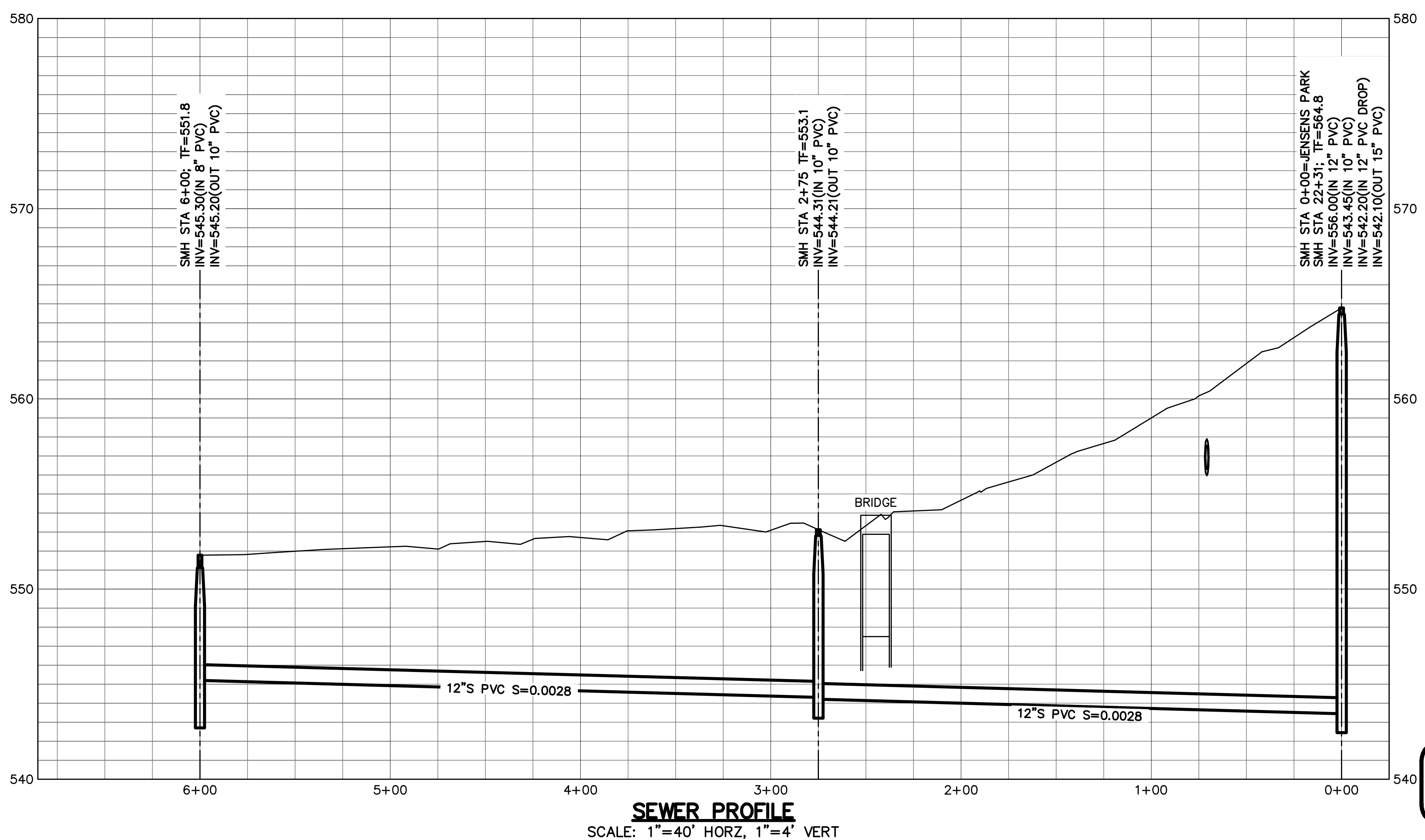
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
ROUTE 195 FORCE MAIN STA 22+50 TO 26+61
ROUTE 195 WEST SEWER STA 0+00 TO 5+70



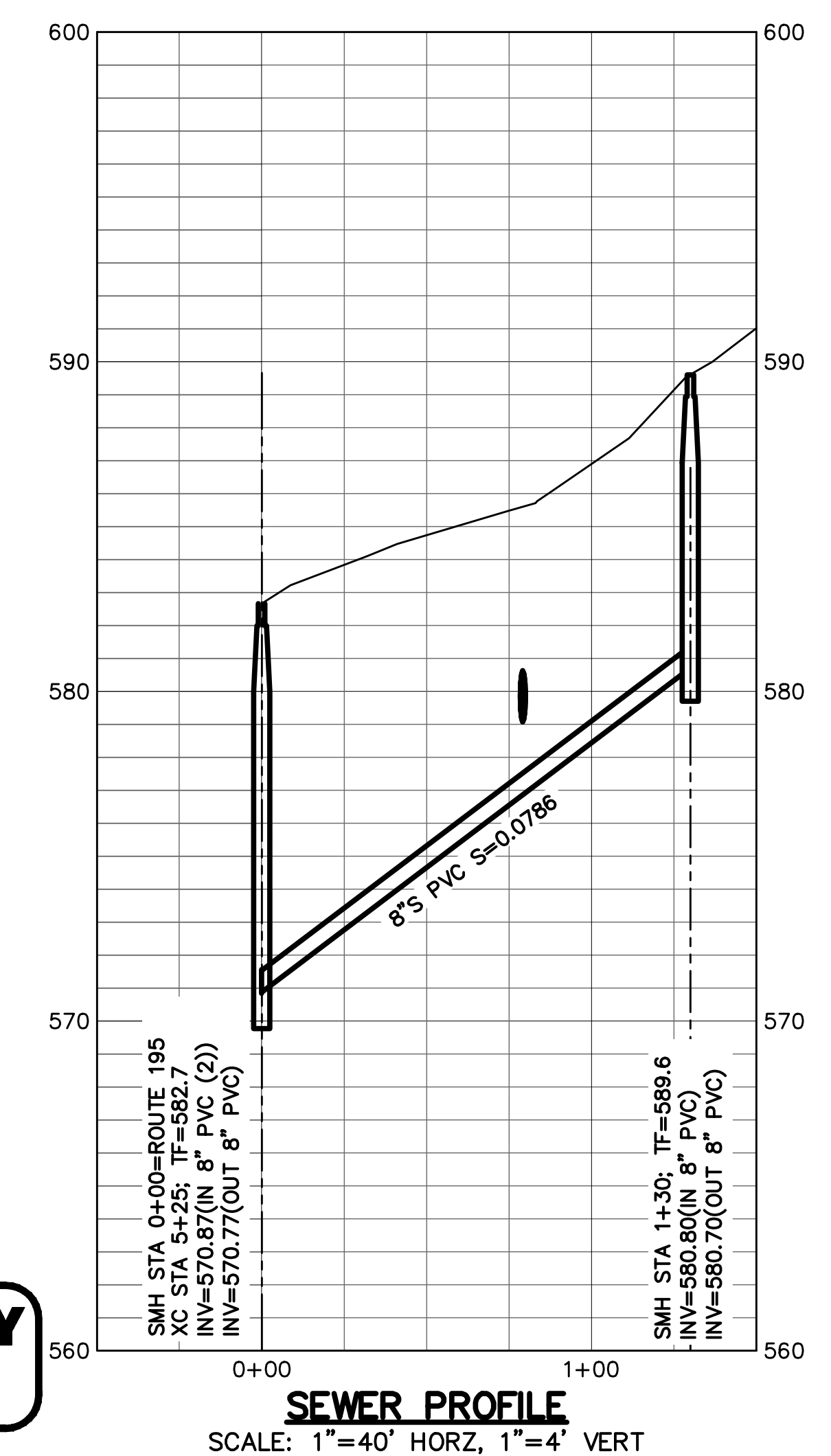
PLAN
SCALE: 1"=40'



PLAN
SCALE: 1"=40'



SEWER PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT



SEWER PROFILE
SCALE: 1"=40' HORZ, 1"=4' VERT

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Weston & Sampson
273 Driland Road, Rocky Hill, CT 06790
(860) 513-1473 (800) SAMPSON
www.westonandsampson.com

No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

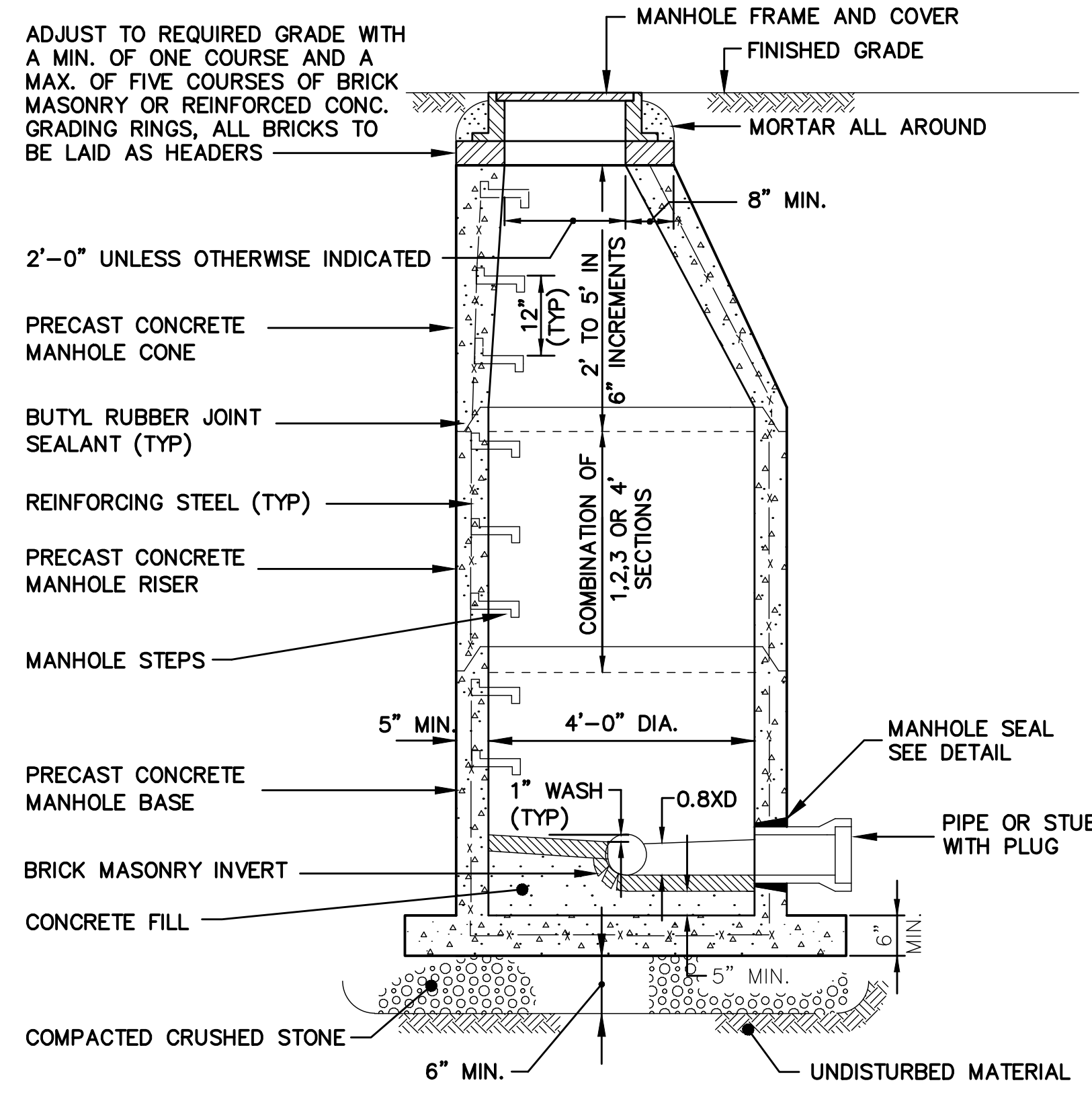
TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT
**ROUTE 44 WEST SEWER STA 0+00 TO 6+00
AND TIMBER DRIVE SEWER STA 0+00 TO 1+30**

FILE NO.	SCALE	AS NOTED	WCS	WCS	DMD	DRL

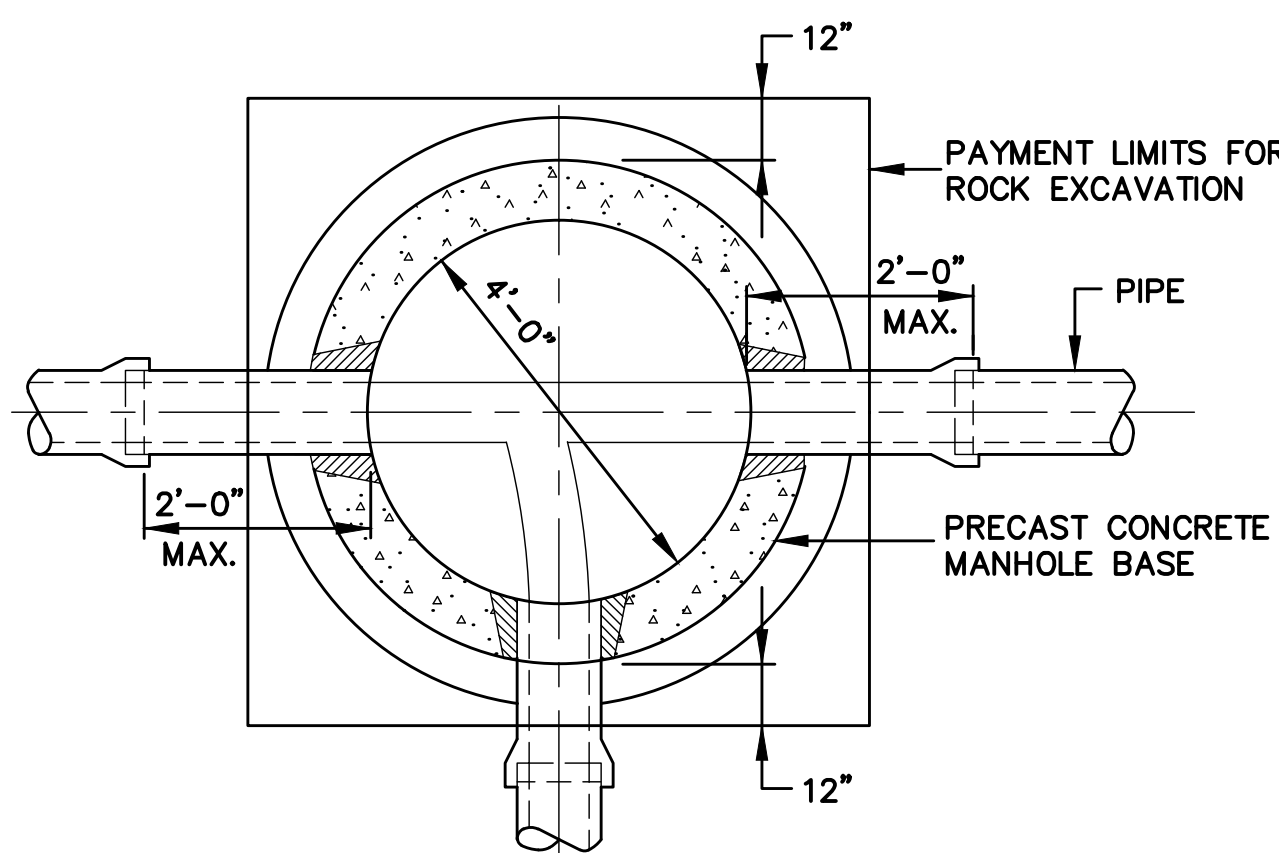
C-19

FILE NO. _____ SCALE _____ AS NOTED _____ WCS _____ WCS _____ DMD _____ DRL _____

SHEET 21 OF 33



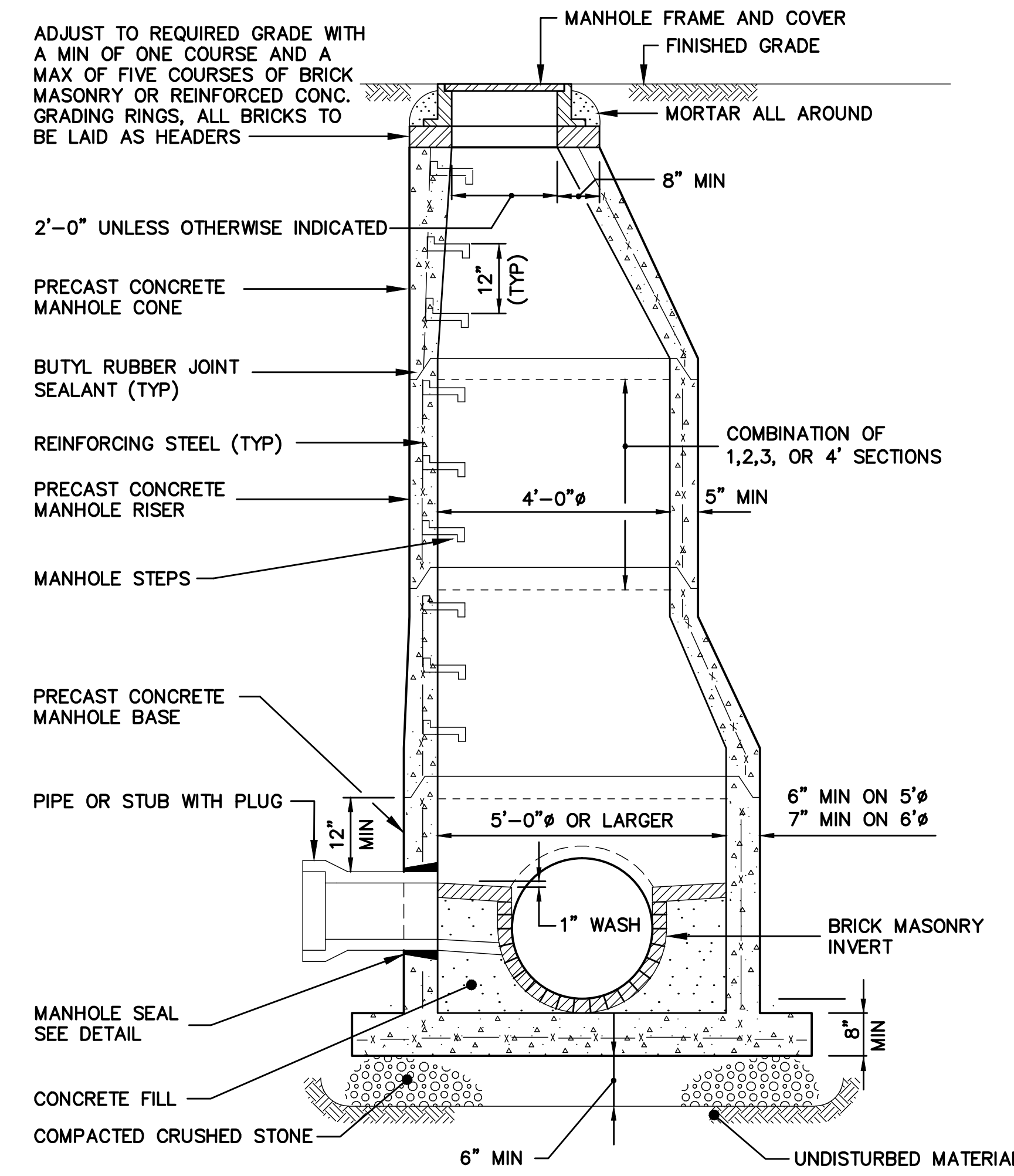
4'-0" DIA. PRECAST CONCRETE MANHOLE DETAIL
N.T.S.



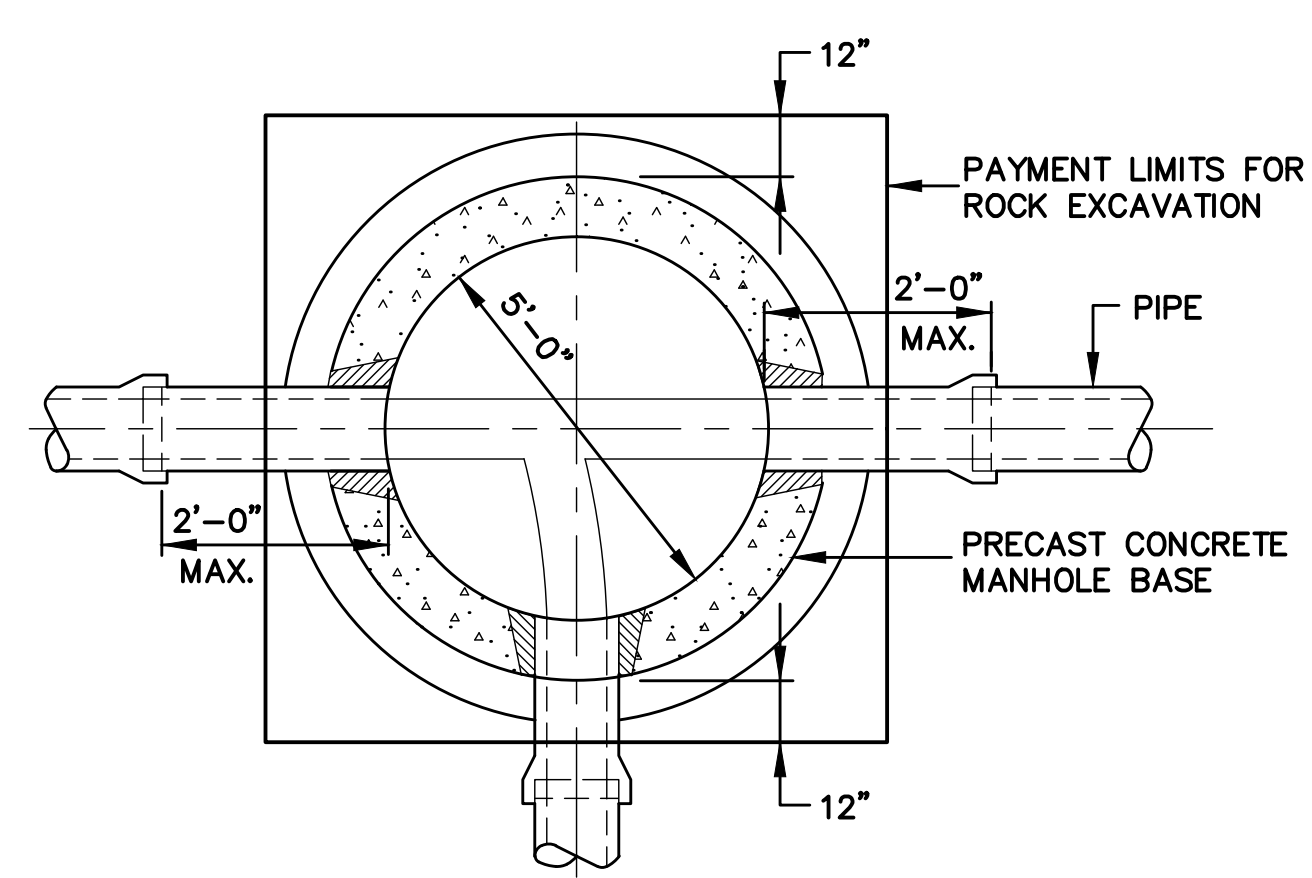
4'-0" DIAMETER MANHOLE PLAN
N.T.S.

DEPTH TO INVERT	DIAMETER OF PIPE (DP)	MAXIMUM TRENCH WIDTH BELOW LINE OF NARROW TRENCH LIMIT (SHEETED OR UNSHEETED) (W)	MINIMUM CLEARANCE (S)
0-12'	TO 18"	5'	6"
0-12'	21"-24"	5'	7-1/2"
OVER 12'	TO 18"	7'	6"
OVER 12'	21"-24"	7'	7-1/2"

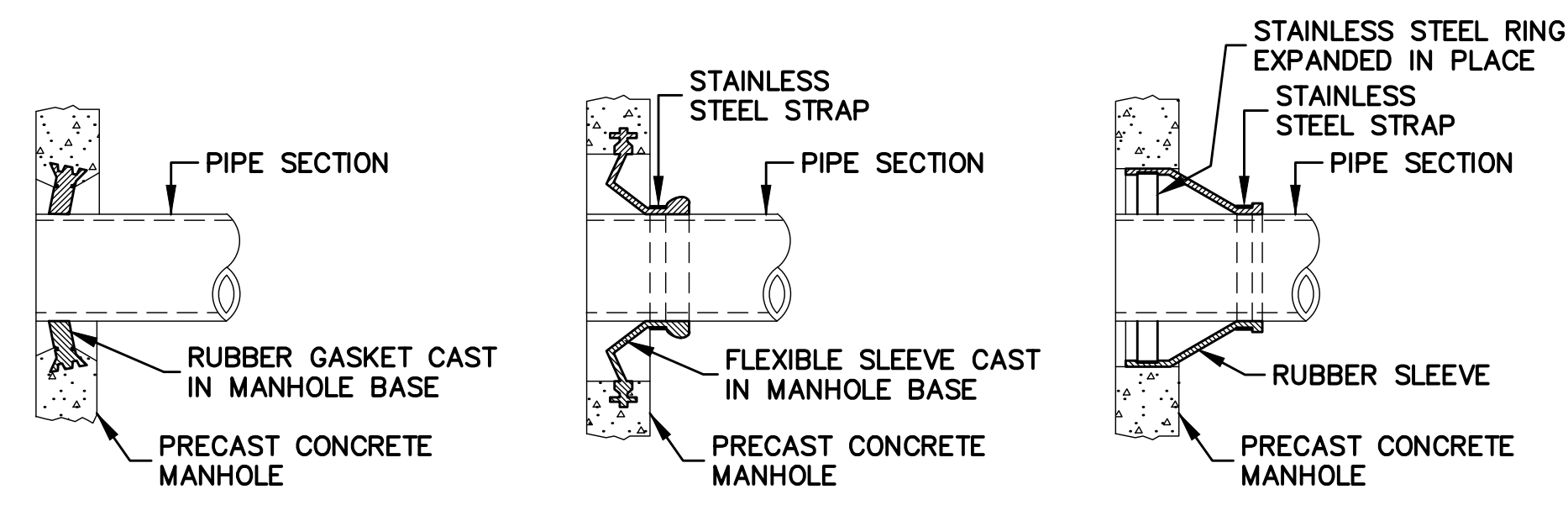
TABLE A



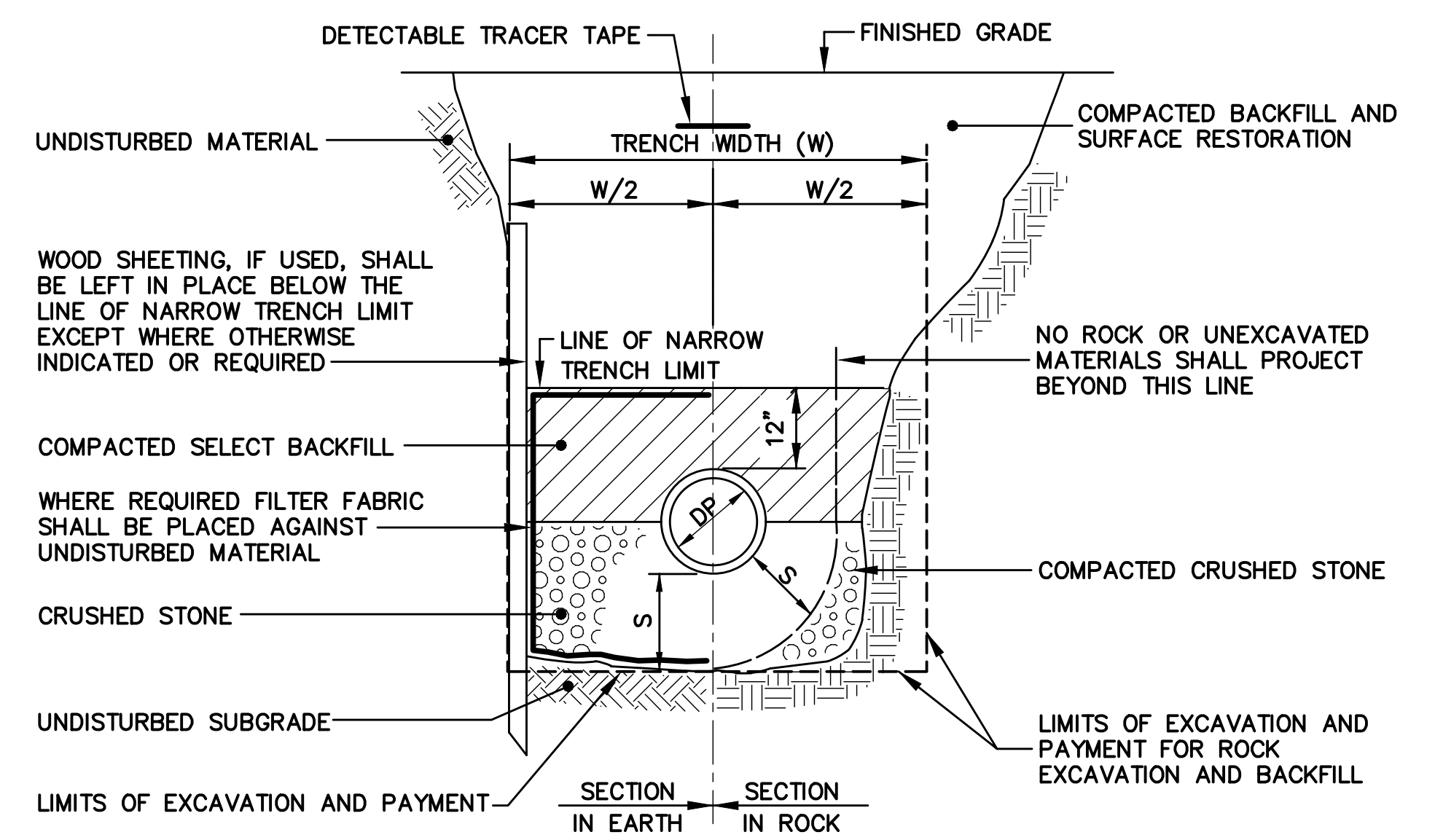
5'-0" OR LARGER DIAMETER PRECAST CONCRETE MANHOLE DETAIL
N.T.S.



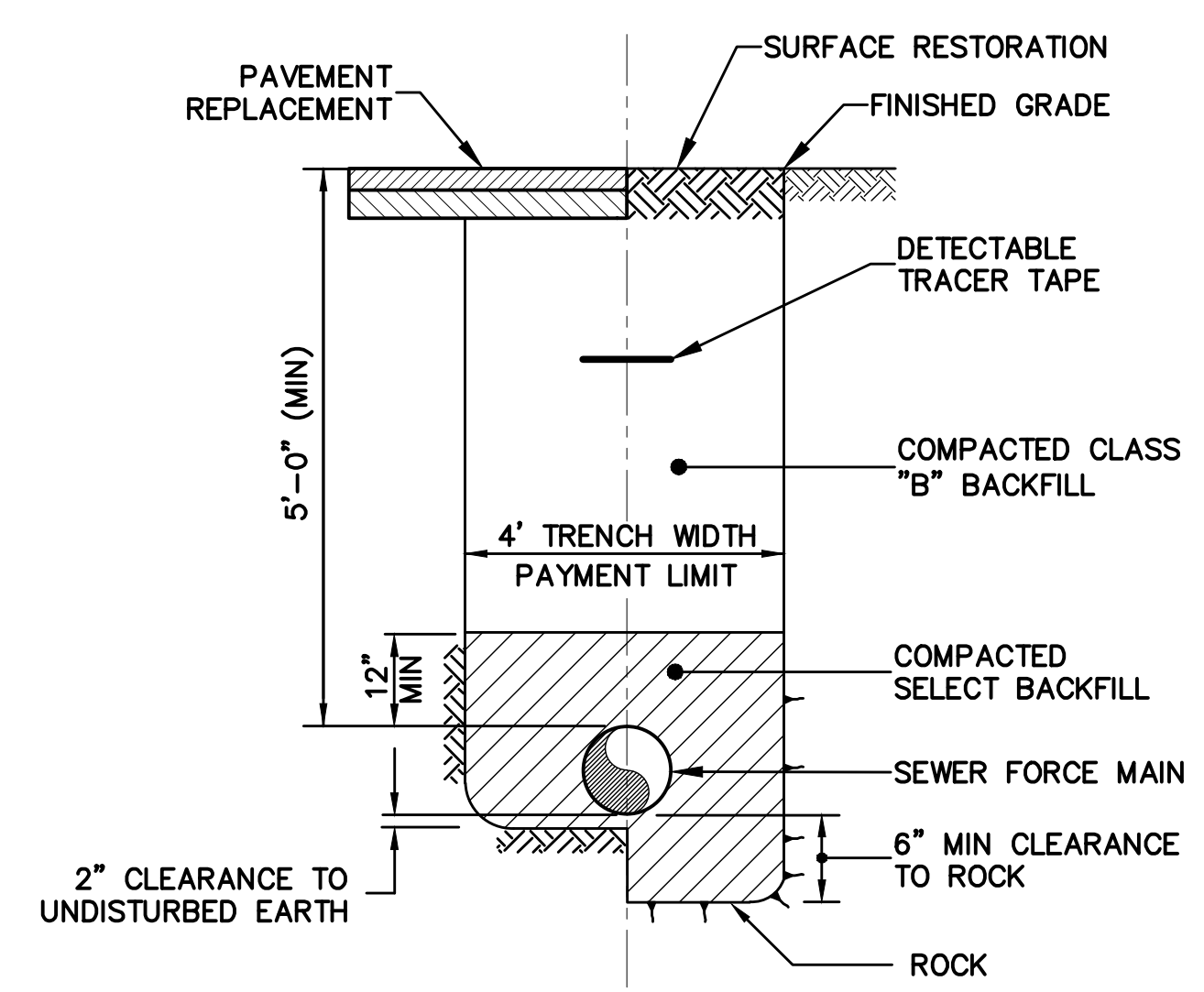
5'-0" DIAMETER MANHOLE PLAN
N.T.S.



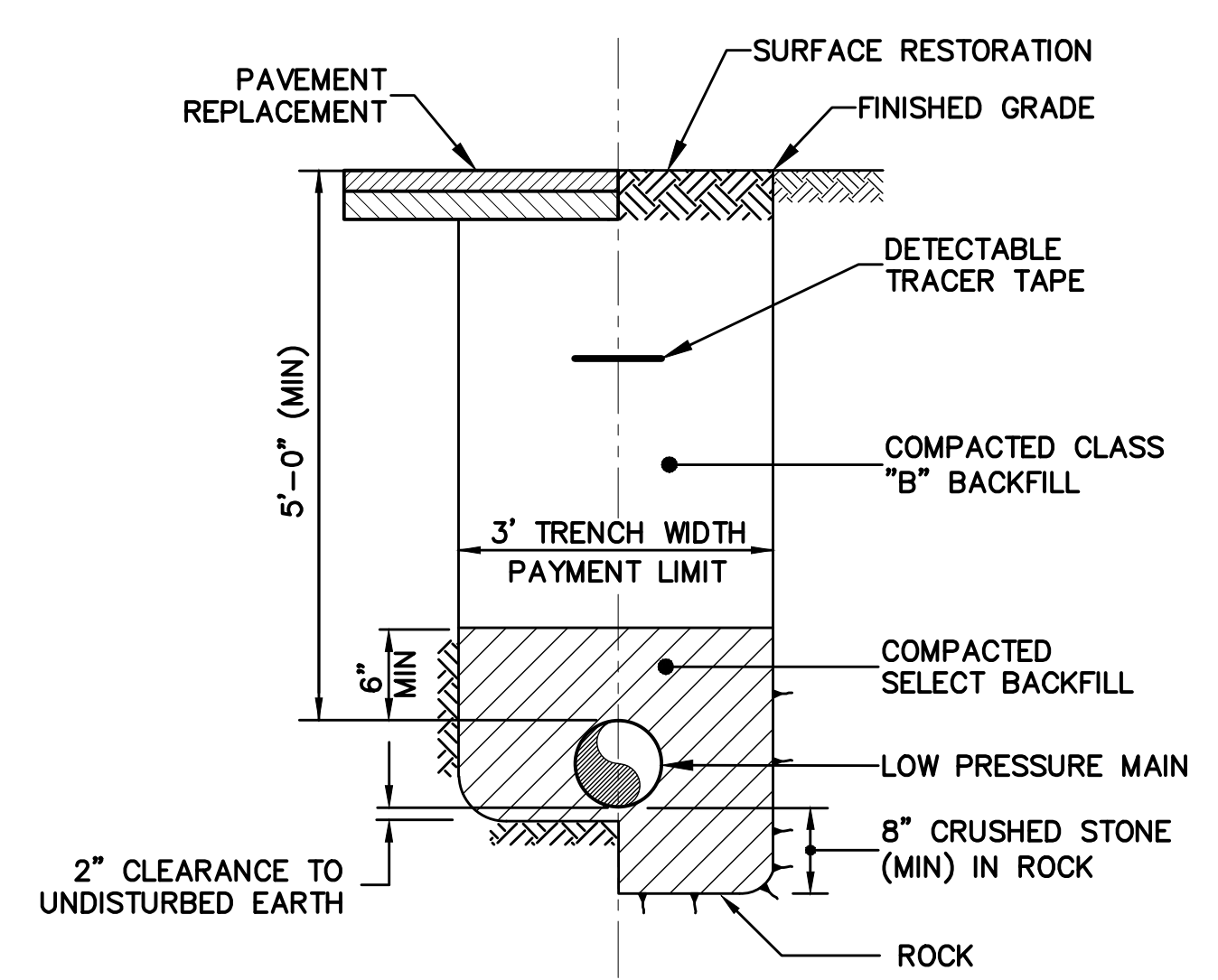
MANHOLE SEAL DETAILS
N.T.S.



GRAVITY SANITARY SEWER TRENCH DETAIL
N.T.S.



SEWER FORCE MAIN TRENCH DETAIL
N.T.S.



LOW PRESSURE SEWER TRENCH DETAIL
N.T.S.

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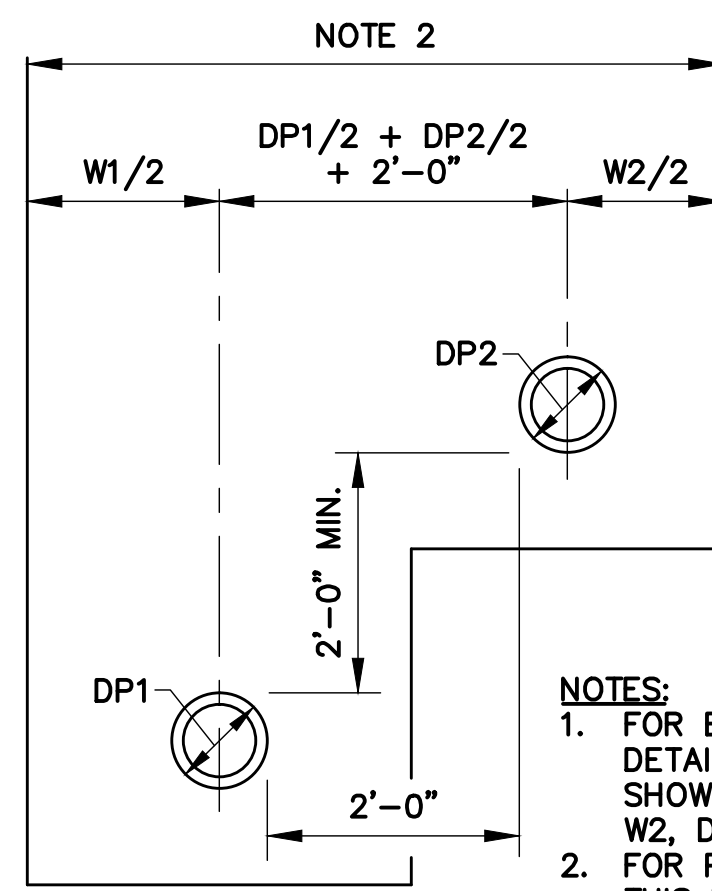
No.	Date	Dr. By	Ck. By	App. By	Description
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REGISTERED PROFESSIONAL ENGINEER

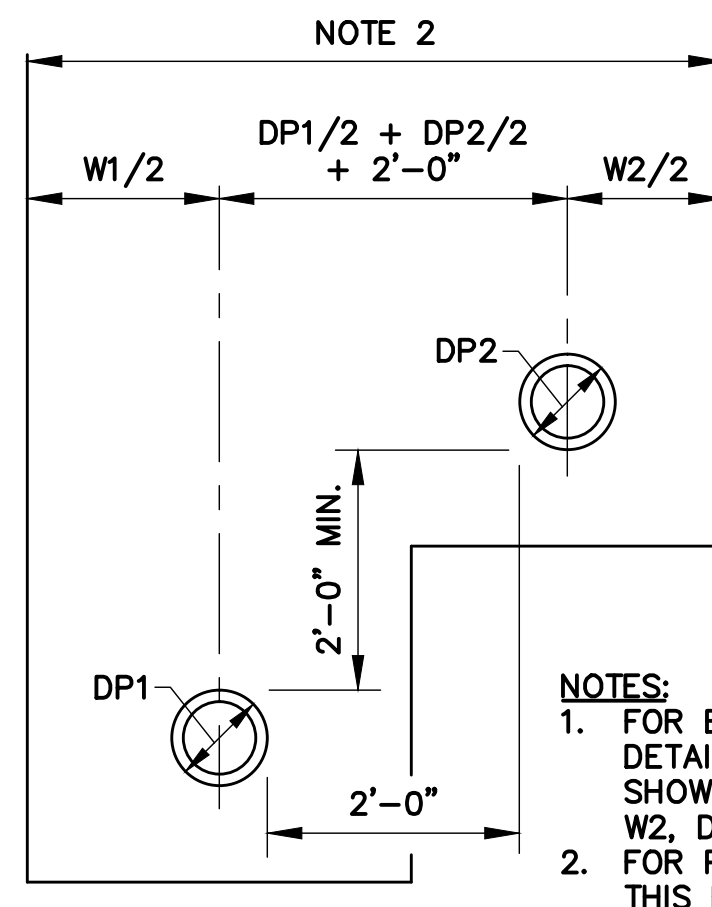
FILE NAME	JOB NO.	SCALE	AS NOTED	WCS	WCS	CHK BY	DMD	APP BY	DRL

TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT

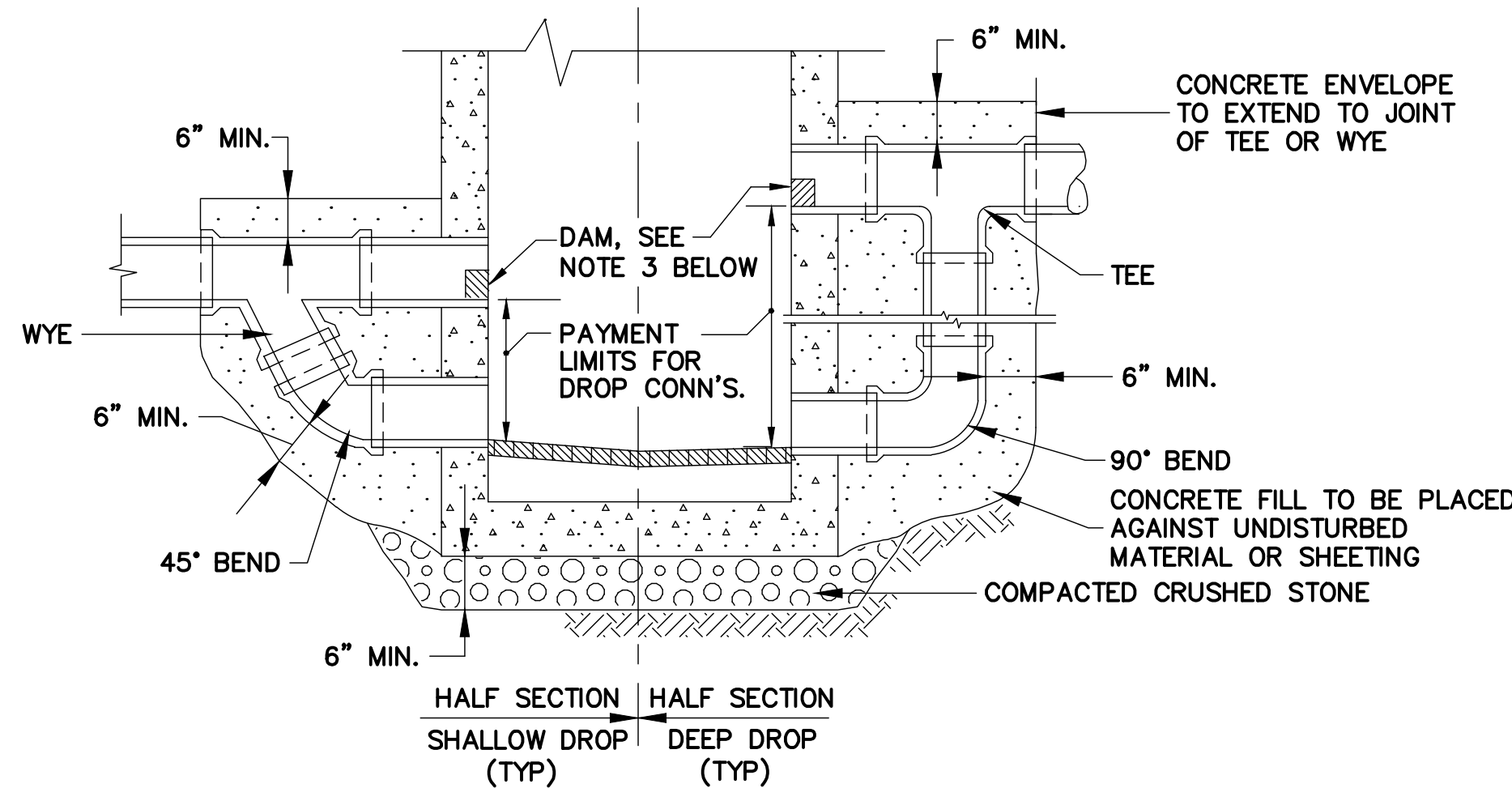
DETAILS



GRAVITY SEWER AND FORCE MAIN IN SAME TRENCH DETAIL
N.T.S.

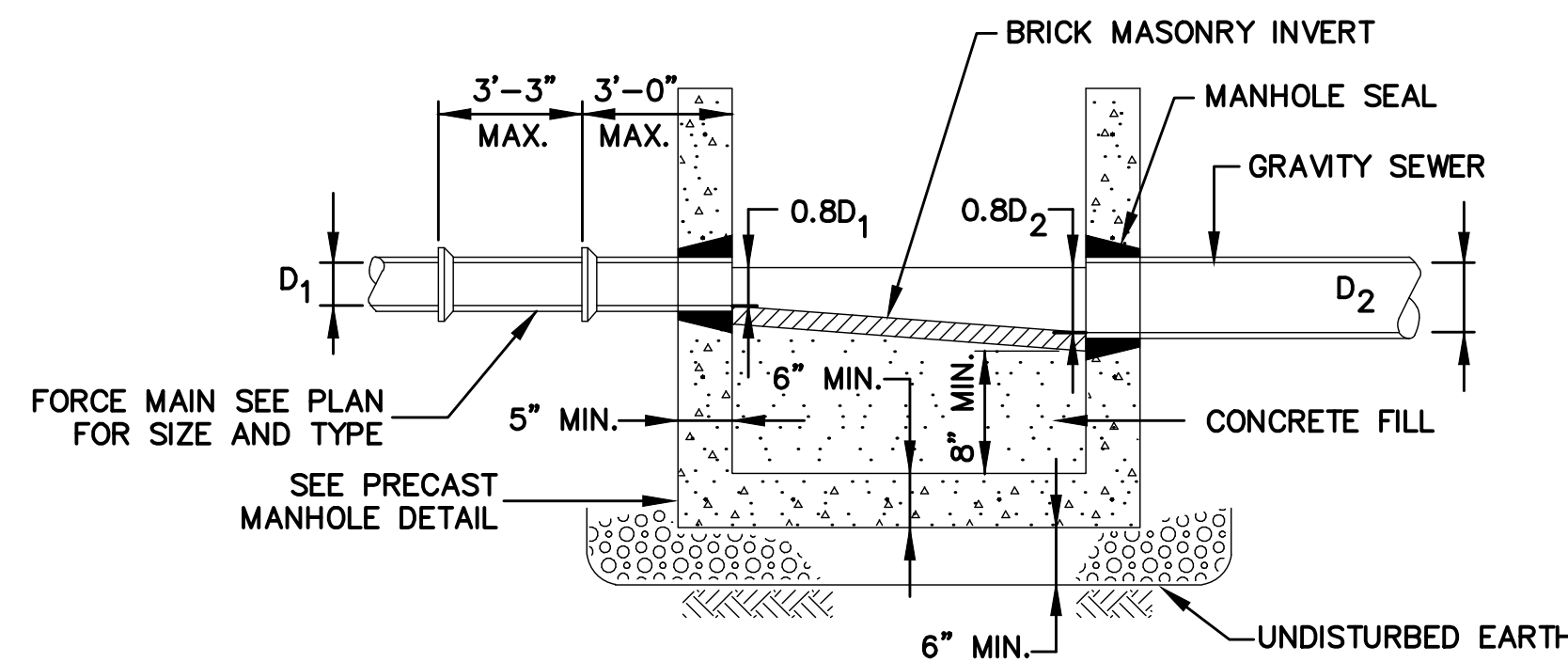


FORCE MAIN AND LOW PRESSURE SEWER IN SAME TRENCH DETAIL
N.T.S.

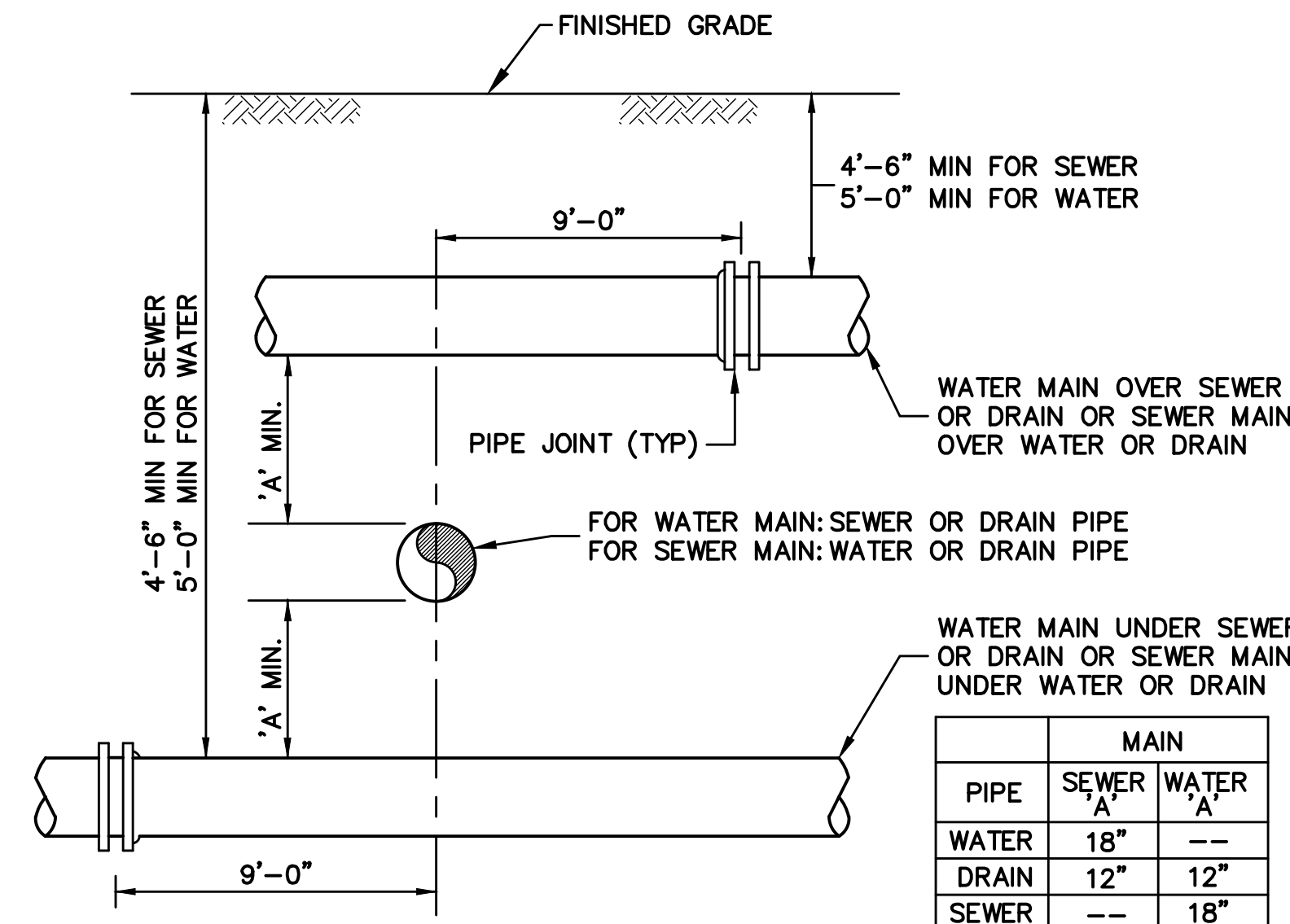


- NOTES:**
1. DROP PIPE TO BE SAME DIAMETER AS SEWER DISCHARGE INTO MANHOLE UNLESS OTHERWISE SHOWN ON DRAWINGS.
 2. DIMENSIONS AND CONSTRUCTION OF DROP MANHOLE TO BE SIMILAR TO TYPICAL MANHOLE EXCEPT AS SHOWN.
 3. FOR PVC PIPE, EPOXY HALF PLUG TO PIPE. FOR DI, VC AND RC PIPE, MORTAR AND BRICK IN PIPE.

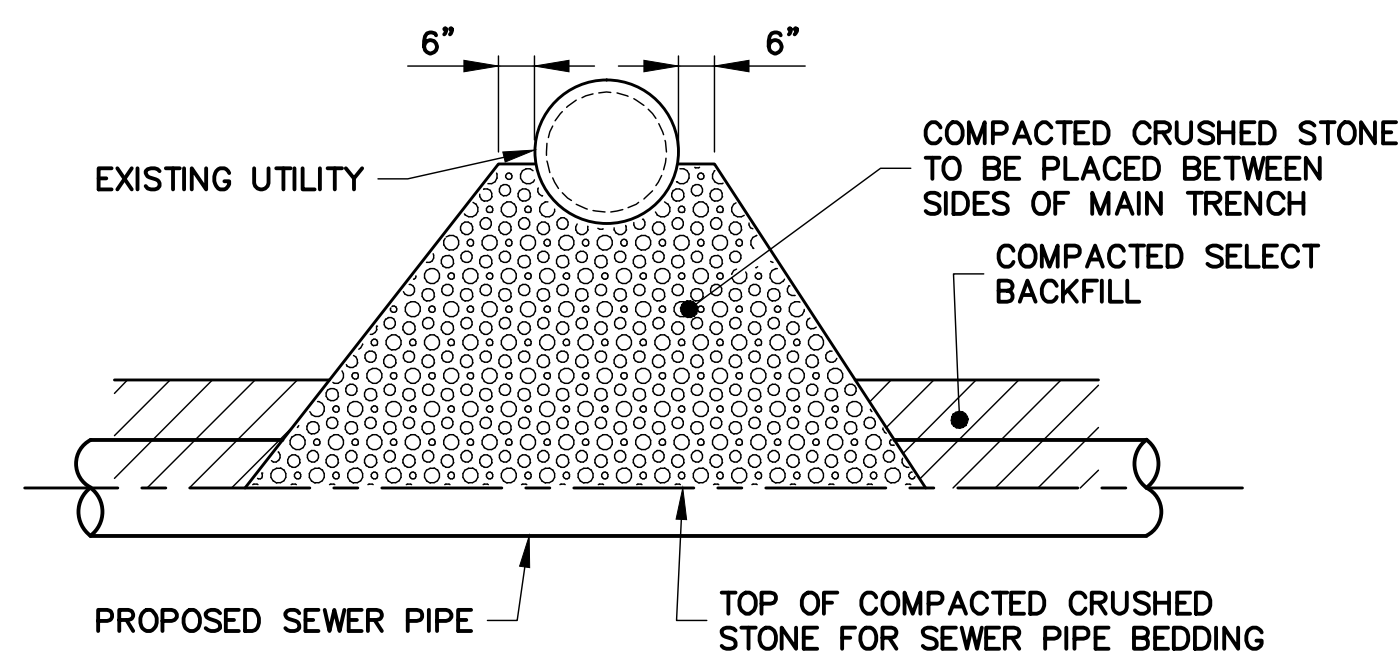
DROP CONNECTION DETAIL
N.T.S.



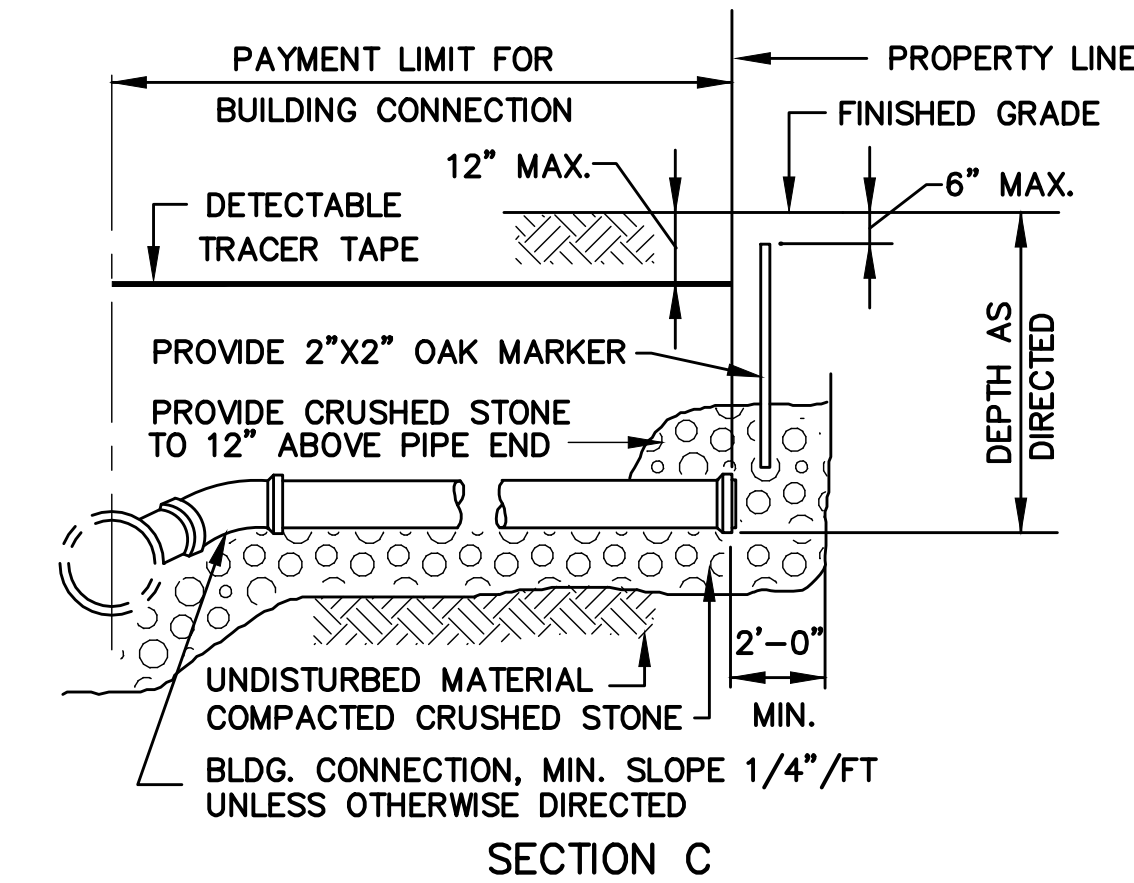
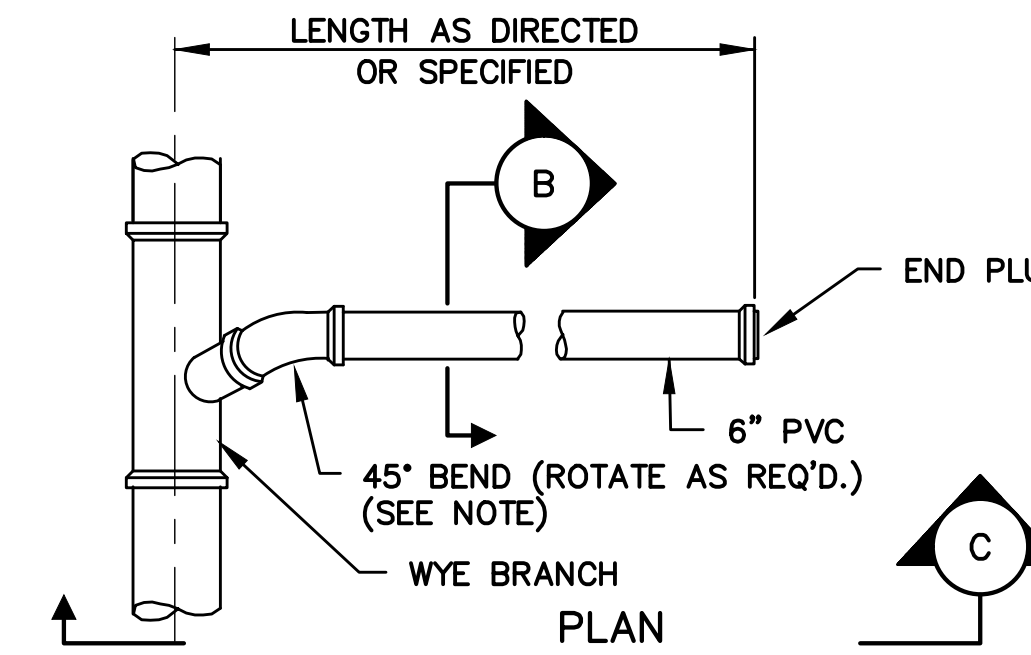
FORCE MAIN CONNECTION TO MANHOLE DETAIL
N.T.S.



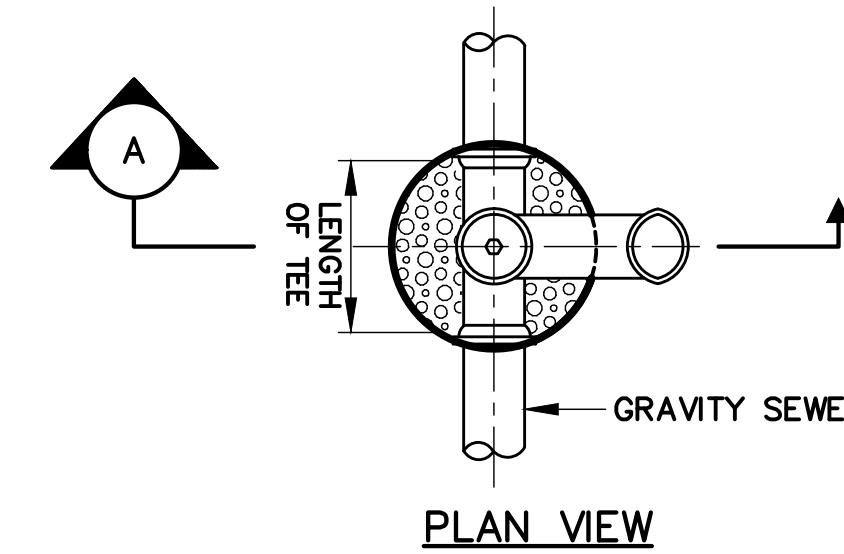
WATER, SEWER OR DRAIN CROSSING DETAIL
N.T.S.



UTILITY CROSSING DETAIL
N.T.S.



TYPICAL BUILDING CONNECTION DETAIL
N.T.S.



- NOTES:**
1. AT THE CONTRACTORS OPTION HE MAY ELECT TO USE DI PIPE INSTEAD OF PVC AT NO ADDITIONAL COST TO THE OWNER. IF DI PIPE IS USED, THE DI PIPE SHALL EXTEND 12" BEYOND THE EDGE OF THE MAINLINE TRENCH AND BE FITTED WITH A PVC ADAPTER.

CHIMNEY DETAIL FOR BUILDING CONNECTION
N.T.S.

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No.	Date	Dr. By	Ck. By	App. By	Description

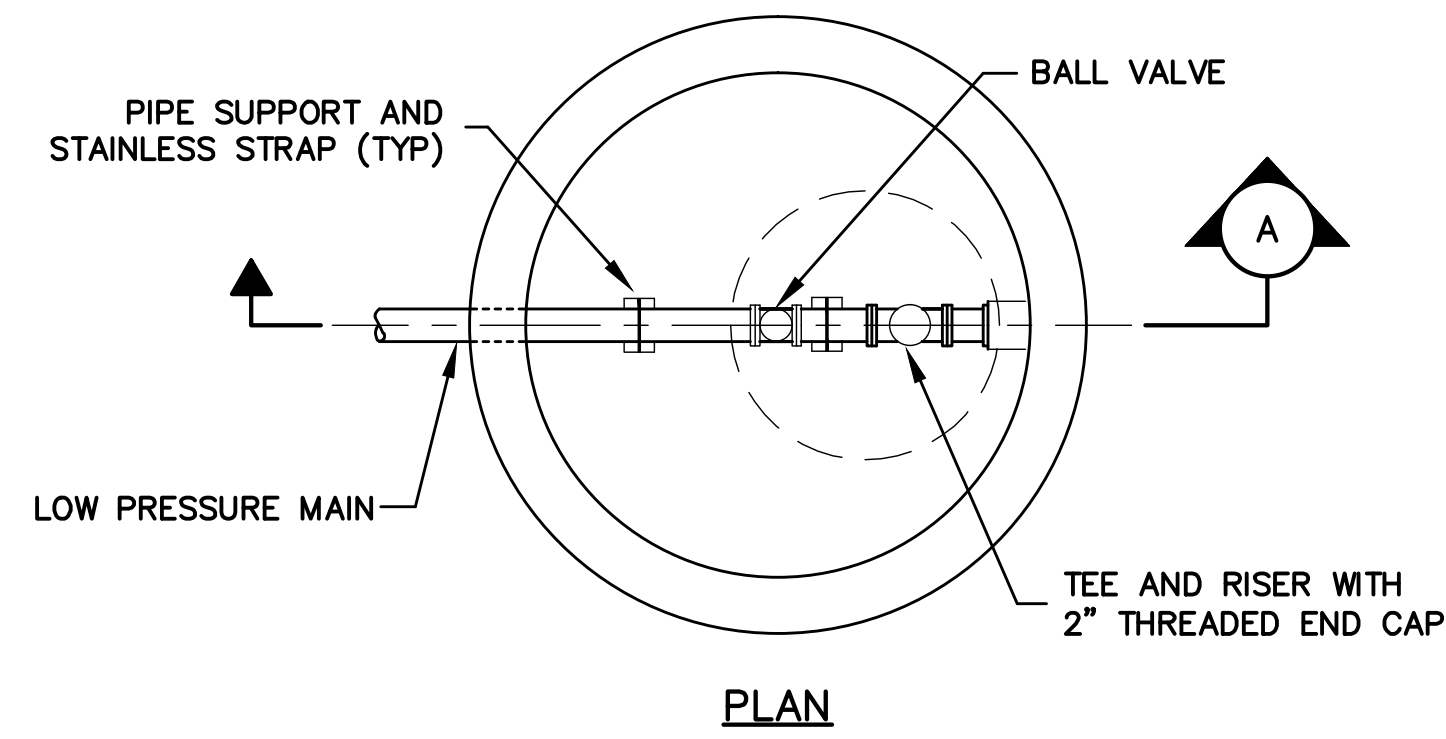
REGISTERED PROFESSIONAL ENGINEER

A	P	R	O	V	E	D

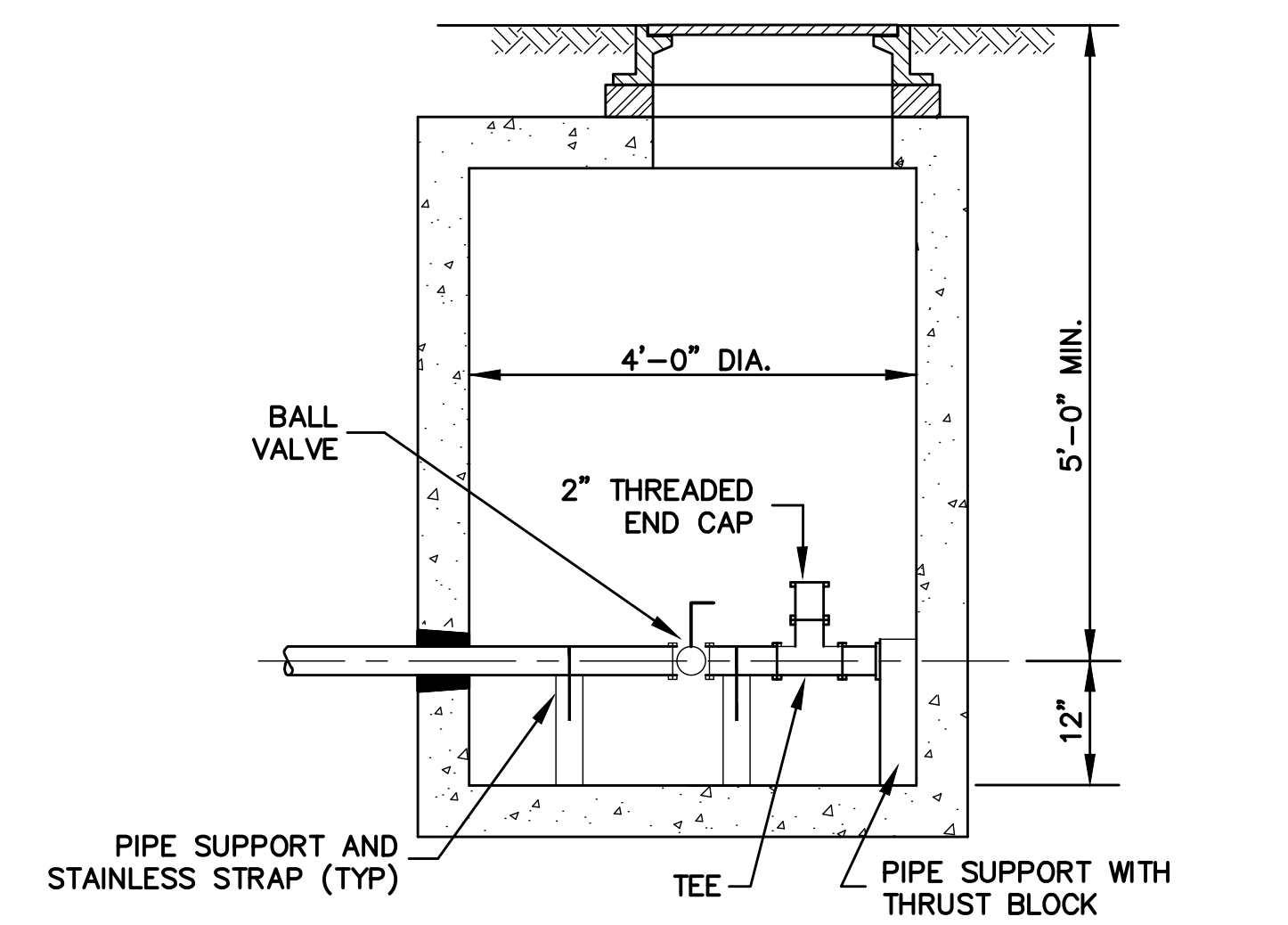
FILE NAME	JOB NO.	SCALE	AS NOTED	WCS	WCS	DMD	DRL

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DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT

DETAILS



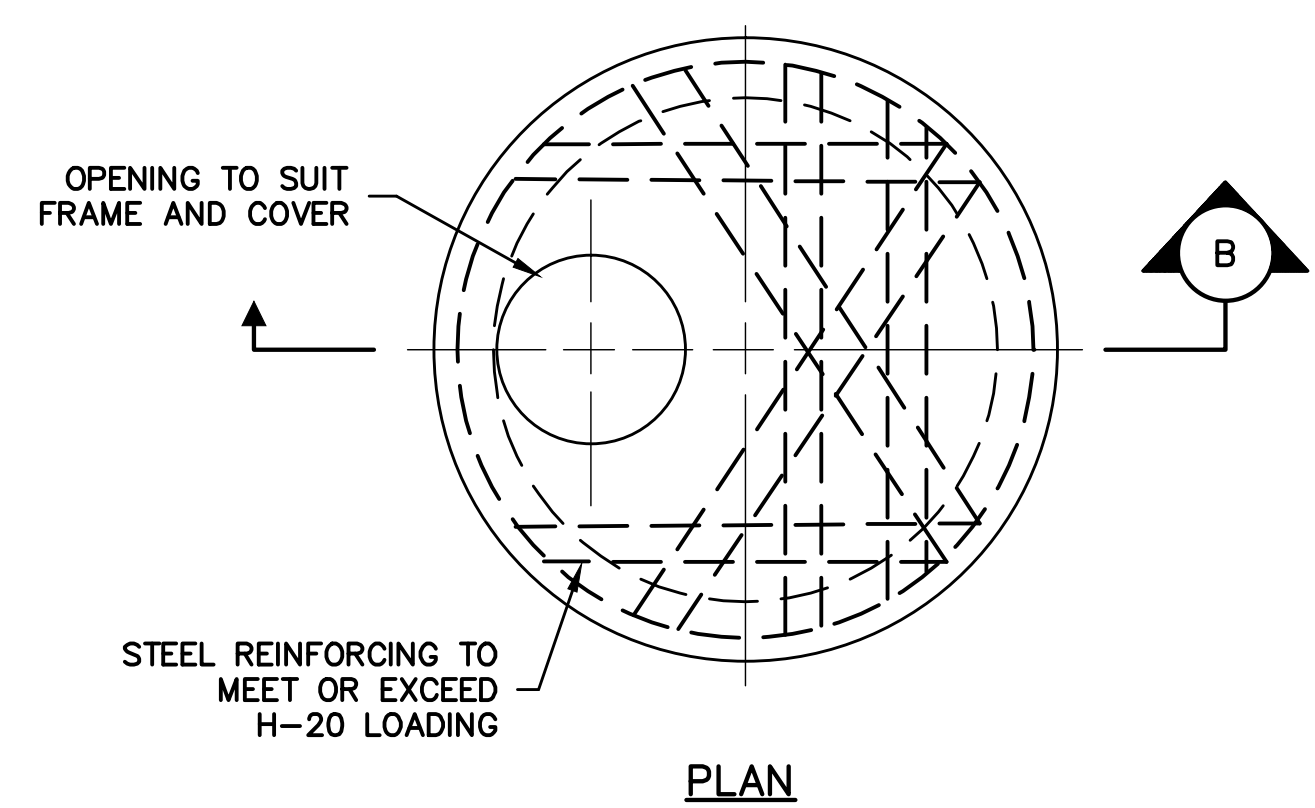
PLAN



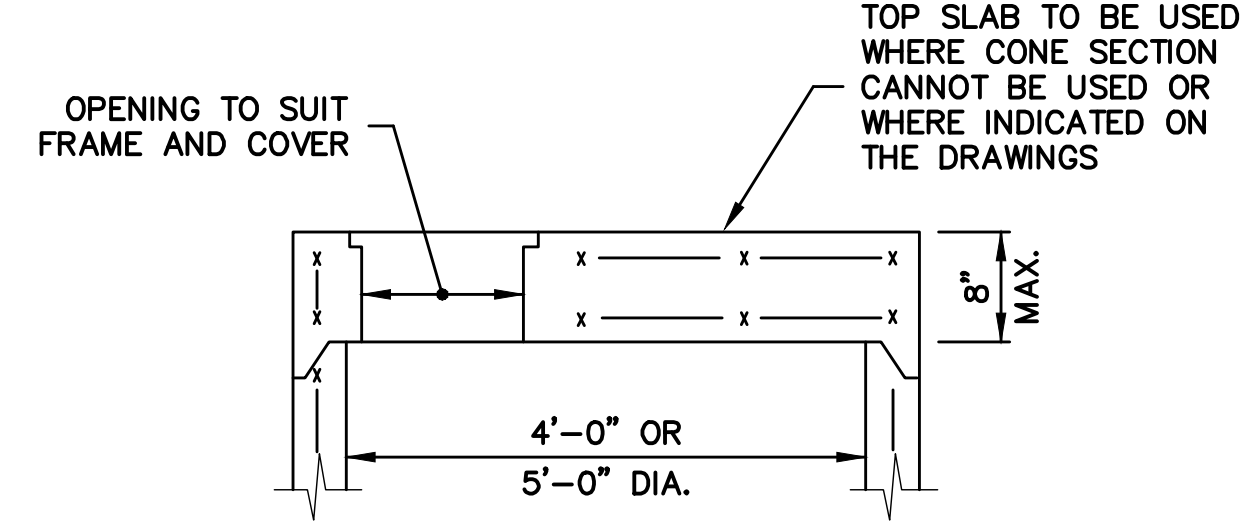
SECTION A

- NOTES:
1. ALL MANHOLE COMPONENTS TO BE AS SHOWN ON TYPICAL PRECAST MANHOLE DETAIL.
 2. PROVIDE ADAPTERS, COUPLINGS AND FITTINGS AS REQUIRED.

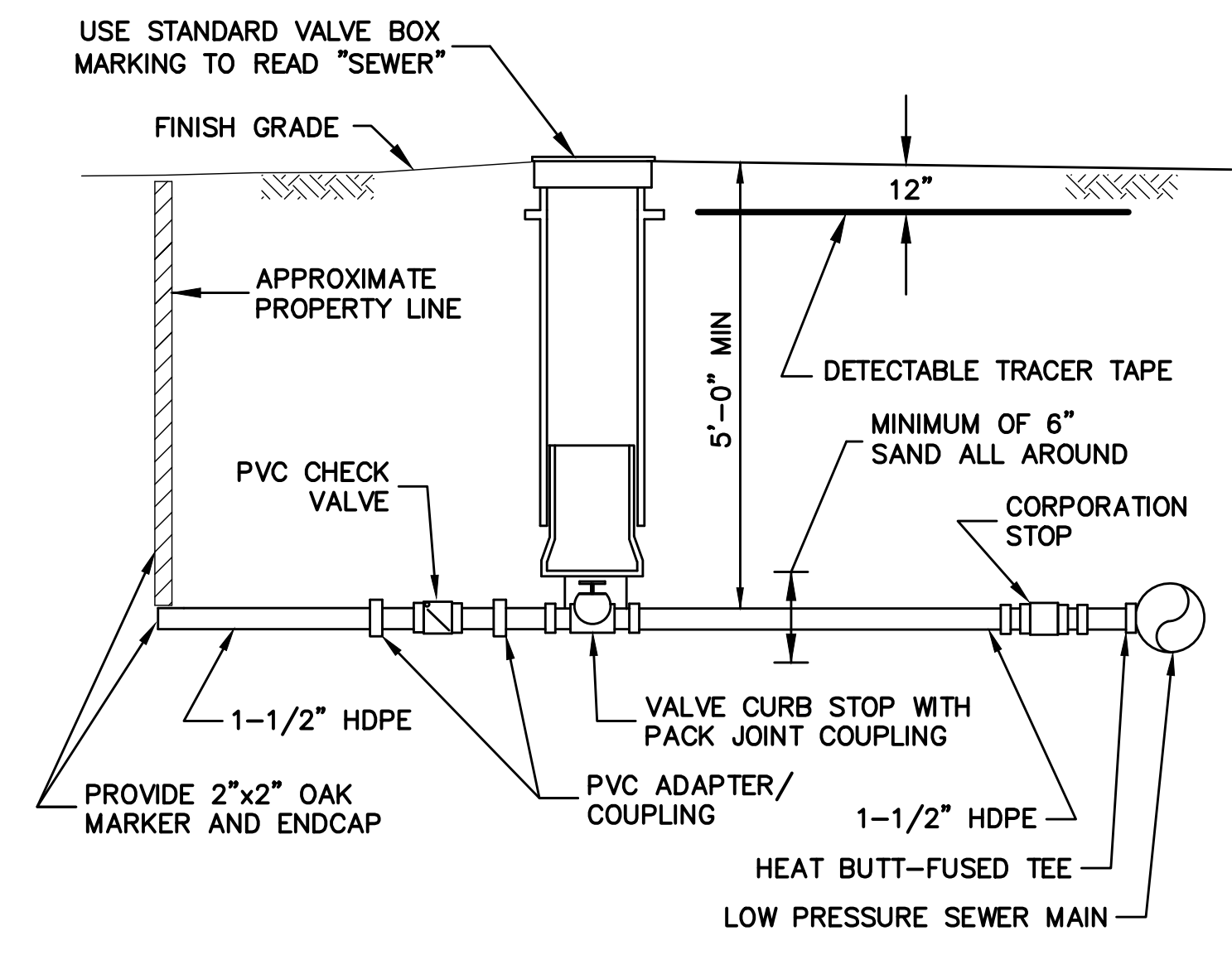
LOW PRESSURE SEWER TERMINAL FLUSHING MANHOLE
N.T.S.



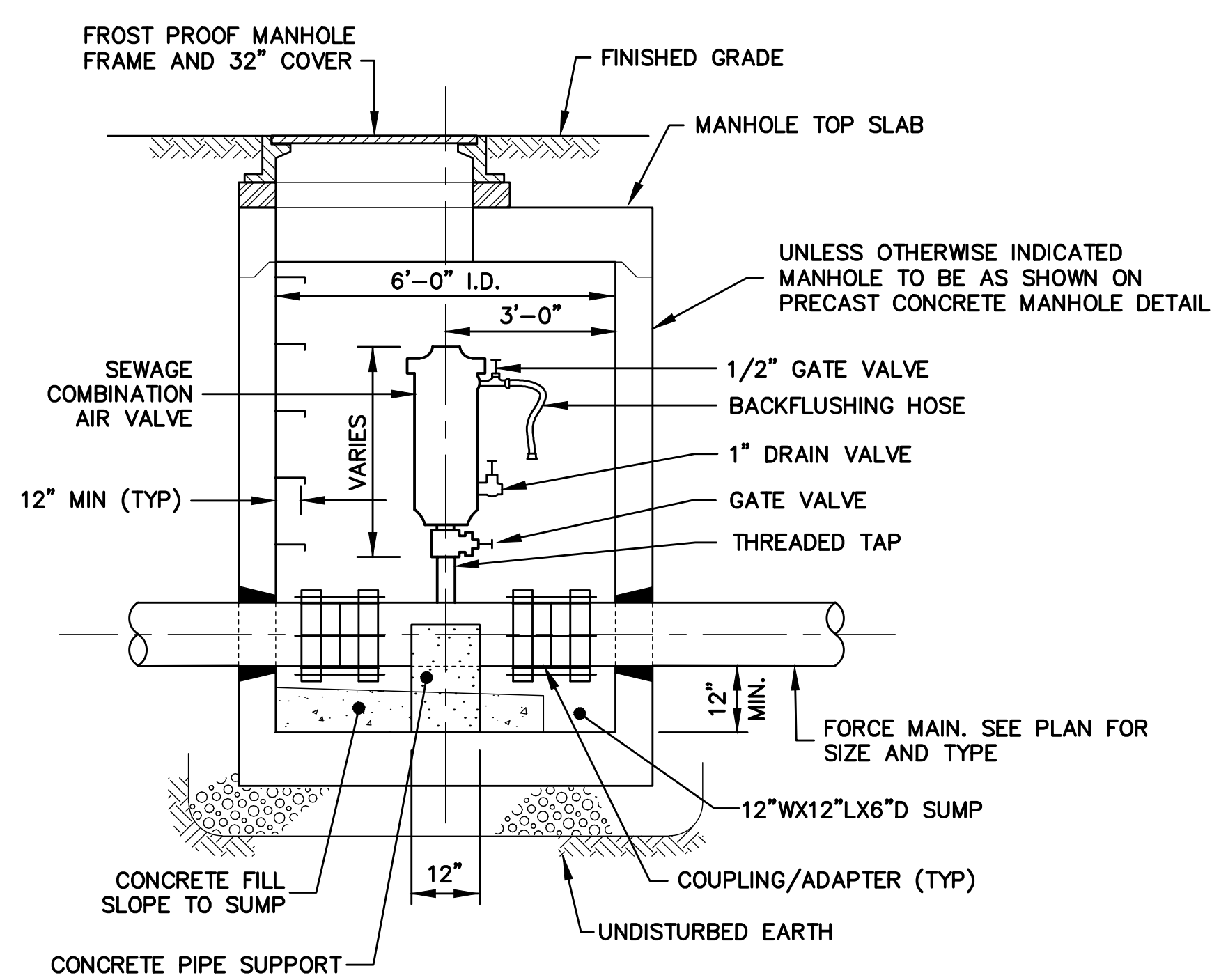
PLAN



SECTION B
MANHOLE TOP SLAB



TYPICAL PRESSURE BUILDING CONNECTION DETAIL
N.T.S.



- NOTES:
1. DIMENSIONS OF EQUIPMENT TO BE VERIFIED BY CONTRACTOR.
 2. PROVIDE DRESSER COUPLINGS AS REQUIRED.
 3. WHERE FORCE MAIN IS HDPE, CONTRACTOR TO PROVIDE MECHANICAL JOINT HDPE-TO-DI ADAPTERS AS REQUIRED.

SEWAGE COMBINATION AIR VALVE STRUCTURE
N.T.S.

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No.	Date	Dr. By	Ck. By	App. By	Description

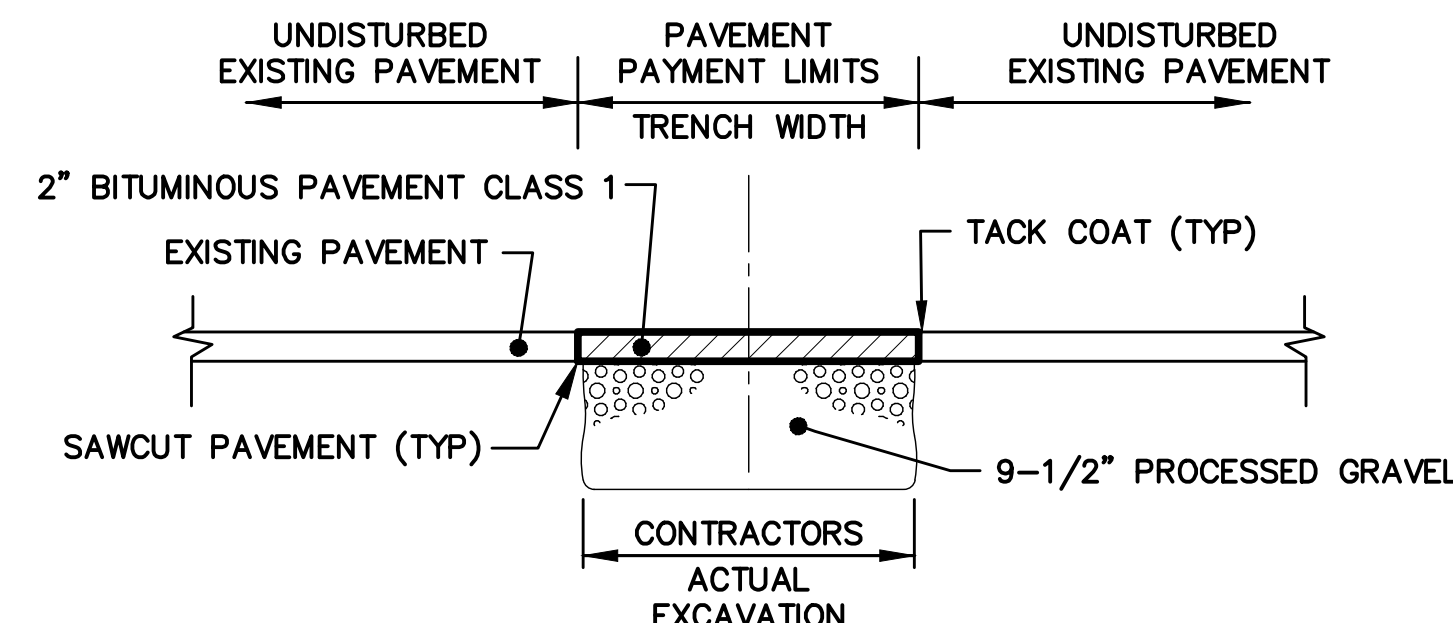
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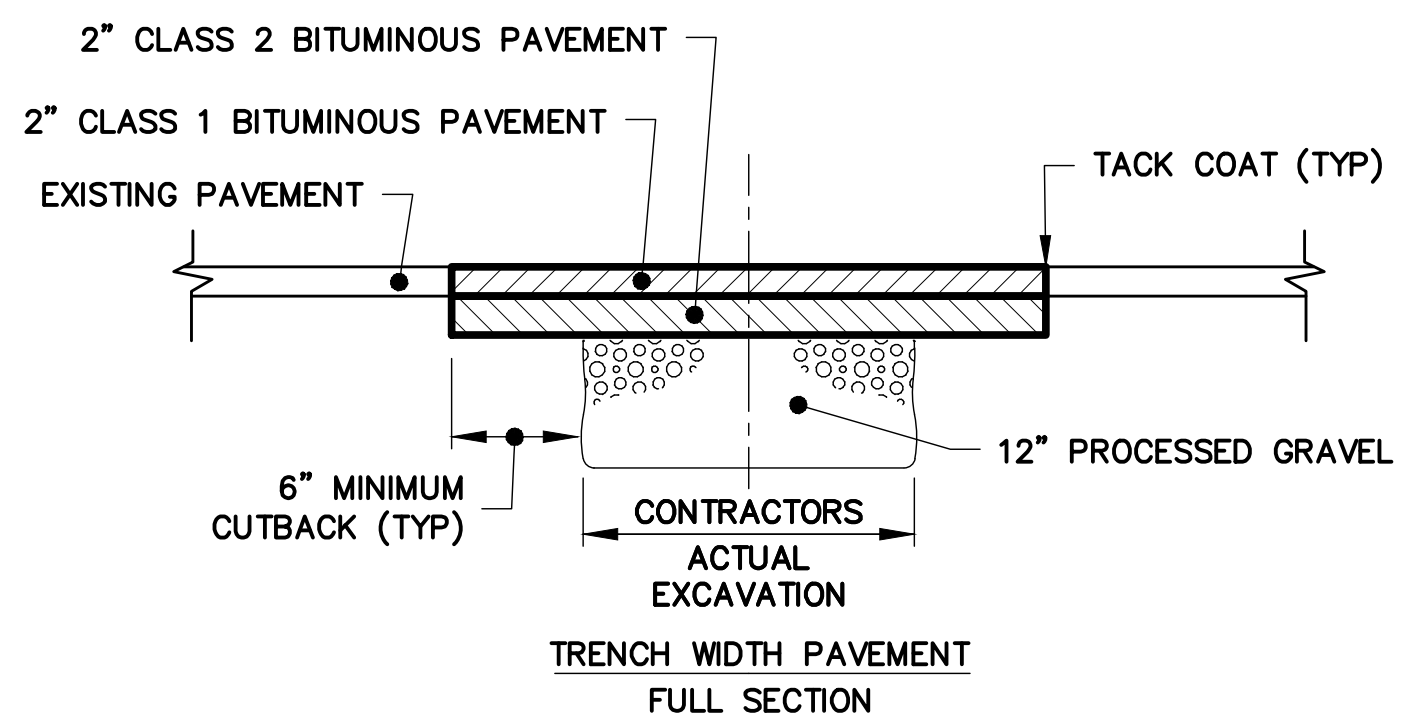
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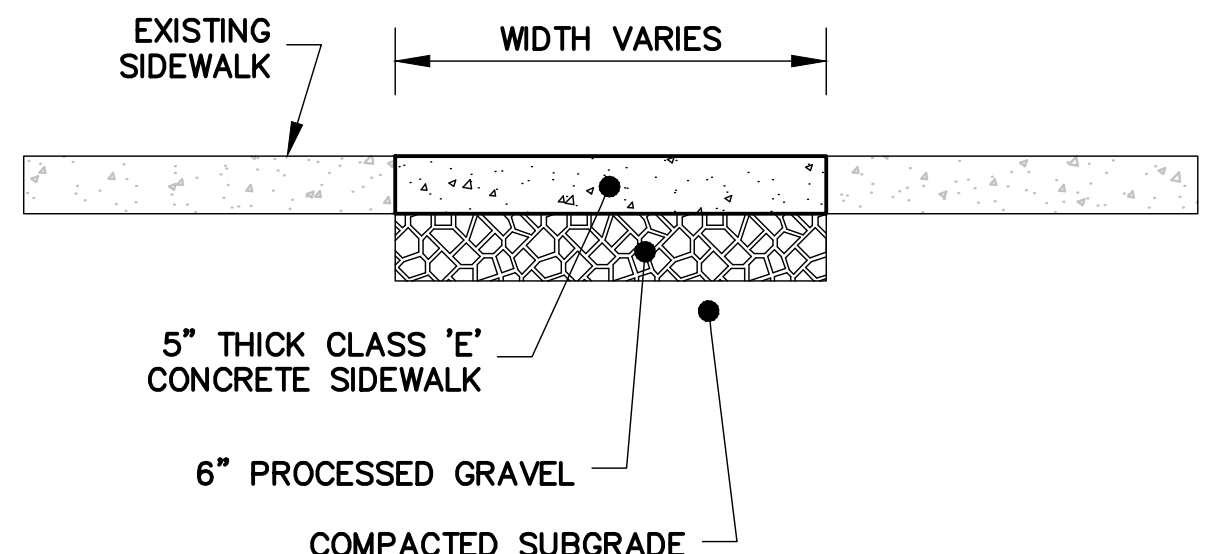
NOTES:
 1. CONTRACTOR REQUIRED TO MAINTAIN TRENCH SURFACE THROUGHOUT THE PROJECT

**TEMPORARY TRENCH PAVEMENT DETAIL
 TOWN ROAD**
 N.T.S.



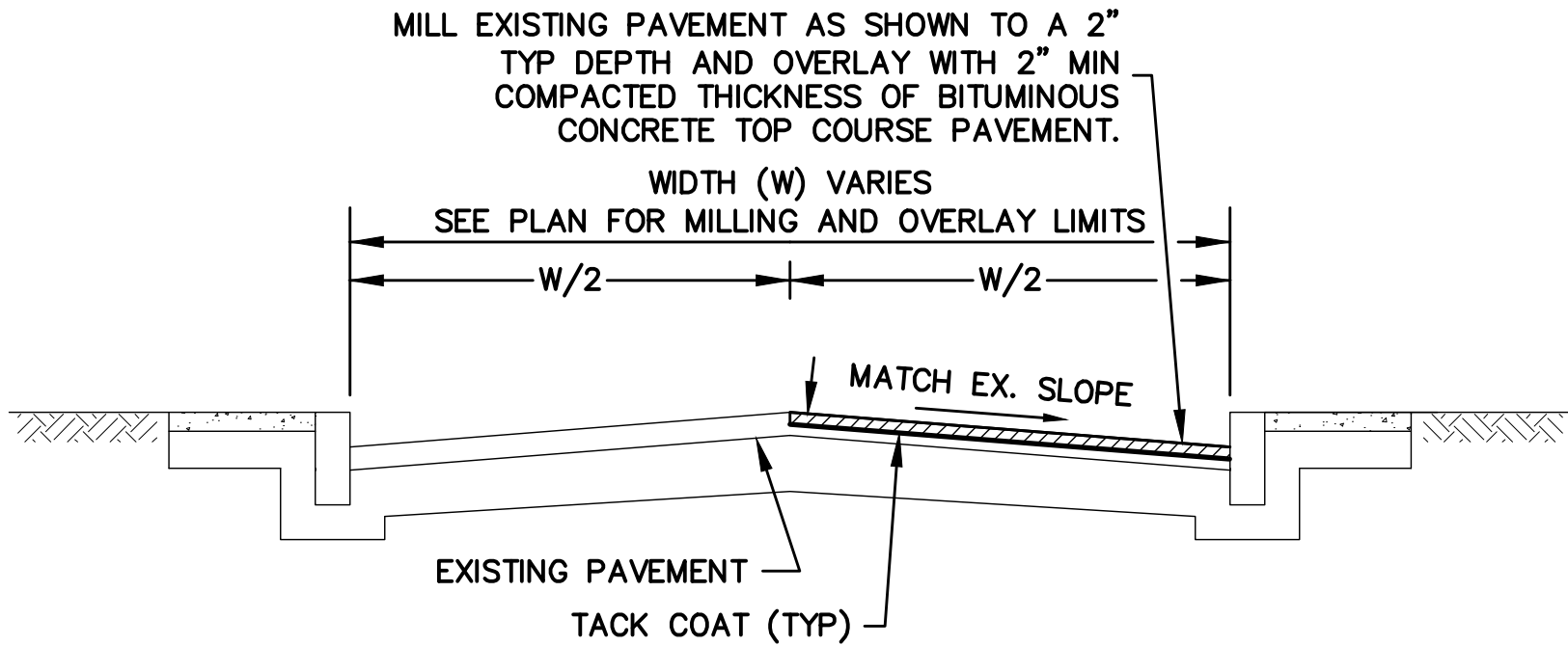
NOTES:
 1. CONTRACTOR REQUIRED TO MAINTAIN TRENCH SURFACE THROUGHOUT THE PROJECT
 2. CUTBACK WITH SHALL BE 6" MINIMUM AND AS REQUIRED TO RETAIN LINE PARALLEL TO THE TRENCH
 3. PAVEMENT THICKNESS SHOWN FOR EXISTING PAVEMENT THICKNESS ≤ 4". MATCH EXISTING PAVEMENT THICKNESS IF > 4"

**PERMANENT TRENCH PAVEMENT DETAIL
 TOWN ROAD**
 N.T.S.

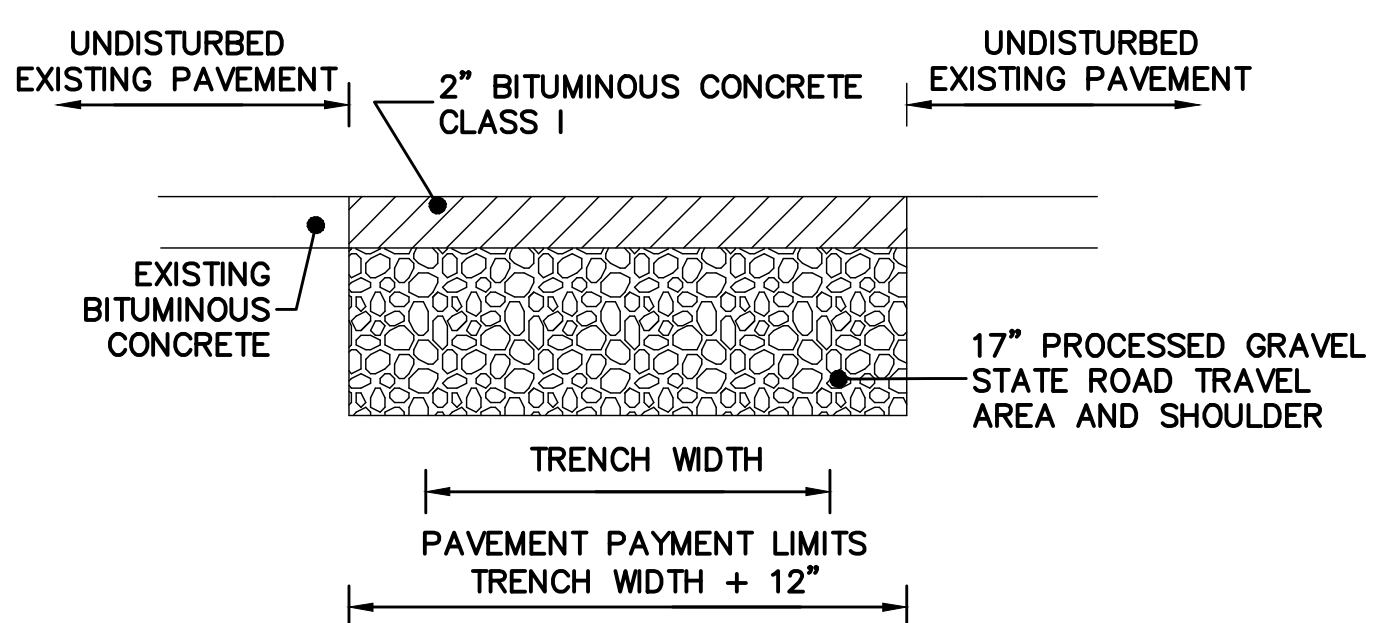


NOTES:
 1. SAWCUT EXISTING SIDEWALK AT EXISTING JOINT.
 2. REPLACE MINIMUM OF ONE PANEL. REPLACE MULTIPLE PANELS AS NECESSARY.
 3. MATCH EXISTING SIDEWALK CROSS SLOPE.

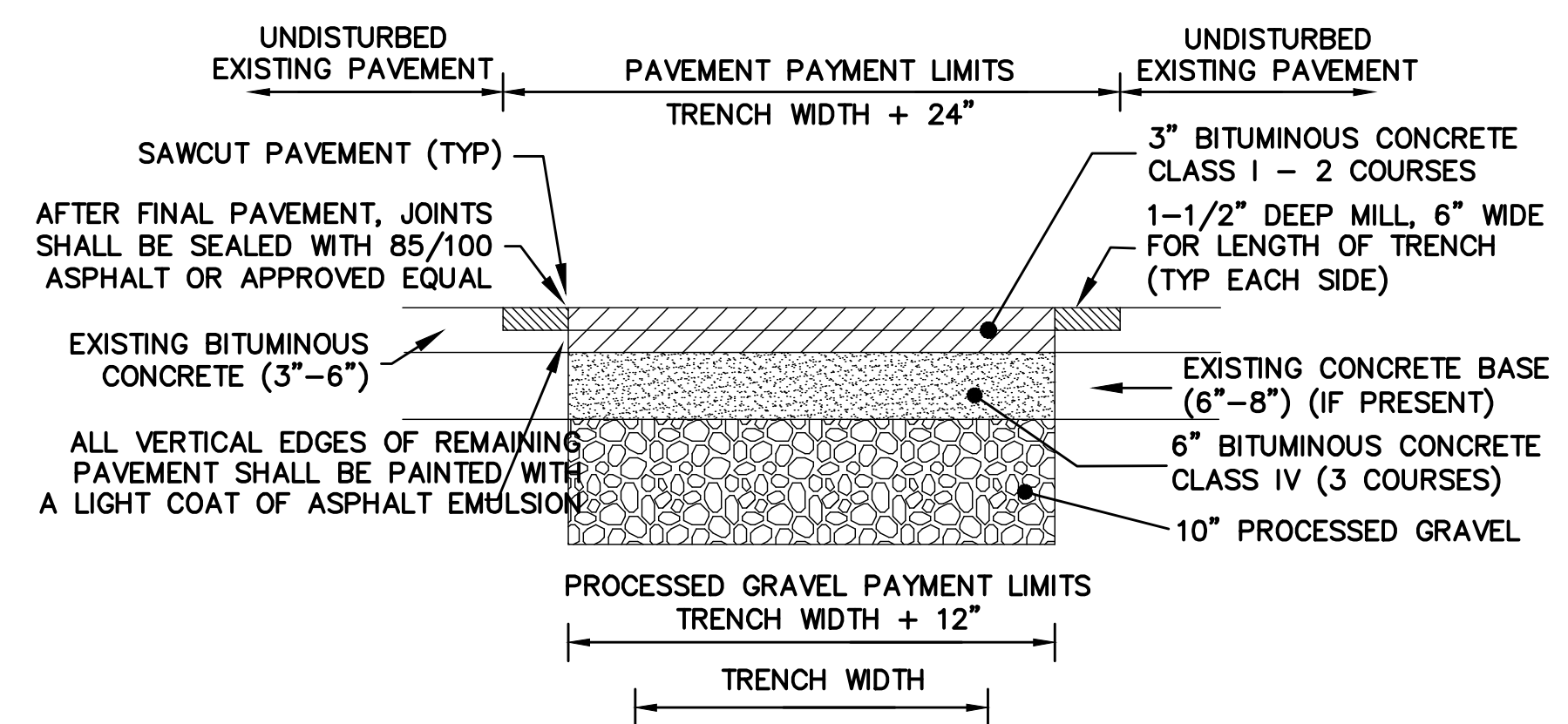
CONCRETE SIDEWALK REPAIR DETAIL
 N.T.S.



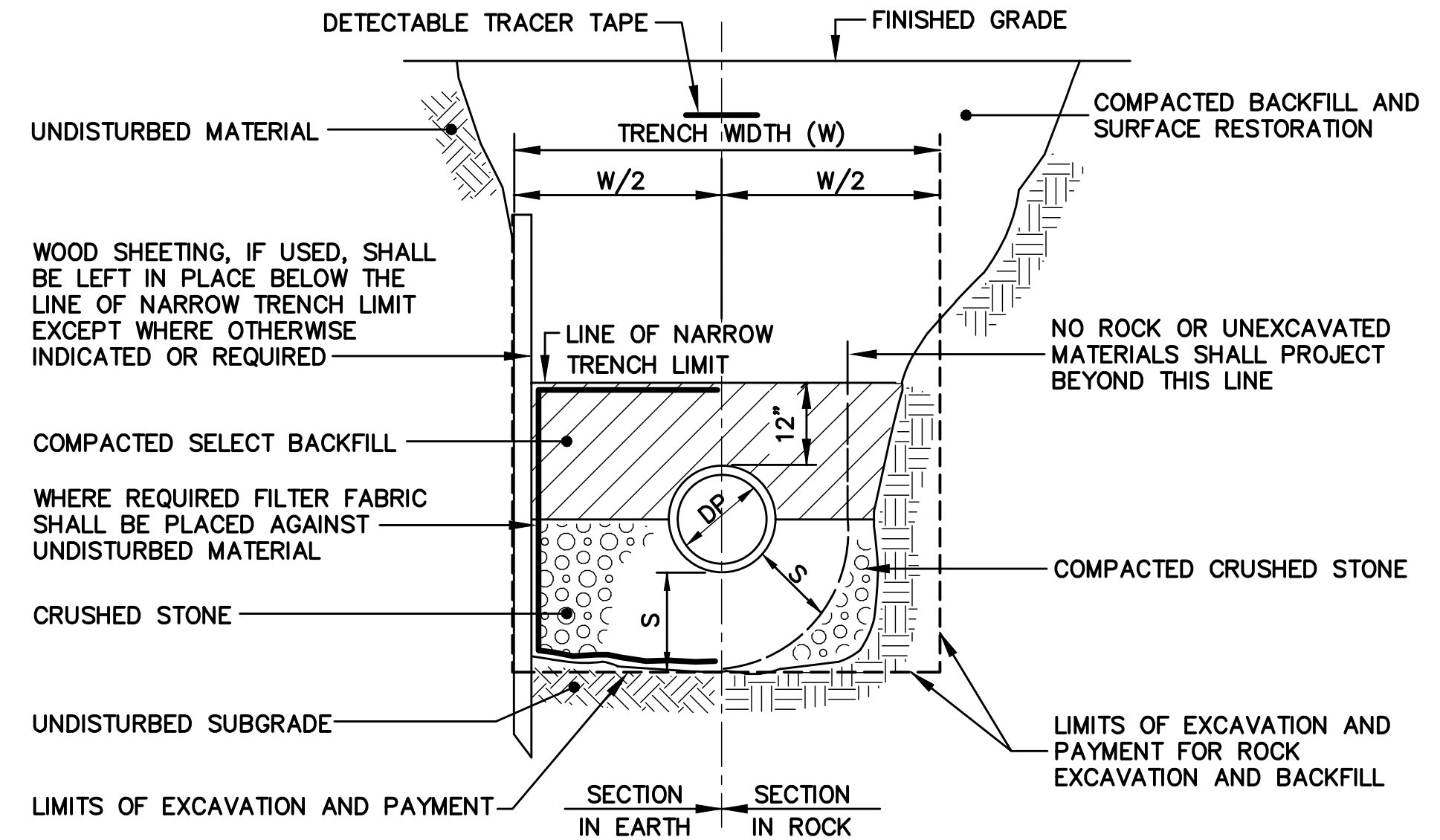
**TYPICAL MILLING AND OVERLAY DETAIL
 STATE ROAD AND TOWN ROAD**
 N.T.S.



**TEMPORARY TRENCH PAVEMENT DETAIL
 STATE ROAD TRAVEL AREA AND SHOULDER**
 N.T.S.



**PERMANENT TRENCH PAVEMENT DETAIL
 STATE ROAD TRAVEL AREA AND SHOULDER**
 N.T.S.



NOTES:
 1. FOR W, DP AND S SEE TABLE A

STORM SEWER TRENCH DETAIL
 N.T.S.

No.	Date	Dr. By	Chk. By	App. By	Description
					A P P R O V E D

REGISTERED PROFESSIONAL ENGINEER _____ DATE _____

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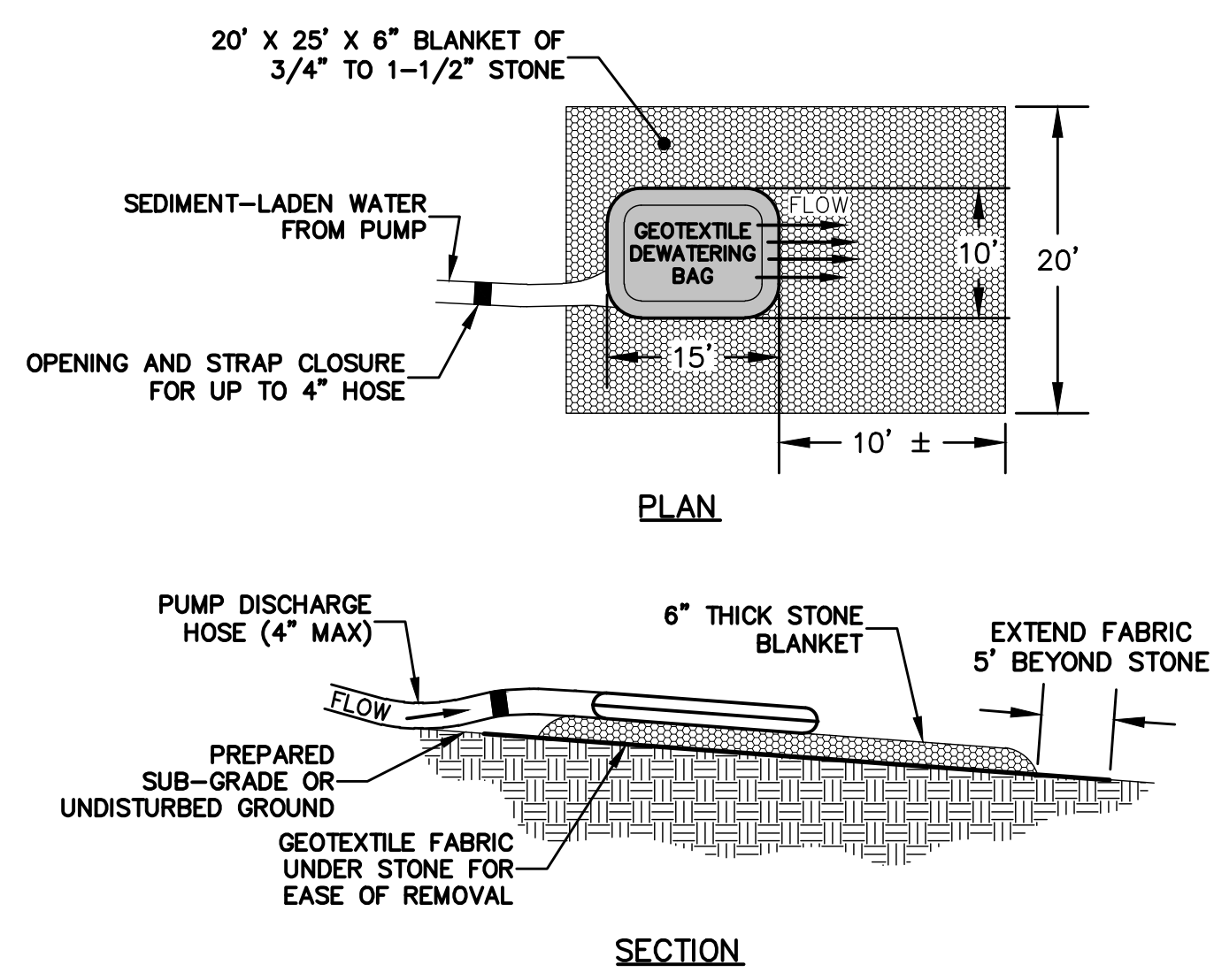
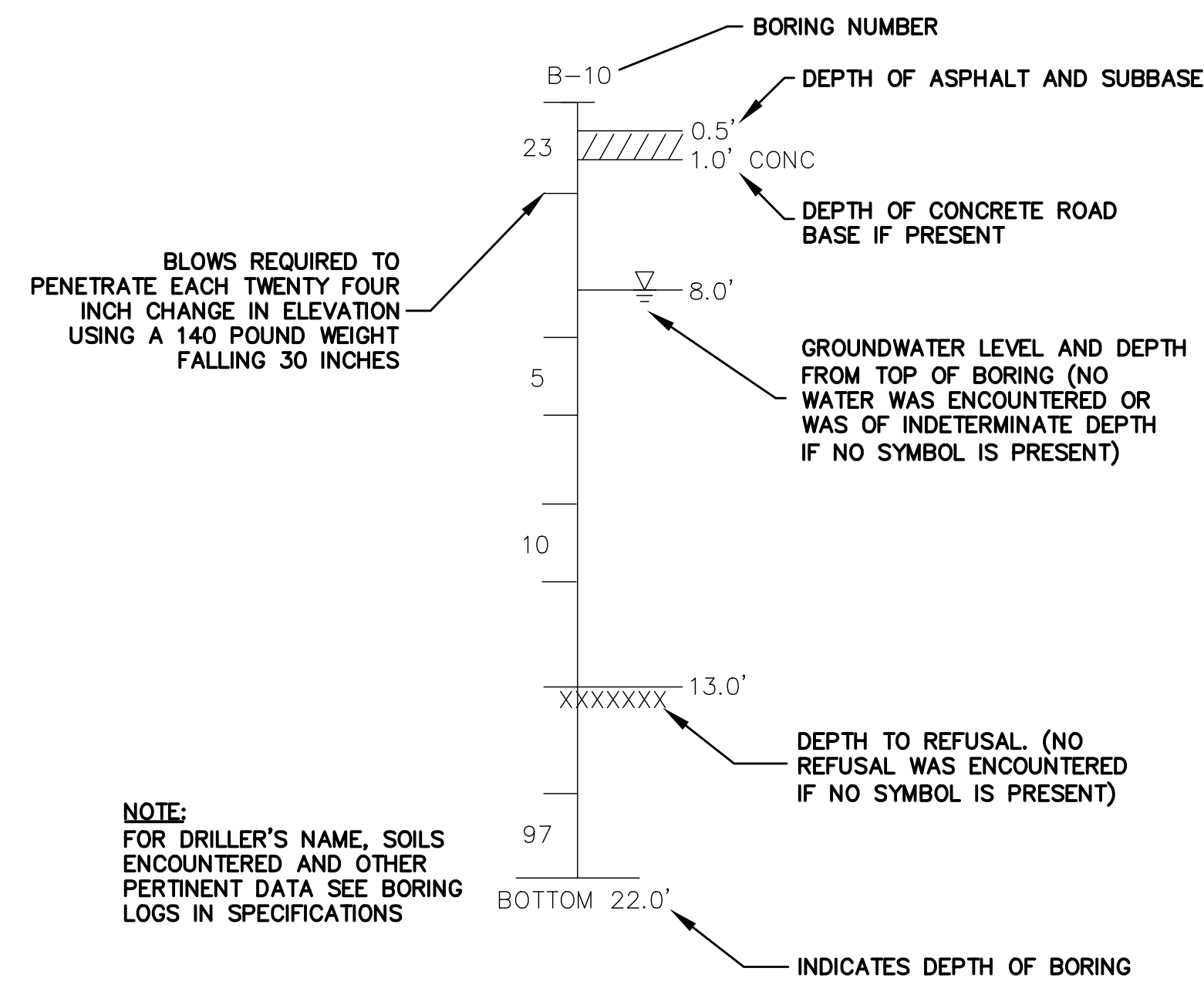
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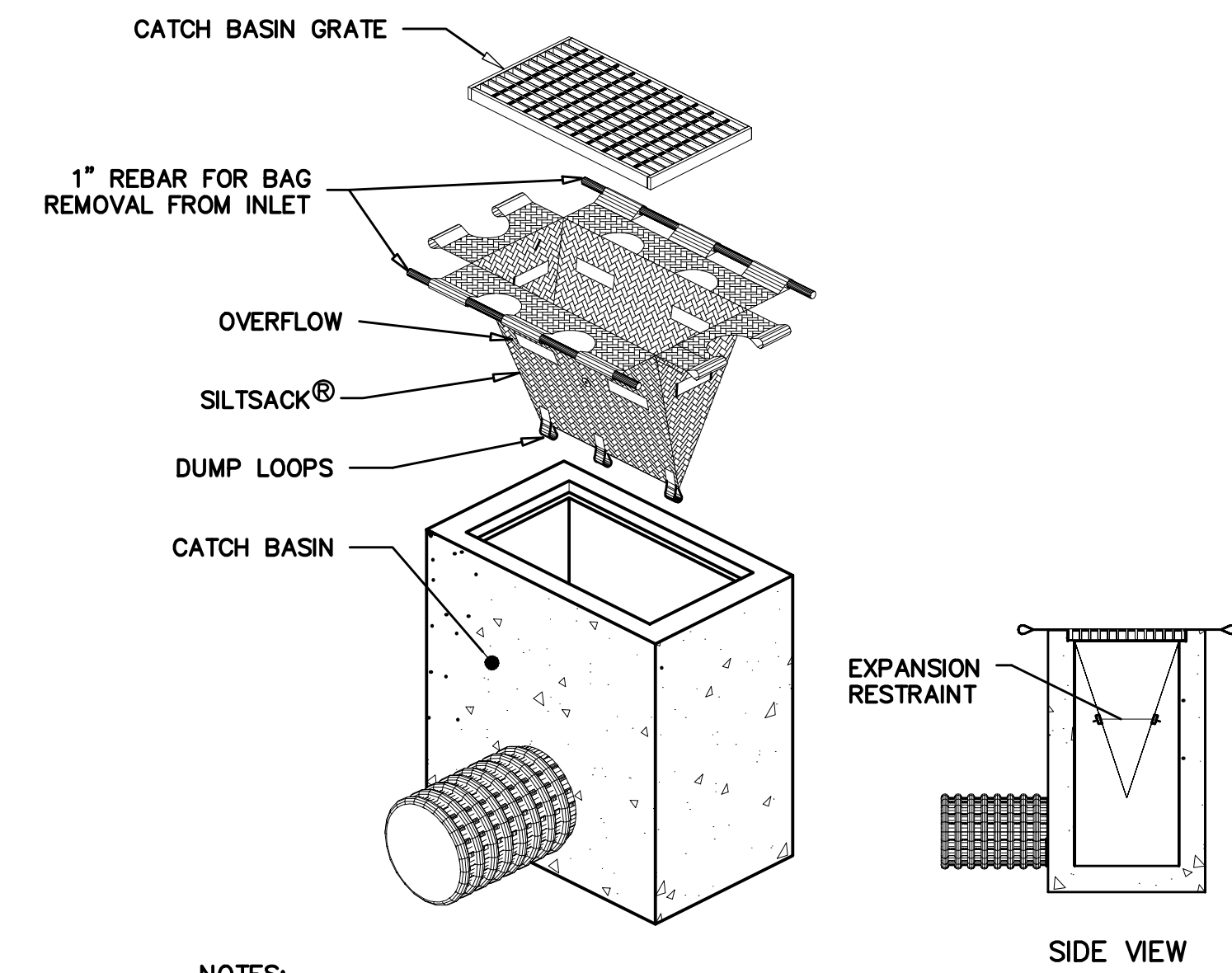
FILE NO.	JOB NO.	SCALE	AS NOTED	WCS	WCS	CHK BY	DMD	APP BY	DRL
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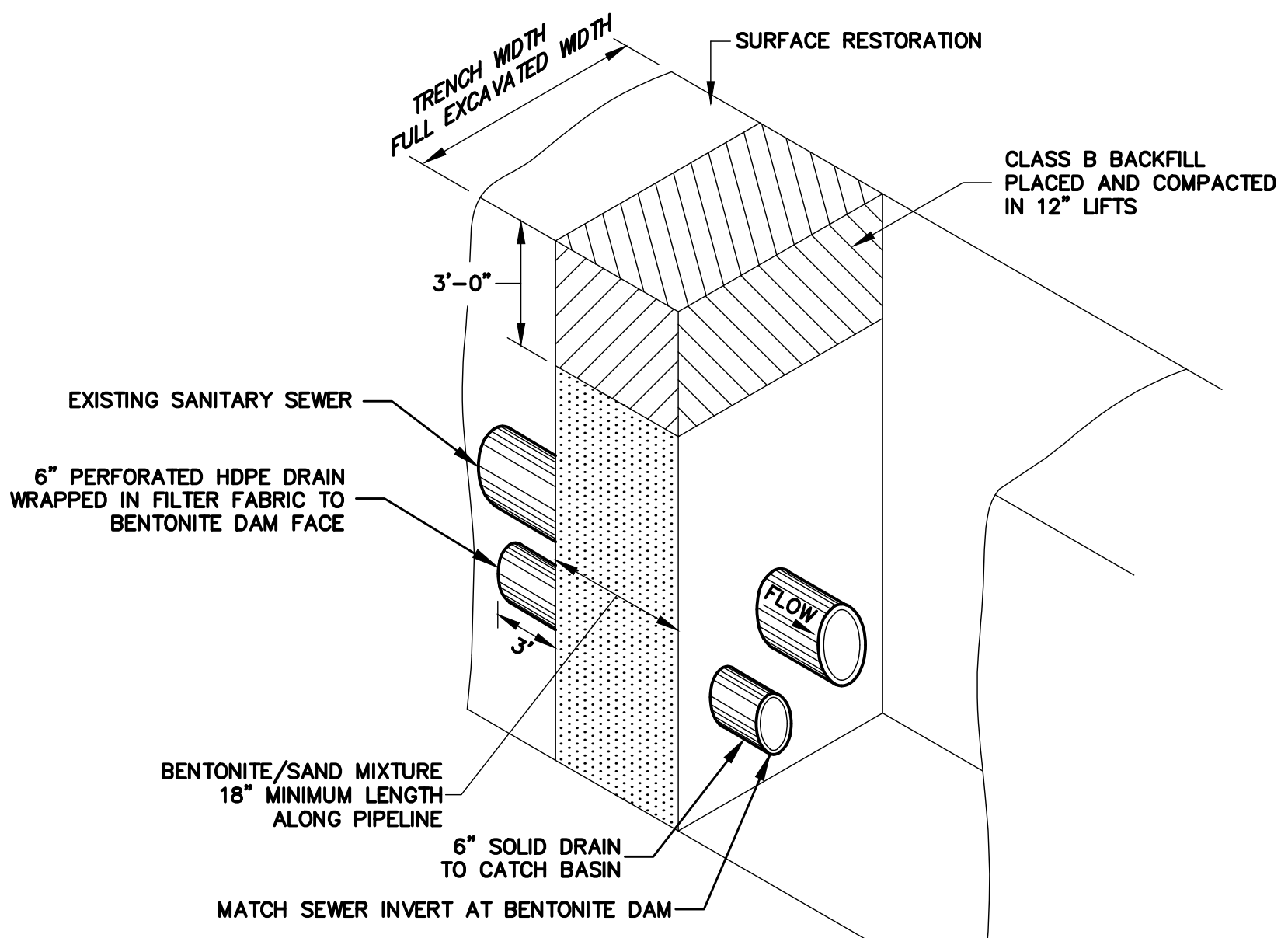
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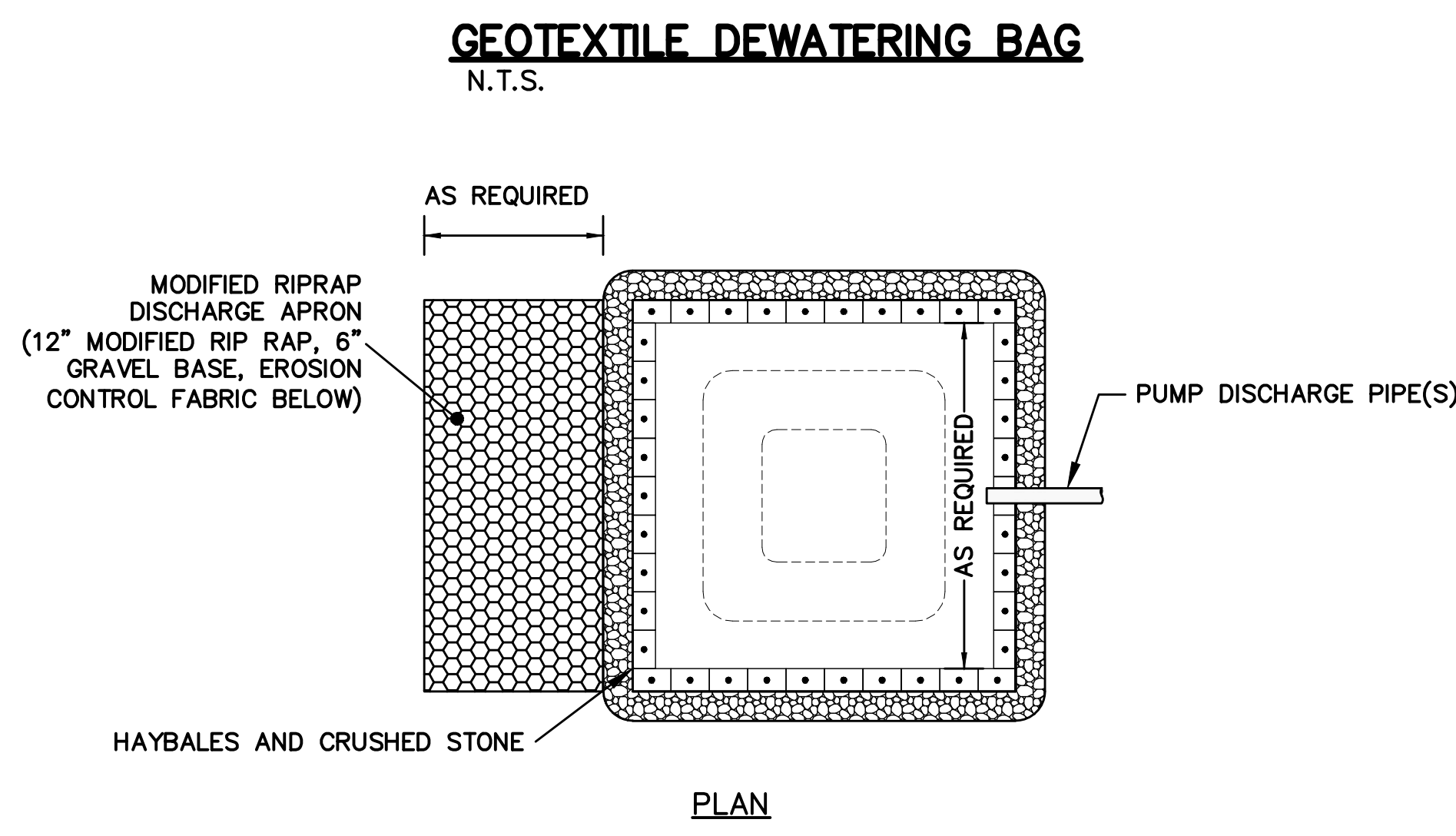
- NOTES:
1. GEOTEXTILE BAG MATERIAL SHALL BE A NON-WOVEN MATERIAL.
 2. DO NOT OVER PRESSURIZE BAG OR USE BEYOND CAPACITY.
 3. LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, AND OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
 4. DOWNGRADIENT FROM RECEIVING AREA MUST BE WELL VEGETATED OR OTHERWISE STABLE FROM EROSION, E.G., FOREST FLOOR OR COARSE GRAVEL/STONE.



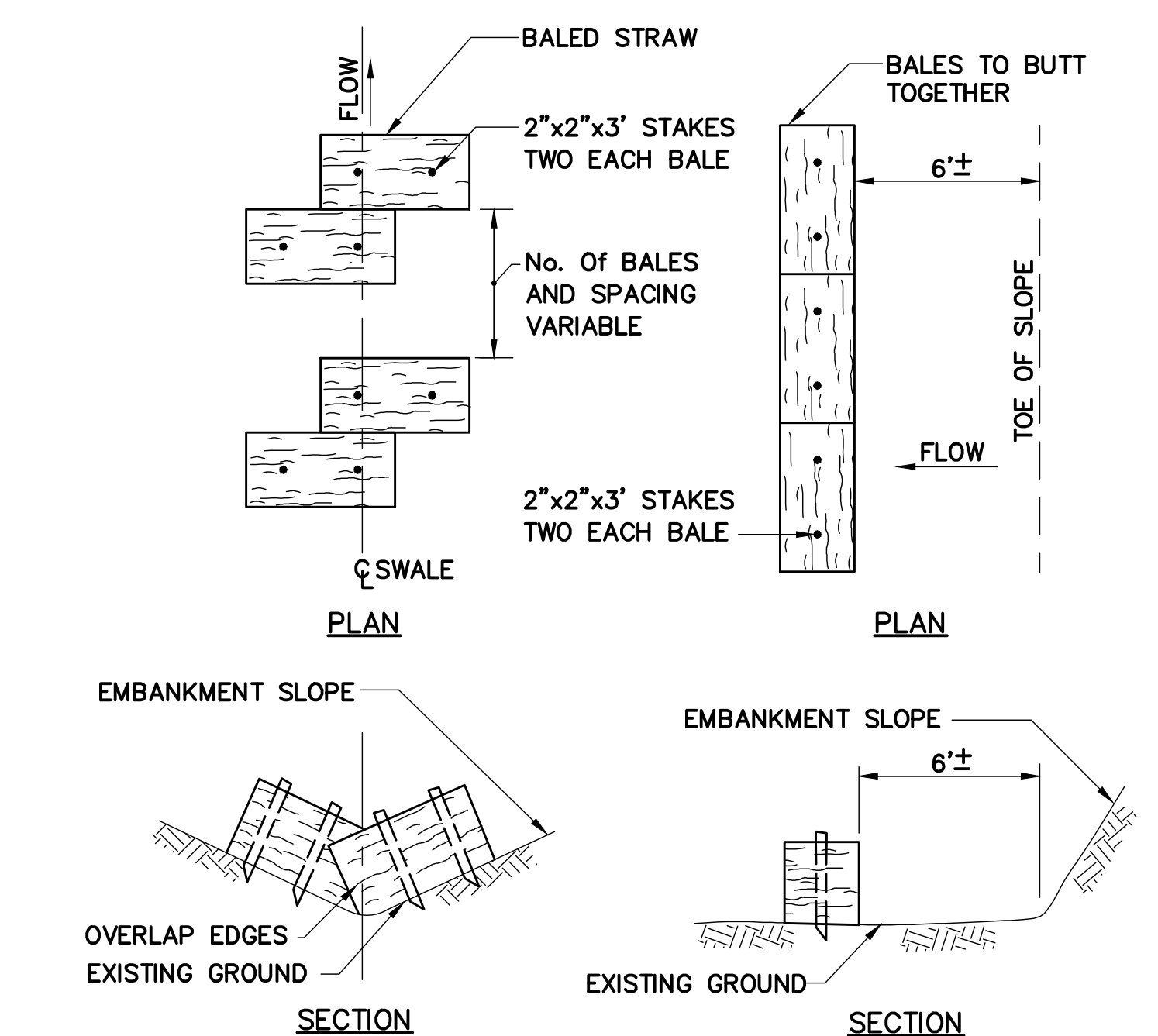
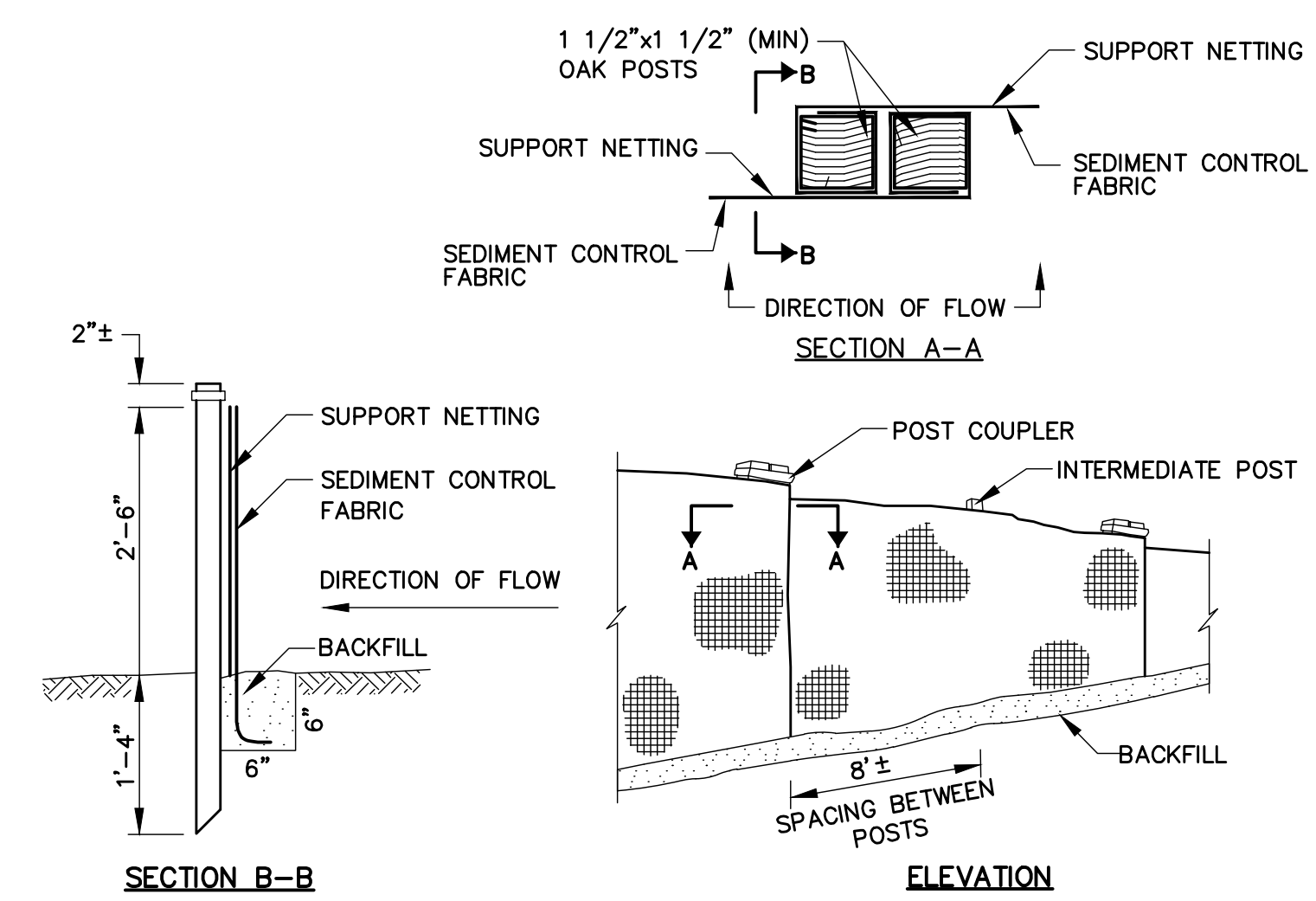
- NOTES:
1. PROVIDE HI-FLOW SILT SACK TYPE A FOR TYPE "C-L" CATCH BASIN TOPS AND TYPE B WITH CURB DEFLECTOR FOR TYPE "C" CATCH BASIN TOPS OR OTHER STRUCTURES WITH CURB INLET.



- NOTES:
1. DAM TO BE PLACED AGAINST UNDISTURBED MATERIAL OR SHEETING



- NOTES:
1. THE CONTRACTOR SHALL SIZE BASIN BASED ON THE SELECTED PUMP DISCHARGE FLOWS, AND ENLARGE AS NECESSARY AT NO ADDITIONAL COST TO THE OWNER, TO ALLOW FOR PROPER FUNCTION OF THE BASIN.
 2. ALTERNATE SEDIMENTATION BASINS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.



- NOTE:
TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES IN TOWARD THE TOE OF SLOPE
- NOTE:
TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES AWAY FROM THE TOE OF SLOPE

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No.	Date	Dr. By	Ck. By	App. By	Description
					A
					P
					P
					R
					O
					V
					E
					D

REGISTERED PROFESSIONAL ENGINEER

DATE

FILE NAME	SCALE	AS NOTED	WCS	WCS	WCS	DMD	DRL
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TOWN OF MANSFIELD, CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
FOUR CORNERS SANITARY SEWER PROJECT

DETAILS

FILE NO.	JOB NO.	SCALE	AS NOTED	WCS	WCS	WCS	DMD	DRL
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APPENDIX D

Soil Survey Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for State of Connecticut

Mansfield Four Corners Sewer Project EIE



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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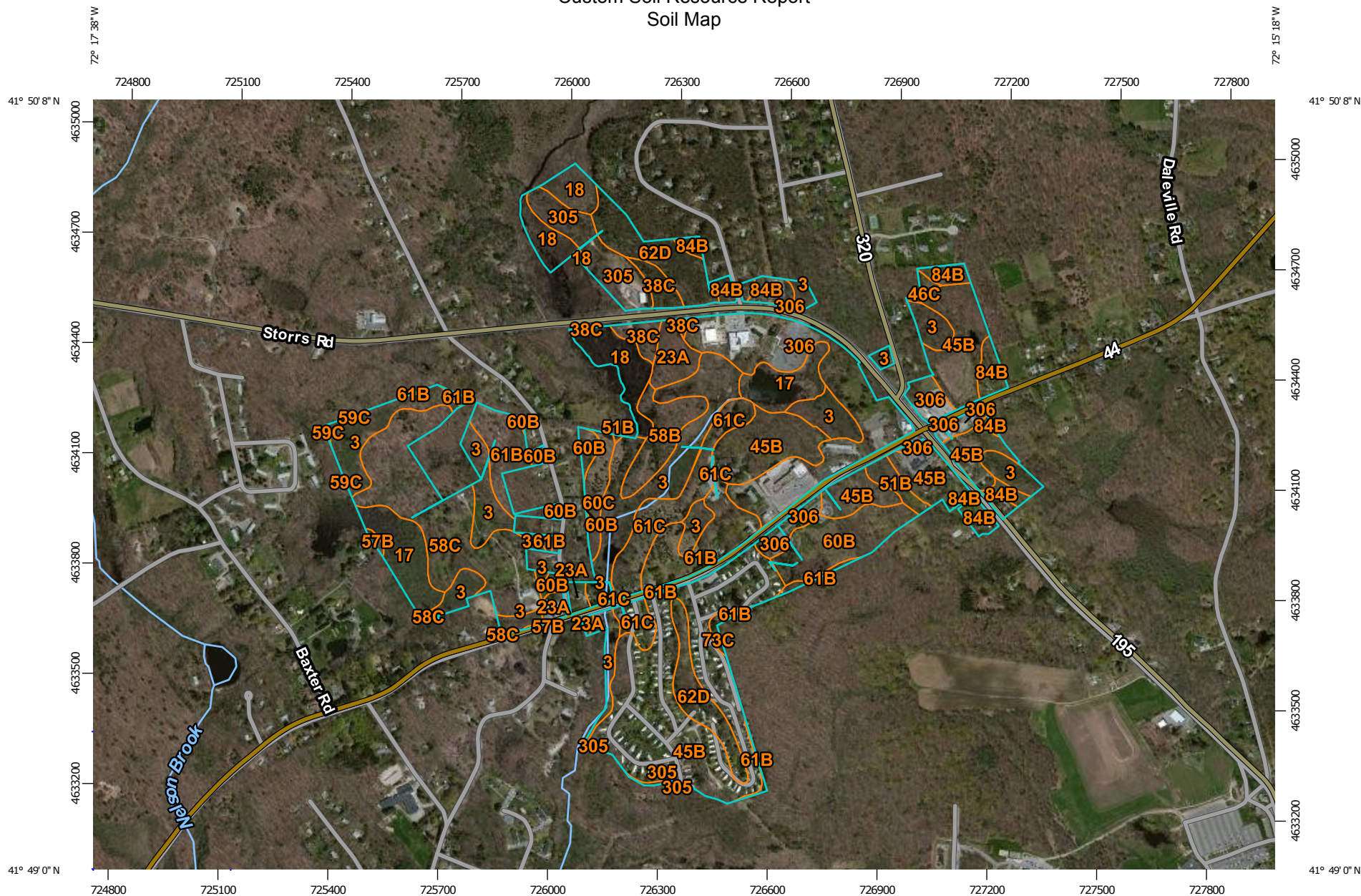
Contents

Preface	2
Soil Map	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	9
State of Connecticut.....	11
3—Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony.....	11
17—Timakwa and Natchaug soils.....	13
18—Catden and Freetown soils.....	16
23A—Sudbury sandy loam, 0 to 5 percent slopes.....	18
38C—Hinckley gravelly sandy loam, 3 to 15 percent slopes.....	20
45B—Woodbridge fine sandy loam, 3 to 8 percent slopes.....	21
46C—Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony.....	23
47C—Woodbridge fine sandy loam, 2 to 15 percent slopes, extremely stony.....	25
51B—Sutton fine sandy loam, 2 to 8 percent slopes, very stony.....	27
57B—Gloucester gravelly sandy loam, 3 to 8 percent slopes.....	28
58B—Gloucester gravelly sandy loam, 3 to 8 percent slopes, very stony.....	30
58C—Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony.....	32
59C—Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony.....	33
60B—Canton and Charlton soils, 3 to 8 percent slopes.....	35
60C—Canton and Charlton soils, 8 to 15 percent slopes.....	37
61B—Canton and Charlton soils, 3 to 8 percent slopes, very stony.....	39
61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony.....	41
62D—Canton and Charlton soils, 15 to 35 percent slopes, extremely stony.....	43
73C—Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky.....	45
84B—Paxton and Montauk fine sandy loams, 3 to 8 percent slopes.....	47
305—Udorthents-Pits complex, gravelly.....	49
306—Udorthents-Urban land complex.....	51
Soil Information for All Uses	53
Suitabilities and Limitations for Use.....	53
Sanitary Facilities.....	53
Septic Tank Absorption Fields.....	53
References	74

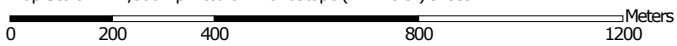
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:14,800 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 18N WGS84


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: State of Connecticut
 Survey Area Data: Version 13, Oct 28, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

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

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	48.6	15.3%
17	Timakwa and Natchaug soils	13.8	4.3%
18	Catden and Freetown soils	12.8	4.0%
23A	Sudbury sandy loam, 0 to 5 percent slopes	6.5	2.0%
38C	Hinckley gravelly sandy loam, 3 to 15 percent slopes	4.6	1.4%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	76.8	24.1%
46C	Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony	0.6	0.2%
47C	Woodbridge fine sandy loam, 2 to 15 percent slopes, extremely stony	1.0	0.3%
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	2.4	0.7%
57B	Gloucester gravelly sandy loam, 3 to 8 percent slopes	0.4	0.1%
58B	Gloucester gravelly sandy loam, 3 to 8 percent slopes, very stony	6.9	2.2%
58C	Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony	26.6	8.3%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	0.2	0.1%
60B	Canton and Charlton soils, 3 to 8 percent slopes	13.6	4.3%
60C	Canton and Charlton soils, 8 to 15 percent slopes	3.7	1.2%
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	18.1	5.7%
61C	Canton and Charlton soils, 8 to 15 percent slopes, very stony	13.1	4.1%
62D	Canton and Charlton soils, 15 to 35 percent slopes, extremely stony	15.3	4.8%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	0.7	0.2%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	8.2	2.6%

Custom Soil Resource Report

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
305	Udorthents-Pits complex, gravelly	9.1	2.9%
306	Udorthents-Urban land complex	35.3	11.1%
Totals for Area of Interest		318.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Custom Soil Resource Report

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut

3—Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2t2qt
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, extremely stony, and similar soils: 40 percent
Leicester, extremely stony, and similar soils: 35 percent
Whitman, extremely stony, and similar soils: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Extremely Stony

Setting

Landform: Drainageways, depressions, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

A - 0 to 5 inches: fine sandy loam
Bw - 5 to 9 inches: sandy loam
Bg - 9 to 18 inches: gravelly sandy loam
Cd - 18 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 14 to 32 inches to densic material
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Description of Leicester, Extremely Stony

Setting

Landform: Depressions, drainageways

Landform position (two-dimensional): Toeslope, footslope, backslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 7 inches: fine sandy loam

Bg1 - 7 to 10 inches: fine sandy loam

Bg2 - 10 to 18 inches: fine sandy loam

BC - 18 to 24 inches: fine sandy loam

C1 - 24 to 43 inches: gravelly fine sandy loam

C2 - 43 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)

Depth to water table: About 0 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B/D

Description of Whitman, Extremely Stony

Setting

Landform: Depressions, drainageways

Landform position (two-dimensional): Toeslope, footslope, backslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 9 inches: fine sandy loam

Bg - 9 to 16 inches: fine sandy loam

Cdg1 - 16 to 22 inches: fine sandy loam

Cdg2 - 22 to 60 inches: fine sandy loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 12 to 20 inches to densic material
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Minor Components

Woodbridge, extremely stony

Percent of map unit: 3 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear

Swansea

Percent of map unit: 2 percent
Landform: Swamps, bogs
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

17—Timakwa and Natchaug soils

Map Unit Setting

National map unit symbol: 9lk2
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Timakwa and similar soils: 45 percent

Custom Soil Resource Report

Natchaug and similar soils: 40 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Timakwa

Setting

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Woody organic material over sandy and gravelly glaciofluvial deposits

Typical profile

Oa1 - 0 to 10 inches: muck

Oa2 - 10 to 21 inches: muck

Oa3 - 21 to 24 inches: muck

Oa4 - 24 to 37 inches: muck

2Cg1 - 37 to 47 inches: very gravelly loamy coarse sand

2Cg2 - 47 to 60 inches: gravelly loamy very fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 99.62 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: Rare

Frequency of ponding: Frequent

Available water storage in profile: Very high (about 16.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: A/D

Description of Natchaug

Setting

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Woody organic material over loamy alluvium and/or loamy glaciofluvial deposits and/or loamy till

Typical profile

Oi1 - 0 to 2 inches: peat

Oi2 - 2 to 4 inches: peat

Oa1 - 4 to 6 inches: muck

Oa2 - 6 to 11 inches: muck

Oa3 - 11 to 18 inches: muck

Oa4 - 18 to 24 inches: muck

2Cg1 - 24 to 33 inches: fine sandy loam

2Cg2 - 33 to 36 inches: fine sandy loam

2Cg3 - 36 to 80 inches: loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: Rare

Frequency of ponding: Frequent

Available water storage in profile: Very high (about 13.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D

Minor Components

Maybid

Percent of map unit: 3 percent

Landform: Depressions, drainageways, terraces

Down-slope shape: Concave

Across-slope shape: Concave

Catden

Percent of map unit: 3 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Saco

Percent of map unit: 3 percent

Landform: Flood plains

Down-slope shape: Concave

Across-slope shape: Concave

Whitman

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Menlo

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Scarboro

Percent of map unit: 2 percent

Landform: Depressions, drainageways, terraces

Down-slope shape: Concave

Across-slope shape: Concave

18—Catden and Freetown soils

Map Unit Setting

National map unit symbol: 9lk3
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 40 percent
Catden and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Catden

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Woody organic material

Typical profile

Oa1 - 0 to 2 inches: muck
Oa2 - 2 to 18 inches: muck
Oa3 - 18 to 47 inches: muck
Oa4 - 47 to 49 inches: muck
Oa5 - 49 to 61 inches: muck

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Description of Freetown

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Woody organic material

Typical profile

Oi1 - 0 to 4 inches: peat
Oi2 - 4 to 10 inches: peat
Oa1 - 10 to 22 inches: muck
Oa2 - 22 to 35 inches: muck
Oa3 - 35 to 41 inches: muck
Oa4 - 41 to 55 inches: muck
Oa5 - 55 to 71 inches: muck
Oa6 - 71 to 91 inches: muck

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Minor Components

Timakwa

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Natchaug

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Whitman

Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Scarboro

Percent of map unit: 2 percent

Custom Soil Resource Report

Landform: Depressions, drainageways, terraces
Down-slope shape: Concave
Across-slope shape: Concave

Saco

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave

Maybid

Percent of map unit: 2 percent
Landform: Depressions, drainageways, terraces
Down-slope shape: Concave
Across-slope shape: Concave

Menlo

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

23A—Sudbury sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9lkv
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sudbury and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sudbury

Setting

Landform: Outwash plains, terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: sandy loam
Bw1 - 5 to 17 inches: gravelly sandy loam

Custom Soil Resource Report

Bw2 - 17 to 25 inches: sandy loam
2C - 25 to 60 inches: stratified gravel to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B

Minor Components

Agawam

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Merrimac

Percent of map unit: 5 percent
Landform: Kames, outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Ninigret

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Concave

Tisbury

Percent of map unit: 3 percent
Landform: Outwash plains, terraces
Down-slope shape: Concave
Across-slope shape: Linear

Walpole

Percent of map unit: 2 percent
Landform: Depressions on terraces, drainageways on terraces
Down-slope shape: Concave
Across-slope shape: Concave

38C—Hinckley gravelly sandy loam, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9In9

Elevation: 0 to 1,200 feet

Mean annual precipitation: 43 to 54 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Eskers, kames, outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 8 inches: gravelly sandy loam

Bw1 - 8 to 20 inches: very gravelly loamy sand

Bw2 - 20 to 27 inches: very gravelly sand

C1 - 27 to 42 inches: stratified cobbly coarse sand to extremely gravelly sand

C2 - 42 to 60 inches: stratified cobbly coarse sand to extremely gravelly sand

Properties and qualities

Slope: 3 to 15 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Kames, outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Windsor

Percent of map unit: 5 percent
Landform: Kames, outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Convex

Agawam

Percent of map unit: 3 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Down-slope shape: Concave
Across-slope shape: Linear

Walpole

Percent of map unit: 1 percent
Landform: Depressions on terraces, drainageways on terraces
Down-slope shape: Concave
Across-slope shape: Concave

Scarboro

Percent of map unit: 1 percent
Landform: Depressions, drainageways, terraces
Down-slope shape: Concave
Across-slope shape: Concave

Unnamed, red parent material

Percent of map unit: 1 percent

Unnamed, gravelly loamy sand surface

Percent of map unit: 1 percent

Unnamed, gravelly silt loam solum

Percent of map unit: 1 percent

45B—Woodbridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2q1
Elevation: 0 to 1,470 feet

Custom Soil Resource Report

Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge, fine sandy loam, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex

Ridgebury

Percent of map unit: 8 percent

Custom Soil Resource Report

Landform: Drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave

46C—Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9Inv
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Woodbridge and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge

Setting

Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from granite and/or schist and/or gneiss

Typical profile

A - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 26 inches: fine sandy loam
Bw3 - 26 to 30 inches: fine sandy loam
Cd1 - 30 to 43 inches: gravelly fine sandy loam
Cd2 - 43 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.9 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Minor Components

Paxton

Percent of map unit: 5 percent

Landform: Drumlins, hills, till plains

Down-slope shape: Linear

Across-slope shape: Convex

Ridgebury

Percent of map unit: 3 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Montauk

Percent of map unit: 3 percent

Landform: Drumlins, hills

Down-slope shape: Convex

Across-slope shape: Linear

Leicester

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Linear

Across-slope shape: Concave

Unnamed, loamy substratum

Percent of map unit: 2 percent

Sutton

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Linear

Whitman

Percent of map unit: 1 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Stockbridge

Percent of map unit: 1 percent

Landform: Hills

Down-slope shape: Concave

Across-slope shape: Linear

Georgia

Percent of map unit: 1 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

47C—Woodbridge fine sandy loam, 2 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 9lnw
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Woodbridge and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge

Setting

Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from granite and/or schist and/or gneiss

Typical profile

A - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 26 inches: fine sandy loam
Bw3 - 26 to 30 inches: fine sandy loam
Cd1 - 30 to 43 inches: gravelly fine sandy loam
Cd2 - 43 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 2 to 15 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C

Minor Components

Paxton

Percent of map unit: 5 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex

Ridgebury

Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Montauk

Percent of map unit: 3 percent
Landform: Drumlins, hills
Down-slope shape: Convex
Across-slope shape: Linear

Unnamed, loamy substratum

Percent of map unit: 2 percent

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Leicester

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Georgia

Percent of map unit: 1 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Whitman

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Stockbridge

Percent of map unit: 1 percent
Landform: Hills
Down-slope shape: Concave
Across-slope shape: Linear

51B—Sutton fine sandy loam, 2 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9lp4
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Sutton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sutton

Setting

Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 6 inches: fine sandy loam
Bw1 - 6 to 12 inches: fine sandy loam
Bw2 - 12 to 24 inches: fine sandy loam
Bw3 - 24 to 28 inches: fine sandy loam
C1 - 28 to 36 inches: gravelly fine sandy loam
C2 - 36 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B

Minor Components

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Canton

Percent of map unit: 4 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex

Paxton

Percent of map unit: 3 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex

Leicester

Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Woodbridge

Percent of map unit: 2 percent
Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear

Rainbow

Percent of map unit: 2 percent
Landform: Drumlins, hills
Down-slope shape: Linear
Across-slope shape: Concave

Narragansett

Percent of map unit: 1 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex

57B—Gloucester gravelly sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9lpd
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F

Custom Soil Resource Report

Frost-free period: 140 to 185 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Gloucester and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Landform: Hills

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam

Bw1 - 4 to 12 inches: gravelly sandy loam

Bw2 - 12 to 25 inches: very gravelly loamy sand

C1 - 25 to 35 inches: very gravelly loamy coarse sand

C2 - 35 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A

Minor Components

Canton

Percent of map unit: 5 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Convex

Hinckley

Percent of map unit: 5 percent

Landform: Eskers, kames, outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Convex

Paxton

Percent of map unit: 3 percent

Landform: Drumlins, hills, till plains

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Convex

Charlton

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Leicester

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

58B—Gloucester gravelly sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9lph
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Gloucester and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam
Bw1 - 4 to 12 inches: gravelly sandy loam
Bw2 - 12 to 25 inches: very gravelly loamy sand
C1 - 25 to 35 inches: very gravelly loamy coarse sand
C2 - 35 to 60 inches: very gravelly loamy coarse sand

Custom Soil Resource Report

Properties and qualities

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Minor Components

Canton

Percent of map unit: 5 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Convex

Hinckley

Percent of map unit: 5 percent

Landform: Eskers, kames, outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Convex

Paxton

Percent of map unit: 3 percent

Landform: Drumlins, hills, till plains

Down-slope shape: Linear

Across-slope shape: Convex

Charlton

Percent of map unit: 3 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

Sutton

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Linear

Leicester

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Linear

Across-slope shape: Concave

58C—Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9lpj
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Gloucester and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam
Bw1 - 4 to 12 inches: gravelly sandy loam
Bw2 - 12 to 25 inches: very gravelly loamy sand
C1 - 25 to 35 inches: very gravelly loamy coarse sand
C2 - 35 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Eskers, kames, outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Convex

Canton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex

Charlton

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Paxton

Percent of map unit: 3 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex

Leicester

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

59C—Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 9lpk
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Gloucester and similar soils: 80 percent

Custom Soil Resource Report

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Landform: Hills

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam

Bw1 - 4 to 12 inches: gravelly sandy loam

Bw2 - 12 to 25 inches: very gravelly loamy sand

C1 - 25 to 35 inches: very gravelly loamy coarse sand

C2 - 35 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 15 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Minor Components

Canton

Percent of map unit: 5 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Convex

Hinckley

Percent of map unit: 5 percent

Landform: Eskers, kames, outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Convex

Paxton

Percent of map unit: 3 percent

Landform: Drumlins, hills, till plains

Down-slope shape: Linear

Across-slope shape: Convex

Charlton

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Leicester

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

60B—Canton and Charlton soils, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9lpn
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Canton and similar soils: 45 percent
Charlton and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: gravelly fine sandy loam
Bw1 - 3 to 15 inches: gravelly loam
Bw2 - 15 to 24 inches: gravelly loam
Bw3 - 24 to 30 inches: gravelly loam
2C - 30 to 60 inches: very gravelly loamy sand

Custom Soil Resource Report

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Description of Charlton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 7 inches: fine sandy loam
Bw2 - 7 to 19 inches: fine sandy loam
Bw3 - 19 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Minor Components

Chatfield

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Sutton

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Leicester

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Hollis

Percent of map unit: 3 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex

Unnamed, silt loam surface

Percent of map unit: 2 percent

60C—Canton and Charlton soils, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9lpp
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton and similar soils: 45 percent
Charlton and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: gravelly fine sandy loam
Bw1 - 3 to 15 inches: gravelly loam

Custom Soil Resource Report

Bw2 - 15 to 24 inches: gravelly loam
Bw3 - 24 to 30 inches: gravelly loam
2C - 30 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Description of Charlton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 7 inches: fine sandy loam
Bw2 - 7 to 19 inches: fine sandy loam
Bw3 - 19 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Minor Components

Hollis

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex

Chatfield

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Sutton

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Leicester

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

61B—Canton and Charlton soils, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9lpr
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton and similar soils: 45 percent
Charlton and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: gravelly fine sandy loam

Custom Soil Resource Report

Bw1 - 3 to 15 inches: gravelly loam
Bw2 - 15 to 24 inches: gravelly loam
Bw3 - 24 to 30 inches: gravelly loam
2C - 30 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B

Description of Charlton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 7 inches: fine sandy loam
Bw2 - 7 to 19 inches: fine sandy loam
Bw3 - 19 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B

Minor Components

Chatfield

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Sutton

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Leicester

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Hollis

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex

61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9lps
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton and similar soils: 45 percent
Charlton and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex

Custom Soil Resource Report

Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: gravelly fine sandy loam
Bw1 - 3 to 15 inches: gravelly loam
Bw2 - 15 to 24 inches: gravelly loam
Bw3 - 24 to 30 inches: gravelly loam
2C - 30 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B

Description of Charlton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 7 inches: fine sandy loam
Bw2 - 7 to 19 inches: fine sandy loam
Bw3 - 19 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.9 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Minor Components

Chatfield

Percent of map unit: 5 percent

Landform: Hills, ridges

Down-slope shape: Convex

Across-slope shape: Linear

Hollis

Percent of map unit: 5 percent

Landform: Hills, ridges

Down-slope shape: Convex

Across-slope shape: Convex

Leicester

Percent of map unit: 5 percent

Landform: Depressions, drainageways

Down-slope shape: Linear

Across-slope shape: Concave

Sutton

Percent of map unit: 5 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Linear

62D—Canton and Charlton soils, 15 to 35 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 9lpv

Elevation: 0 to 1,200 feet

Mean annual precipitation: 43 to 54 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days

Farmland classification: Not prime farmland

Map Unit Composition

Canton and similar soils: 45 percent

Charlton and similar soils: 35 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: gravelly fine sandy loam

Bw1 - 3 to 15 inches: gravelly loam

Bw2 - 15 to 24 inches: gravelly loam

Bw3 - 24 to 30 inches: gravelly loam

2C - 30 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Description of Charlton

Setting

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: fine sandy loam

Bw1 - 4 to 7 inches: fine sandy loam

Bw2 - 7 to 19 inches: fine sandy loam

Bw3 - 19 to 27 inches: gravelly fine sandy loam

C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Medium

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Minor Components

Sutton

Percent of map unit: 5 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Linear

Hollis

Percent of map unit: 5 percent

Landform: Hills, ridges

Down-slope shape: Convex

Across-slope shape: Convex

Chatfield

Percent of map unit: 5 percent

Landform: Hills, ridges

Down-slope shape: Convex

Across-slope shape: Linear

Leicester

Percent of map unit: 5 percent

Landform: Depressions, drainageways

Down-slope shape: Linear

Across-slope shape: Concave

73C—Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 9lqk

Elevation: 0 to 1,200 feet

Mean annual precipitation: 43 to 56 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days

Farmland classification: Not prime farmland

Map Unit Composition

Charlton and similar soils: 45 percent

Custom Soil Resource Report

Chatfield and similar soils: 30 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: fine sandy loam

Bw1 - 4 to 7 inches: fine sandy loam

Bw2 - 7 to 19 inches: fine sandy loam

Bw3 - 19 to 27 inches: gravelly fine sandy loam

C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Description of Chatfield

Setting

Landform: Hills, ridges

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material

A - 1 to 6 inches: gravelly fine sandy loam

Bw1 - 6 to 15 inches: gravelly fine sandy loam

Bw2 - 15 to 29 inches: gravelly fine sandy loam

2R - 29 to 80 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Custom Soil Resource Report

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Minor Components

Rock outcrop

Percent of map unit: 6 percent

Sutton

Percent of map unit: 5 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Linear

Leicester

Percent of map unit: 5 percent

Landform: Depressions, drainageways

Down-slope shape: Linear

Across-slope shape: Concave

Hollis

Percent of map unit: 5 percent

Landform: Hills, ridges

Down-slope shape: Convex

Across-slope shape: Convex

Unnamed, sandy subsoil

Percent of map unit: 2 percent

Unnamed, red parent material

Percent of map unit: 2 percent

84B—Paxton and Montauk fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qn

Elevation: 0 to 1,570 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Custom Soil Resource Report

Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 55 percent

Montauk and similar soils: 30 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, drumlins, ground moraines

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, crest, side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam

Bw1 - 8 to 15 inches: fine sandy loam

Bw2 - 15 to 26 inches: fine sandy loam

Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 18 to 39 inches to densic material

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 18 to 37 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: C

Description of Montauk

Setting

Landform: Drumlins, hills

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

A - 0 to 4 inches: fine sandy loam

Bw1 - 4 to 14 inches: fine sandy loam

Bw2 - 14 to 25 inches: sandy loam

2Cd1 - 25 to 39 inches: gravelly loamy coarse sand

Custom Soil Resource Report

2Cd2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 20 to 38 inches to densic material

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 24 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Minor Components

Charlton

Percent of map unit: 5 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

Ridgebury

Percent of map unit: 5 percent

Landform: Drainageways, hills, ground moraines, depressions

Landform position (two-dimensional): Backslope, footslope, toeslope

Landform position (three-dimensional): Head slope, base slope, dip

Down-slope shape: Concave

Across-slope shape: Concave

Woodbridge

Percent of map unit: 5 percent

Landform: Ground moraines, hills, drumlins

Landform position (two-dimensional): Footslope, summit, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Linear

305—Udorthents-Pits complex, gravelly

Map Unit Setting

National map unit symbol: 9Imf

Elevation: 0 to 2,000 feet

Mean annual precipitation: 43 to 54 inches

Mean annual air temperature: 45 to 55 degrees F

Custom Soil Resource Report

Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 65 percent
Pits: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Gravelly outwash

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 24 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Description of Pits

Typical profile

C - 0 to 65 inches: very gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Minor Components

Hinckley

Percent of map unit: 2 percent
Landform: Eskers, kames, outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Convex

Gloucester

Percent of map unit: 2 percent
Landform: Hills

Custom Soil Resource Report

Down-slope shape: Convex
Across-slope shape: Convex

Merrimac

Percent of map unit: 2 percent
Landform: Kames, outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Windsor

Percent of map unit: 2 percent
Landform: Kames, outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Convex

Sudbury

Percent of map unit: 1 percent
Landform: Outwash plains, terraces
Down-slope shape: Concave
Across-slope shape: Linear

Ninigret

Percent of map unit: 1 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Concave

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Drift

Custom Soil Resource Report

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 54 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent

Udorthents, wet substratum

Percent of map unit: 5 percent
Down-slope shape: Convex
Across-slope shape: Linear

Rock outcrop

Percent of map unit: 2 percent

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Sanitary Facilities

Sanitary Facilities interpretations are tools designed to guide the user in site selection for the safe disposal of sewage and solid waste. Example interpretations include septic tank absorption fields, sewage lagoons, and sanitary landfills.

Septic Tank Absorption Fields

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning,

Custom Soil Resource Report

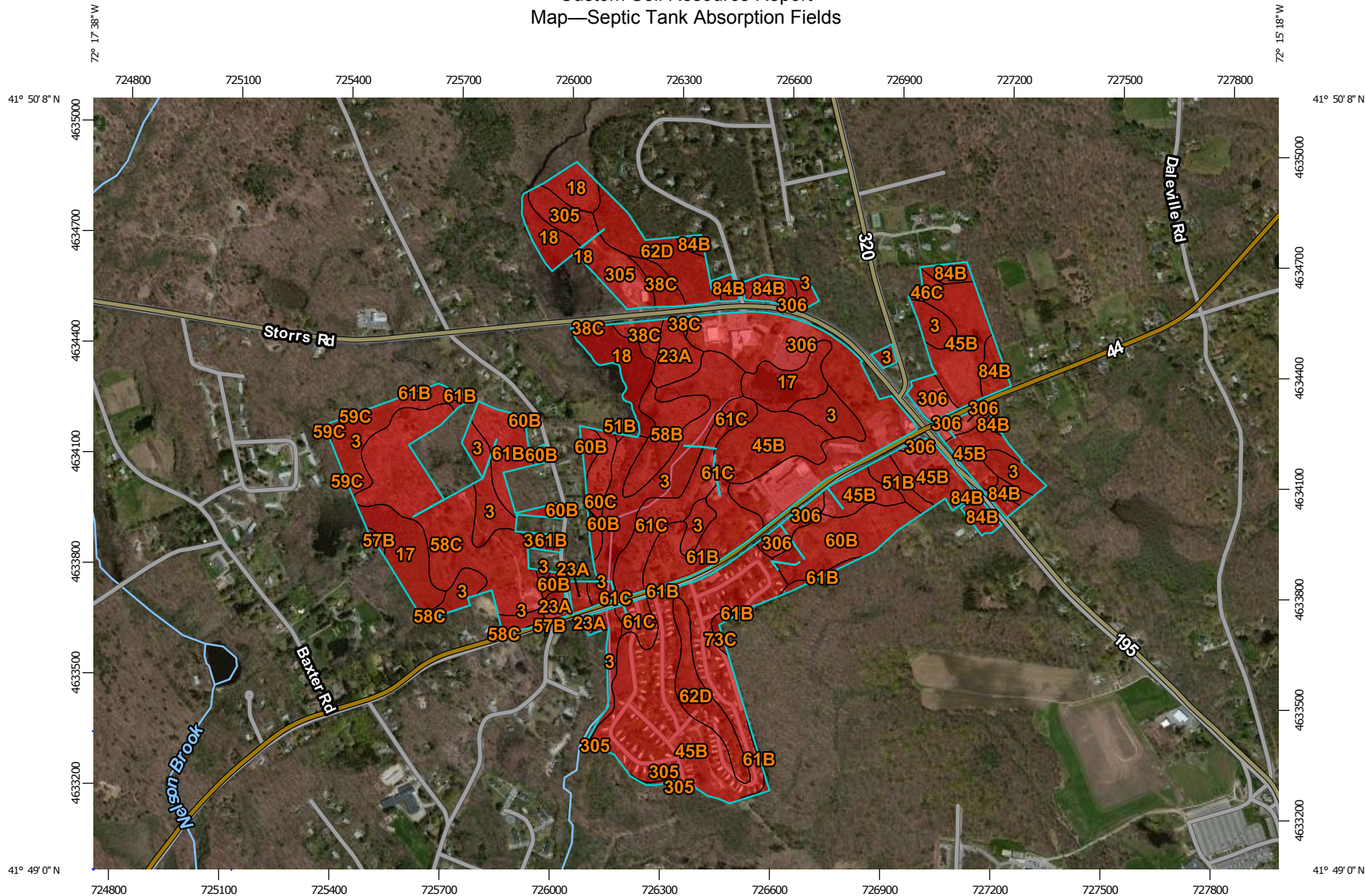
design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

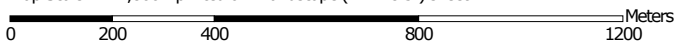
The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report Map—Septic Tank Absorption Fields



Map Scale: 1:14,800 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84




MAP LEGEND

Area of Interest (AOI)





 Area of Interest (AOI)

Background





 Aerial Photography

Soils





Soil Rating Polygons

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available


Soil Rating Lines

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available






Soil Rating Points

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: State of Connecticut
 Survey Area Data: Version 13, Oct 28, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

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

Custom Soil Resource Report

Tables—Septic Tank Absorption Fields

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	Very limited	Ridgebury, extremely stony (40%)	Depth to saturated zone (1.00)	48.6	15.3%
				Slow water movement (1.00)		
			Leicester, extremely stony (35%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Whitman, extremely stony (20%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Woodbridge, extremely stony (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Swansea (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Subsidence (1.00)		
				Seepage, bottom layer (1.00)		
Flooding (0.40)						
17	Timakwa and Natchaug soils	Very limited	Timakwa (45%)	Ponding (1.00)	13.8	4.3%
				Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
				Flooding (0.40)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Natchaug (40%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (0.68)		
				Flooding (0.40)		
			Saco (3%)	Flooding (1.00)		
				Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.50)		
			Maybid (3%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Catden (3%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Subsidence (1.00)		
				Seepage, bottom layer (1.00)		
				Flooding (0.40)		
			Whitman (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Menlo (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Scarboro (2%)	Ponding (1.00) Depth to saturated zone (1.00) Seepage, bottom layer (1.00) Filtering capacity (1.00)		
18	Catden and Freetown soils	Very limited	Catden (40%)	Ponding (1.00) Depth to saturated zone (1.00) Subsidence (1.00) Seepage, bottom layer (1.00) Flooding (0.40)	12.8	4.0%
			Freetown (40%)	Ponding (1.00) Depth to saturated zone (1.00) Subsidence (1.00) Seepage, bottom layer (1.00) Flooding (0.40)		
			Natchaug (5%)	Ponding (1.00) Depth to saturated zone (1.00) Slow water movement (0.68) Flooding (0.40)		
			Timakwa (5%)	Ponding (1.00) Depth to saturated zone (1.00) Seepage, bottom layer (1.00) Filtering capacity (1.00) Flooding (0.40)		
			Whitman (3%)	Ponding (1.00) Depth to saturated zone (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow water movement (1.00)		
			Maybid (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Scarboro (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
			Saco (2%)	Flooding (1.00)		
				Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.50)		
			Menlo (1%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
23A	Sudbury sandy loam, 0 to 5 percent slopes	Very limited	Sudbury (80%)	Depth to saturated zone (1.00)	6.5	2.0%
				Seepage, bottom layer (1.00)		
			Merrimac (5%)	Seepage, bottom layer (1.00)		
			Ninigret (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Agawam (5%)	Seepage, bottom layer (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow water movement (0.32)		
			Tisbury (3%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.68)		
			Walpole (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
38C	Hinckley gravelly sandy loam, 3 to 15 percent slopes	Very limited	Hinckley (80%)	Seepage, bottom layer (1.00)	4.6	1.4%
				Filtering capacity (1.00)		
				Slope (0.04)		
			Merrimac (5%)	Seepage, bottom layer (1.00)		
				Slope (0.63)		
			Windsor (5%)	Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
				Slope (0.63)		
			Agawam (3%)	Seepage, bottom layer (1.00)		
				Slope (0.63)		
				Slow water movement (0.32)		
			Sudbury (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Scarboro (1%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Filtering capacity (1.00)		
			Walpole (1%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	Very limited	Woodbridge, fine sandy loam (82%)	Depth to saturated zone (1.00)	76.8	24.1%
				Slow water movement (1.00)		
			Paxton (10%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Ridgebury (8%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
46C	Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony	Very limited	Woodbridge (80%)	Depth to saturated zone (1.00)	0.6	0.2%
				Slow water movement (1.00)		
				Slope (0.63)		
			Paxton (5%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
				Slope (0.63)		
			Ridgebury (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Montauk (3%)	Depth to saturated zone (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow water movement (1.00)		
				Slope (0.63)		
			Leicester (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Sutton (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Whitman (1%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Georgia (1%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
47C	Woodbridge fine sandy loam, 2 to 15 percent slopes, extremely stony	Very limited	Woodbridge (80%)	Depth to saturated zone (1.00)	1.0	0.3%
				Slow water movement (1.00)		
				Slope (0.04)		
			Paxton (5%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
				Slope (0.63)		
			Ridgebury (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Montauk (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
				Slope (0.63)		
			Leicester (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Sutton (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Whitman (1%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Georgia (1%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	Very limited	Sutton (80%)	Depth to saturated zone (1.00)	2.4	0.7%
				Seepage, bottom layer (1.00)		
			Charlton (5%)	Seepage, bottom layer (1.00)		
			Canton (4%)	Seepage, bottom layer (1.00)		
			Paxton (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Leicester (3%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Woodbridge (2%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Rainbow (2%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Narragansett (1%)	Seepage, bottom layer (1.00)		
				Slow water movement (0.50)		
57B	Gloucester gravelly sandy loam, 3 to 8 percent slopes	Very limited	Gloucester (80%)	Seepage, bottom layer (1.00)	0.4	0.1%
				Filtering capacity (1.00)		
			Hinckley (5%)	Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
				Slope (0.04)		
			Canton (5%)	Seepage, bottom layer (1.00)		
			Paxton (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Charlton (3%)	Seepage, bottom layer (1.00)		
			Sutton (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Leicester (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
58B	Gloucester gravelly sandy loam, 3 to 8 percent slopes, very stony	Very limited	Gloucester (80%)	Seepage, bottom layer (1.00)	6.9	2.2%
				Filtering capacity (1.00)		
			Canton (5%)	Seepage, bottom layer (1.00)		
			Hinckley (5%)	Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
				Slope (0.04)		
			Charlton (3%)	Seepage, bottom layer (1.00)		
			Paxton (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Sutton (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Leicester (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
58C	Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony	Very limited	Gloucester (80%)	Seepage, bottom layer (1.00)	26.6	8.3%
				Filtering capacity (1.00)		
				Slope (0.63)		
			Canton (5%)	Seepage, bottom layer (1.00)		
				Slope (0.63)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Hinckley (5%)	Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
				Slope (0.04)		
			Charlton (3%)	Seepage, bottom layer (1.00)		
				Slope (0.63)		
			Paxton (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
				Slope (0.63)		
			Sutton (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Leicester (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	Very limited	Gloucester (80%)	Seepage, bottom layer (1.00)	0.2	0.1%
				Filtering capacity (1.00)		
				Slope (0.04)		
			Hinckley (5%)	Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
				Slope (0.04)		
			Canton (5%)	Seepage, bottom layer (1.00)		
			Paxton (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
				Slope (0.04)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Charlton (3%)	Seepage, bottom layer (1.00)		
			Sutton (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Leicester (2%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
60B	Canton and Charlton soils, 3 to 8 percent slopes	Very limited	Canton (45%)	Seepage, bottom layer (1.00)	13.6	4.3%
			Charlton (35%)	Seepage, bottom layer (1.00)		
			Leicester (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Chatfield (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Sutton (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Hollis (3%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
Slope (0.04)						
60C	Canton and Charlton soils, 8 to 15 percent slopes	Very limited	Canton (45%)	Seepage, bottom layer (1.00)	3.7	1.2%
				Slope (0.63)		
			Charlton (35%)	Seepage, bottom layer (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slope (0.63)		
			Chatfield (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Sutton (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Leicester (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Hollis (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	Very limited	Canton (45%)	Seepage, bottom layer (1.00)	18.1	5.7%
			Charlton (35%)	Seepage, bottom layer (1.00)		
			Hollis (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Chatfield (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Sutton (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Leicester (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow water movement (0.32)		
61C	Canton and Charlton soils, 8 to 15 percent slopes, very stony	Very limited	Canton (45%)	Seepage, bottom layer (1.00)	13.1	4.1%
				Slope (0.63)		
			Charlton (35%)	Seepage, bottom layer (1.00)		
				Slope (0.63)		
			Sutton (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Leicester (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Chatfield (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Hollis (5%)	Depth to bedrock (1.00)		
Seepage, bottom layer (1.00)						
Slope (0.04)						
62D	Canton and Charlton soils, 15 to 35 percent slopes, extremely stony	Very limited	Canton (45%)	Slope (1.00)	15.3	4.8%
				Seepage, bottom layer (1.00)		
			Charlton (35%)	Slope (1.00)		
				Seepage, bottom layer (1.00)		
			Sutton (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Hollis (5%)	Depth to bedrock (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slope (1.00)		
				Seepage, bottom layer (1.00)		
			Chatfield (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Leicester (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	Very limited	Charlton (45%)	Seepage, bottom layer (1.00)	0.7	0.2%
				Slope (0.04)		
			Chatfield (30%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
			Sutton (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Leicester (5%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
				Slow water movement (0.32)		
			Hollis (5%)	Depth to bedrock (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (0.04)		
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	Very limited	Paxton (55%)	Depth to saturated zone (1.00)	8.2	2.6%
				Slow water movement (1.00)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Montauk (30%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Charlton (5%)	Seepage, bottom layer (1.00)		
			Ridgebury (5%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
			Woodbridge (5%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
305	Udorthents-Pits complex, gravelly	Very limited	Udorthents (65%)	Depth to saturated zone (1.00)	9.1	2.9%
				Slope (1.00)		
				Seepage, bottom layer (1.00)		
			Pits (25%)	Filtering capacity (1.00)		
				Seepage, bottom layer (1.00)		
				Slope (1.00)		
			Hinckley (2%)	Slope (1.00)		
				Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
			Gloucester (2%)	Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
			Merrimac (2%)	Seepage, bottom layer (1.00)		
				Slope (0.63)		
			Windsor (2%)	Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
				Slope (0.63)		

Custom Soil Resource Report

Septic Tank Absorption Fields— Summary by Map Unit — State of Connecticut (CT600)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Ninigret (1%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
			Sudbury (1%)	Depth to saturated zone (1.00)		
				Seepage, bottom layer (1.00)		
306	Udorthents-Urban land complex	Very limited	Udorthents (50%)	Slope (1.00)	35.3	11.1%
				Seepage, bottom layer (1.00)		
				Depth to saturated zone (0.50)		
			Udorthents, wet substratum (5%)	Seepage, bottom layer (1.00)		
Totals for Area of Interest					318.2	100.0%

Septic Tank Absorption Fields— Summary by Rating Value		
Rating	Acres in AOI	Percent of AOI
Very limited	318.2	100.0%
Totals for Area of Interest	318.2	100.0%

Rating Options—Septic Tank Absorption Fields

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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APPENDIX E

EDR Database Results

Report Name: Mansfield Four Corners

Project: Mansfield EIE

Contact: Corey



SUMMARY

1	..... Page 3
	632 MIDDLE TURNPIKE (FOUR CORNERS), MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
2	..... Page 5
	MARTY'S SERVICE CENTER (CITGO)
	575 MIDDLE TURNPIKE (ROUTE 44), MANSFIELD, CT
	RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
3	..... Page 6
	HUSKY MOBIL (DRAKE PETROLEUM CO)
	607 MIDDLE TURNPIKE (ROUTE 44) STORRS, MANSFIELD, CT
	SEH: List of Significant Environmental Hazards Report to DEEP
4	..... Page 7
	1660 STORRS ROAD, MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
5	..... Page 9
	1660 STORRS ROAQD, MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
6	..... Page 11
	1660 STORRS ROAD, MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
7	..... Page 13
	1645 STORRS ROAD, MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
8	..... Page 15
	1646 STORRS ROAD, MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
9	..... Page 17
	1725 STORRS ROAD, MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
10	..... Page 19
	STORRS AUTOMOTIVE
	1659 STORRS RD., MANSFIELD, CT 06268
	CPCS: Contaminated or Potentially Contaminated Sites
11	..... Page 20
	1660 STORRS RD, MANSFIELD, CT
	SPILLS: Oil & Chemical Spill Database
12	..... Page 22
	PUBLIC PETROLEUM CO
	1669 STORRS RD, MANSFIELD, CT 06250
	MANIFEST: Hazardous Waste Manifest Data
13	..... Page 24
	CUMBERLAND FARMS #805 (FORMER REPUBLIC OIL AND STORRS TEXACO
	1660 STORRS ROAD (ROUTE 195 AND ROUTE 44), MANSFIELD, CT 06250

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SUMMARY

LUST: Leaking Underground Storage Tank List

- 14** **MUELLER MEDICAL INTERNATIONAL** Page 28
1768 STORRS RD, MANSFIELD, CT 06268
NPDES: Wastewater Permit Listing
- 15** **PUBLIC AMERICA (FORMER STORRS AUTOMOTIVE)** Page 29
1659 STORRS ROAD, MANSFIELD, CT
RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
- 16** **WILLINGTON TIRE COMPANY, INC.** Page 30
1733 STORRS ROAD, MANSFIELD, CT
SDADB: Site Discovery and Assessment Database
SPILLS: Oil & Chemical Spill Database
PROPERTY: Property Transfer Filings

NAME

1

**632 MIDDLE TURNPIKE (FOUR CORNERS)
MANSFIELD, CT**

EDR ID: S104628063

FINDINGS

▶ **SPILLS: Oil & Chemical Spill Database** Page 3
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	2000
Case Number:	200002973
Who Took Spill:	931
Assigned To:	934
Report Date:	05/04/2000
Report Time:	15:30:00
Date Release:	05/03/2000
Time Responded:	Not Reported
Reported By:	BILL FABRI OF GES/& SCOTT WING/WATER
Phone:	860 6889023
Representing:	EXXON UNDER CONSENT ORDER WC5052 FROM 1989
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	Closed
Continuous Spill:	False
Released Substance:	GASOLINE
Qty:	0 (Gallons)
Emergency Measure:	THIS CONSULTANT HAS BEEN BAILING & SAMPLING SINCE ALLIANCE ENERGY PURCHASED IN LATE 1996/ BUT NO FREE PRODUCT
Water Body:	Not Reported
Discharger:	EXXON CONTACT=ELENORE LUCARINI
Telephone:	617 3812915
Responsible Party:	YES
RP Address 1:	52 BEACHAM ST.
RP City,St,Zip:	EVERETT, MA 02149-
Historic:	False
Waterbody:	False
Time Stamp:	2000-05-23 12:11:25
Sr Inspector:	Coss, Brian
At Inspctor:	Williamson, Matt
User Stamp:	Not Reported

DETAILS

, 632 MIDDLE TURNPIKE (FOUR CORNERS) MANSFIELD, CT (Continued)

Comments:	Not Reported
Action:	Contracted
Other Action:	Not Reported
Agency ID:	DEP
Other Agency:	Not Reported
DEP Bureau:	WATER MANAGEMENT ORDER
DEP Agency:	Not Reported
Cause ID:	Inground Tank Failure
Other Cause:	Not Reported
Media ID:	Ground Water
Other Media:	Not Reported
Class ID:	Commercial
Other Class:	Not Reported
Release Type:	petroleum
Other Release:	Not Reported
Waterbody:	Groundwater
Other Wtrbody:	Not Reported

NAME

2

MARTY'S SERVICE CENTER (CITGO)
575 MIDDLE TURNPIKE (ROUTE 44)
MANSFIELD, CT

EDR ID: S116032461

FINDINGS

- ▶ [RGA LUST: Recovered Government Archive Leaking Underground Storage Tank](#) Page 5
Recovered Government Archive Leaking Underground Storage Tank...*Full Description*>>



DETAILS

- ▼ [RGA LUST: Recovered Government Archive Leaking Underground Storage Tank](#)
RGA LUST:

2012 MARTY'S SERVICE CENTER (CITGO) 575 MIDDLE TURNPIKE (ROUTE 44)

NAME

3

HUSKY MOBIL (DRAKE PETROLEUM CO)
607 MIDDLE TURNPIKE (ROUTE 44) STORRS
MANSFIELD, CT

EDR ID: S113471600

FINDINGS

▶ **SEH: List of Significant Environmental Hazards Report to DEEP** Page 6
List of Significant Environmental Hazards Report to DEEP...[Full Description>>](#)



DETAILS

▼ SEH: List of Significant Environmental Hazards Report to DEEP

SEH:

Date Notified: 12/27/2007

Type Of Hazard: Pollution was detected in a drinking water well above standards. Pollution detected in groundwater above standards may threaten a drinking water well.

Response: DEP directed the property owner to sample the onsite supply well and identify and sample wells up to 500 feet away from the site for pollutants detected at the site.

Actions: Sampling of neighboring well performed. Carbon filter installed. DEP issued Order to Drake Petroleum for pollution abatement and monitoring and maintenance of Carbon filter.

NAME

4

1660 STORRS ROAD
MANSFIELD, CT

EDR ID: S116763489

FINDINGS

▶ [SPILLS: Oil & Chemical Spill Database](#) Page 7
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	2014
Case Number:	201403658
Who Took Spill:	209
Assigned To:	0
Report Date:	07/25/2014
Report Time:	08:46:32
Date Release:	07/25/2014
Time Responded:	Not Reported
Reported By:	john collins
Phone:	508 2704494
Representing:	cumberland farms
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	CLOSED
Continuous Spill:	False
Released Substance:	DIESEL FUEL
Qty:	1 (Gallons)
Emergency Measure:	Not Reported
Water Body:	Not Reported
Discharger:	saa
Telephone:	Not Reported
Responsible Party:	Not Reported
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	2014-07-30 16:33:09
Sr Inspector:	WELCH, THOMAS
At Inspctor:	**NO RESPONSE
User Stamp:	GuzmanCa
Comments:	Not Reported
Action:	Sanded
Other Action:	Not Reported
Agency ID:	DEP Dispatch
Other Agency:	Not Reported

DETAILS

, 1660 STORRS ROAD MANSFIELD, CT (Continued)

DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Cause ID:	Overfill
Other Cause:	Not Reported
Media ID:	Ground Surface
Other Media:	Not Reported
Class ID:	Commercial
Other Class:	Not Reported
Release Type:	petroleum
Other Release:	Not Reported

NAME

5

1660 STORRS ROAD
MANSFIELD, CT

EDR ID: S117540036

FINDINGS

▶ **SPILLS: Oil & Chemical Spill Database** Page 9
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	2014
Case Number:	201406582
Who Took Spill:	204
Assigned To:	0
Report Date:	12/23/2014
Report Time:	10:45:13
Date Release:	12/23/2014
Time Responded:	Not Reported
Reported By:	john collins
Phone:	508 2704494
Representing:	cimberland farms
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	CLOSED
Continuous Spill:	False
Released Substance:	GASOLINE
Qty:	1 (Gallons)
Emergency Measure:	Not Reported
Water Body:	Not Reported
Discharger:	Not Reported
Telephone:	Not Reported
Responsible Party:	Not Reported
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	2014-12-23 11:45:25
Sr Inspector:	therrien, adam
At Inspctor:	**NO RESPONSE
User Stamp:	Guzmanca
Comments:	Not Reported
Action:	Sanded
Other Action:	Not Reported
Agency ID:	DEP Dispatch
Other Agency:	Not Reported

DETAILS

, 1660 STORRS ROA QD MANSFIELD, CT (Continued)

DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Cause ID:	Overfill
Other Cause:	Not Reported
Cause ID:	Other
Other Cause:	customer overfill
Media ID:	Ground Surface
Other Media:	Not Reported
Class ID:	Commercial
Other Class:	Not Reported
Release Type:	petroleum
Other Release:	Not Reported

NAME

6

1660 STORRS ROAD
MANSFIELD, CT

EDR ID: S117540567

FINDINGS

▶ [SPILLS: Oil & Chemical Spill Database](#) Page 11
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	2015
Case Number:	201500410
Who Took Spill:	205
Assigned To:	0
Report Date:	01/26/2015
Report Time:	08:29:28
Date Release:	01/26/2015
Time Responded:	Not Reported
Reported By:	john collins
Phone:	508 2704494
Representing:	cumberland farms
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	CLOSED
Continuous Spill:	False
Released Substance:	GASOLINE
Qty:	0.25 (Gallons)
Emergency Measure:	speedi dry
Water Body:	n/a
Discharger:	saa
Telephone:	Not Reported
Responsible Party:	YES
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	2015-01-26 14:53:57
Sr Inspector:	Cox, Michael
At Inspctor:	**NO RESPONSE
User Stamp:	Guzmanca
Comments:	Not Reported
Action:	Removed
Other Action:	Not Reported
Action:	Contained
Other Action:	Not Reported

DETAILS

, 1660 STORRS ROAD MANSFIELD, CT (Continued)

Agency ID:	DEP Dispatch
Other Agency:	Not Reported
DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Cause ID:	Overfill
Other Cause:	Not Reported
Media ID:	Ground Surface
Other Media:	Not Reported
Class ID:	Transportation
Other Class:	Not Reported
Class ID:	Private
Other Class:	Not Reported
Release Type:	petroleum
Other Release:	Not Reported
Waterbody:	Other
Other Wtrbody:	none

NAME

7

1645 STORRS ROAD
MANSFIELD, CT

EDR ID: S110537085

FINDINGS

▶ [SPILLS: Oil & Chemical Spill Database](#) Page 13
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	2010
Case Number:	201006046
Who Took Spill:	205
Assigned To:	0
Report Date:	10/07/2010
Report Time:	13:05:09
Date Release:	10/07/2010
Time Responded:	Not Reported
Reported By:	Mark cote
Phone:	860 6463348
Representing:	tank works
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	CLOSED
Continuous Spill:	False
Released Substance:	#2 FUEL OIL
Qty:	0 (Gallons)
Emergency Measure:	550 ust
Water Body:	n/a
Discharger:	first merchants group dave taylor
Telephone:	860 4627209
Responsible Party:	YES
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	2010-10-08 16:30:11
Sr Inspector:	Cox, Michael
At Inspctor:	**NO RESPONSE
User Stamp:	CGuzman
Comments:	Not Reported
Action:	Removed Tank
Other Action:	Not Reported
Agency ID:	Local Fire Marshal
Other Agency:	Not Reported

DETAILS

, 1645 STORRS ROAD MANSFIELD, CT (Continued)

DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Agency ID:	DEP Dispatch
Other Agency:	Not Reported
DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Cause ID:	Inground Tank Failure
Other Cause:	Not Reported
Media ID:	Other
Other Media:	none
Class ID:	Private
Other Class:	Not Reported
Release Type:	petroleum
Other Release:	Not Reported
Waterbody:	Other
Other Wtrbody:	none

NAME

8

1646 STORRS ROAD
MANSFIELD, CT

EDR ID: S112194474

FINDINGS

▶ **SPILLS: Oil & Chemical Spill Database** Page 15
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	2012
Case Number:	201205503
Who Took Spill:	209
Assigned To:	0
Report Date:	10/08/2012
Report Time:	11:45:48
Date Release:	10/08/2012
Time Responded:	Not Reported
Reported By:	dispatch
Phone:	860 8752543
Representing:	fd
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	CLOSED
Continuous Spill:	False
Released Substance:	ANTIFREEZE
Qty:	0 (Gallons)
Emergency Measure:	contents of 1 radiator
Water Body:	Not Reported
Discharger:	Not Reported
Telephone:	Not Reported
Responsible Party:	Not Reported
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	2012-10-08 11:46:59
Sr Inspector:	WELCH, THOMAS
At Inspctor:	**NO RESPONSE
User Stamp:	WelchTh
Comments:	Not Reported
Action:	Sanded
Other Action:	Not Reported
Agency ID:	Local Police
Other Agency:	Not Reported

DETAILS

, 1646 STORRS ROAD MANSFIELD, CT (Continued)

DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Agency ID:	DEP Dispatch
Other Agency:	Not Reported
DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Agency ID:	LOCAL FIRE DEPARTMENT
Other Agency:	Not Reported
DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Cause ID:	MV Accident
Other Cause:	Not Reported
Media ID:	Ground Surface
Other Media:	Not Reported
Class ID:	Transportation
Other Class:	Not Reported
Class ID:	Private
Other Class:	Not Reported
Release Type:	chemical
Other Release:	Not Reported
Waterbody:	Other
Other Wtrbody:	none

NAME

9

1725 STORRS ROAD
MANSFIELD, CT

EDR ID: S105615738

FINDINGS

▶ [SPILLS: Oil & Chemical Spill Database](#) Page 17
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	2002
Case Number:	200205529
Who Took Spill:	918
Assigned To:	934
Report Date:	08/12/2002
Report Time:	11:16:39
Date Release:	08/12/2002
Time Responded:	Not Reported
Reported By:	JOHN JACKMAN
Phone:	860 4293328
Representing:	TOWN OF MANSFIELD - FIRE MARSHAL
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	Closed
Continuous Spill:	False
Released Substance:	DIESEL FUEL
Qty:	10 (Gallons)
Emergency Measure:	DIESEL FUEL SPILL FROM SCHOOL BUS, NO DRAINS INVOLVED, SPEEDI-DRY APPLIED, BUS COMPANY TO PUMP TANK AND APPLY SPEEDI-DRY
Water Body:	NA
Discharger:	SAA
Telephone:	860 4506596
Responsible Party:	YES
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	2002-08-19 11:07:32
Sr Inspector:	LECLERC, KEN
At Inspctor:	Williamson, Matt
User Stamp:	Not Reported
Comments:	Not Reported
Action:	Sanded
Other Action:	Not Reported
Action:	Pumped Out

DETAILS

, 1725 STORRS ROAD MANSFIELD, CT (Continued)

Other Action:	Not Reported
Agency ID:	Local Fire Marshal
Other Agency:	Not Reported
DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Agency ID:	DEP
Other Agency:	Not Reported
DEP Bureau:	BUREAU OF WASTE MANAGEMENT
DEP Agency:	OIL AND CHEMICAL SPILL RESPONSE
Cause ID:	Hose Failure
Other Cause:	Not Reported
Media ID:	Ground Surface
Other Media:	Not Reported
Class ID:	Transportation
Other Class:	Not Reported
Class ID:	Private
Other Class:	Not Reported
Release Type:	petroleum
Other Release:	Not Reported

NAME

10

STORRS AUTOMOTIVE
1659 STORRS RD.
MANSFIELD, CT 06268

EDR ID: S105456140

FINDINGS

▶ **CPCS: Contaminated or Potentially Contaminated Sites** Page 19
Contaminated or Potentially Contaminated Sites...[Full Description>>](#)



DETAILS

▼ CPCS: Contaminated or Potentially Contaminated Sites

CPCS:

Site Type:	LUST
Lust Status:	Cleanup Initiated
PTP Form:	Not Reported
Program:	Not Reported
Comments:	Ust Cleanup Account Id: 59According To A Letter From Storrs Automotive Dated Feb 2, 1988 To Ct-dep Ustf Program Tanks A1, B2, B3 And F7, 6k, 5k, 5k Gasoline And 550 Wo Were Taken Out Of Service In 1988 And Were Scheduled To Be Removed By May 1988. T
Site Type Definition:	Leaking Underground Storage Tanks Rem. Started

NAME

11

1660 STORRS RD
MANSFIELD, CT

EDR ID: S116762312

FINDINGS

▶ [SPILLS: Oil & Chemical Spill Database](#) Page 20
Oil and Chemical Spill Data....[Full Description>>](#)



DETAILS

▼ [SPILLS: Oil & Chemical Spill Database](#)

SPILLS:

Year of Database:	2014
Case Number:	201402481
Who Took Spill:	206
Assigned To:	0
Report Date:	05/23/2014
Report Time:	23:41:36
Date Release:	05/23/2014
Time Responded:	Not Reported
Reported By:	JULIE
Phone:	800 2259702
Representing:	CUMBERLAND FARMS HELP DESK
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	CLOSED
Continuous Spill:	False
Released Substance:	GAS
Qty:	1 (Gallons)
Emergency Measure:	Not Reported
Water Body:	NA
Discharger:	Not Reported
Telephone:	Not Reported
Responsible Party:	Not Reported
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	2014-05-23 23:51:07
Sr Inspector:	Kinney, Clarence
At Inspctor:	**NO RESPONSE
User Stamp:	KinneyC
Comments:	Not Reported
Action:	Other
Other Action:	SPEEDY DRY
Agency ID:	DEP Dispatch
Other Agency:	Not Reported

DETAILS

, 1660 STORRS RD MANSFIELD, CT (Continued)

DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Cause ID:	Overfill
Other Cause:	Not Reported
Media ID:	Ground Surface
Other Media:	Not Reported
Release Type:	petroleum
Other Release:	Not Reported
Waterbody:	Other
Other Wtrbody:	NA

NAME

12

PUBLIC PETROLEUM CO
1669 STORRS RD
MANSFIELD, CT 06250

EDR ID: S109752674

FINDINGS

▶ **MANIFEST: Hazardous Waste Manifest Data** Page 22
Facility and manifest data. Manifest is a document that lists and tracks hazardous ...[Full Description>>](#)

DETAILS

▼ MANIFEST: Hazardous Waste Manifest Data

CT MANIFEST:

Detail:

Year:	2002
Manifest Id:	NYG3654081
EPA ID:	CTP000026493
TSDf EPA ID:	NYD093248698
TSDf Name:	EXXONMOBIL ALBANY TERMINAL
TSDf Address:	50 CHURCH ST
TSDf City,St,Zip:	ALBANY, NY 12202
TSDf Country:	USA
TSDf Telephone:	Not Reported
Transport Date:	04/12/2002
Transporter EPA ID:	MAD082303777
Transporter Name:	CYN OIL CORP
Transporter Address:	Not Reported
Transporter City,St,Zip:	CT
Transporter Country:	USA
Transporter Phone:	Not Reported
Trans 2 Date:	Not Reported
Trans 2 EPA ID:	Not Reported
Trans 2 Name:	Not Reported
Trans 2 Address:	Not Reported
Trans 2 City,St,Zip:	CT
Trans 2 Country:	USA
Trans 2 Phone:	Not Reported
Generator Phone:	Not Reported
Generator Mailing Addr:	1669 STORRS RD
Generator Mailing City/State/Zip:	06250
Generator Mailing Country:	USA
Special Handling:	Not Reported
Discrepancies:	Not Reported
Date Shipped:	04/12/2002
Date Received:	Not Reported
Last modified date:	04/27/2004
Last modified by:	IG

DETAILS

PUBLIC PETROLEUM CO, 1669 STORRS RD MANSFIELD, CT 06250 (Continued)

Comments:	Not Reported
Waste:	
Year:	2002
Manifest Id:	NYG3654081
Waste Occurrence:	1
UNNA:	1203
Hazard Class:	3
US Dot Description:	gasahol, gasoline
No of Containers:	001
Container Type:	TT
Quantity:	155
Weight/Volume:	G
Additional Description:	Not Reported
Handling Code:	Not Reported
Date Record Was Last Modified:	2004-04-27 00:00:00
DEO Who Last Modified Record:	IG
EPA Waste Code:	D001
Recycled Waste?:	False
Date Record Was Last Modified:	2004-04-27 00:00:00

NAME

13

CUMBERLAND FARMS #805 (FORMER REPUBLIC OIL AND STORRS TEXACO)
1660 STORRS ROAD (ROUTE 195 AND ROUTE 44)
MANSFIELD, CT 06250

EDR ID: S109822279

FINDINGS

▶ **LUST: Leaking Underground Storage Tank List** Page 24
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventor...[Full Description>>](#)



DETAILS

▼ LUST: Leaking Underground Storage Tank List

LUST:

LUST Id:	388
UST Facility Id:	1208
LUST Case Id:	28414
Lust Status:	Cleanup Initiated
Processing Status:	Not Reported
EPA Reportable:	True
Motor Fuel:	True
Diesel:	True
Gasoline:	True
Other:	False
Other Release:	Not Reported
No Release:	False
Leak:	False
Tank:	True
Piping:	False
Overfill:	False
Removal:	True
Incident Date:	09/26/1989
Entry Date:	Not Reported
Site Case Id:	Not Reported
UST Site Id:	106
Cost Recovery Spill Case #:	Not Reported
Old SITS Number:	Not Reported
Case Log Id:	Not Reported
Monthly Report Id:	0
UST Owner Id:	5499
LUST Owner Id:	Not Reported
UST Event Id:	387
Contact Info:	Not Reported
Contact EMail:	Not Reported
Site Contact City,St,Zip:	UNKNOWN
2nd Contact:	Abby Albano (Environmental Compliance Services, Inc.)
2nd Contact EMail:	Not Reported
2nd Contact Address:	33 Business Park Drive
2nd Contact City,St,Zip:	14, CT 06405
2nd Contact Address 2:	Not Reported

DETAILS

CUMBERLAND FARMS #805 (FORMER REPUBLIC OIL AND STORRS TEXACO, 1660 STORRS ROAD (ROUT (Continued)

2nd Contact City 2:	Branford
2nd Contact Phone Number:	2034889481
2nd Contact Fax Number:	2034889564
2nd Contact Type:	Not Reported
Facility City Num:	78
Site Contact:	Tyree Organization Ltd.
Site Contact Address:	Not Reported
Site Contact Add 2:	Not Reported
Site Contact City 2:	Not Reported
Site Contact Phone:	Not Reported
Site Contact Fax:	Not Reported
Site Contact Type:	Not Reported
Department Contact 1:	William Warzechia
Department Contact 2:	Not Reported
Referral Source:	Not Reported
Offsite Source:	False
Date Referred:	Not Reported
Emergency:	True
Private Heating Fuel:	False
Commercial Heating Fuel:	False
Commercial HF < 2100 Gal.:	False
Commercial HF > 2100 Gal.:	False
Commercial HF - Size Unk:	False
No LUST Site:	False
Cost Recvry Prgm Candidate:	False
OCSR Complete:	False
Follow Up Flag:	False
Alternate Water Supply:	False
Relocation:	False
Responsible Party:	True
Responsible EMail:	MHilfingier@cumberlandgulf.com
Resp Party Name:	Cumberland Farms, Inc.
Resp Party Address:	100 Crossing Boulevard
Resp Party City,St,Zip:	Framingham, MA 017025401
Resp Party Town Number:	Not Reported
Resp Party Phone:	5082704448
Resp Party Fax:	7814591093
Resp Party Name 2:	Martin Hilfingier (Project Manager for Connecticut)
Resp Party Address 2:	Not Reported
Resp Party Phone 2:	8002259702
Investigator Id:	30
Follow Update:	Not Reported
Area Lextent:	Not Reported
Annual Precipitation:	Not Reported
Affected Population:	Not Reported
Population Setting:	Not Reported
Ground Water Direction:	Not Reported
Ground Water Gradient:	Not Reported

DETAILS

CUMBERLAND FARMS #805 (FORMER REPUBLIC OIL AND STORRS TEXACO, 1660 STORRS ROAD (ROUT (Continued)

Hydro Basin:	Not Reported
Drastic:	Not Reported
Geo Setting:	Not Reported
Ground Water Classification:	GA
Receptor:	Not Reported
Ground Water Flow Direction:	Not Reported
Ground Water Depth:	Not Reported
Areas Of Concern:	Not Reported
Free Product Inches:	0
Fund Date:	Not Reported
Fund Planned:	No
Fund Obligated:	No
Fund Outlaid:	No
Fund Judgment:	No
Fund Recovered:	No
Cellar Borings:	False
Install Micro Wells:	True
Ground Water Sample:	True
Soil Sample:	True
Soil Gas:	False
Site Inspect:	False
Soil Excavate:	True
Geo Probe:	False
Survey:	False
Potable Well Sample:	True
Sample MWS:	True
Ground Water Gauging:	True
Soil Venting:	False
Active:	True
NOV Action:	None
NOV Issued:	Not Reported
NOV Due:	Not Reported
NOV Received:	Not Reported
NOV Closed:	Not Reported
NOV Disc Date:	1990-09-26 00:00:00
NOV Issued Date:	1991-03-26 00:00:00
NOV Compliance Sched:	Not Reported
NOV Admin Order:	Not Reported
NOV Referred To Ag:	Not Reported
Stop All NOV Actions:	False
Release Invest Rpt:	False
DEP App Letter 1:	False
Correct Action Plan:	False
DEP App Letter 2:	False
Rem Sys Install:	False
Rem Sys Install Date:	Not Reported
Closure Date:	Not Reported
Rem Sys Monitoring Rpt:	False
Qrtly Gwater Mon Rpts:	False

DETAILS

CUMBERLAND FARMS #805 (FORMER REPUBLIC OIL AND STORRS TEXACO, 1660 STORRS ROAD (ROUT (Continued)

Closure Req Rpt:	False
DEP Closure Letter:	False
Referred To:	Not Reported
No Wells:	6
Lph Wells:	0
User Stamp:	allison forrest/ForrestA
Date Stamp:	05/09/2013
Correspondence:	Action: General Correspondence Issued:10/14/1999 Received:10/14/1999The questionnaire was returned with minor changes.
Environmental Impact:	Not Reported
FollowUp:	Not Reported
GW Comments:	Site is serviced by a potable water well. Unnamed stream is ~300 ft to the east of site.
Location Desc:	Surficial Geology: brown medium to fine sand with traces of gravelBedrock Geology: Bigelow Brook Formation, a gray, rusty-weathering, medium grained schist, with gray medium-grained granofels
NOV Comments:	Consent Order WC5077
Release Desc:	Not Reported
Running Comments:	Spills Files, UST Enforcement Files, Cleanup Fund Files, and LUST FilesOpen LUST Cases:2012-04730
Work Performed:	Not Reported

NAME

14

MUELLER MEDICAL INTERNATIONAL
1768 STORRS RD
MANSFIELD, CT 06268

EDR ID: S116690004

FINDINGS

▶ **NPDES: Wastewater Permit Listing** [Page 28](#)

A listing of permits issued by the DEP....[Full Description>>](#)



DETAILS

▼ NPDES: Wastewater Permit Listing

NPDES:

Town Id:	Not Reported
Company Name:	Not Reported
Permit Number:	CTMIU0109
Permit Issued Date:	06/26/2014
Permit Expiration Date:	10/30/2018
Application Received Date:	Not Reported
Affiliation Type:	Registrant
Permit EI Type:	Miscellaneous Sewer Discharges-GP
App Id:	201404819
Site Address Description:	Not Reported
Site Address Line 2:	Not Reported
Permit Description:	Mixing of nutritional supplements - Mansfield, Ct. Approval to transport issued May 16, 2014.
Status:	Active
Affiliate Address Line 1:	48 Moosup Valley Rd
Affiliate Address Line 2:	McCULLOUGH MUELLER ENT. LLC
Affiliate City/State/Zip:	Foster, RI 02825-1236
Contact Name:	RICKY MCCULLOUGH
Contact Title:	Not Reported
Contact EMail:	glencopelph@aol.com


NAME

15

PUBLIC AMERICA (FORMER STORRS AUTOMOTIVE)
1659 STORRS ROAD
MANSFIELD, CT

EDR ID: S116035277

FINDINGS

- ▶ **RGA LUST: Recovered Government Archive Leaking Underground Storage Tank** Page 29
Recovered Government Archive Leaking Underground Storage Tank...*Full Description*>> 

DETAILS

- ▼ **RGA LUST: Recovered Government Archive Leaking Underground Storage Tank**

RGA LUST:

2012	PUBLIC AMERICA (FORMER STORRS AUTOMOTIVE)	1659 STORRS ROAD
2011	PUBLIC AMERICA (FORMER STORRS AUTOMOTIVE)	1659 STORRS ROAD




NAME

16

WILLINGTON TIRE COMPANY, INC.
1733 STORRS ROAD
MANSFIELD, CT

EDR ID: S104563184

FINDINGS

- ▶ **SDADB: Site Discovery and Assessment Database** Page 30
All sites reported to Permitting, Enforcement, and Remediation Division where it is ...[Full Description>>](#) 
- ▶ **SPILLS: Oil & Chemical Spill Database** Page 32
Oil and Chemical Spill Data....[Full Description>>](#) 
- ▶ **PROPERTY: Property Transfer Filings** Page 33
A listing of sites that meet the definition of a hazardous waste establishment. The...[Full Description>>](#) 

DETAILS

▼ SDADB: Site Discovery and Assessment Database

Site Discovery and Assessment:

Facility ID:	4444
Rem Master ID:	3250
PTP Id:	2737
WPC Number:	Not Reported
Postal District:	Not Reported
Latitude:	Not Reported
Longitude:	Not Reported
Lat/Long Determined By:	Not Reported
Ground Water Quality Classification:	Not Reported
Surface Water Quality Classification:	Not Reported
Waste Type:	Not Reported
Disposal:	Not Reported
Sample Data Available:	False
Updated By:	Not Reported
Update Program:	Not Reported
Updated:	Not Reported
Date Created:	Not Reported
Duplicate:	False
EPA CERCLIS Id:	Not Reported
Number EPA RCRIS Id:	Not Reported
Site on EPA's CERCLIS:	Not Reported
Site Archived from CERCLIS:	Not Reported
Archive Date:	Not Reported
EPA's Removal at Site:	Not Reported
Deferred to another EPA Program:	Not Reported
EPA Env Priority Initiative Site:	Not Reported
Federal Facility:	Not Reported

DETAILS

WILLINGTON TIRE COMPANY, INC., 1733 STORRS ROAD MANSFIELD, CT (Continued)

Site on EPA's National Priority List:	Not Reported
Part of an NPL site:	Not Reported
RCRA Generator Status:	Not Reported
RCRA Permit Status:	Not Reported
Referral Id:	4602
Source of referral:	PTP
Date Received:	4/2/1998
Staff Assigned:	Not Reported
Remediation Program:	PTP
Date dt_assigned:	Not Reported
Remediation Complete Approved DEP/Verified by LEP:	4/2/1998
Outcome:	PTP
Remedial Id:	Not Reported
PTP Id:	Not Reported
Remediation Program:	Not Reported
Remediation Program Entered:	Not Reported
Staff Assigned:	Not Reported
Remediation Program:	Not Reported
Date dt_assign:	Not Reported
Project Phase:	Not Reported
Order issued:	Not Reported
Order Number:	Not Reported
Date order issued:	Not Reported
Remedial Investigation Start:	Not Reported
Remedial Investigation Completed:	Not Reported
Remedial Design Start:	Not Reported
Remedial Design complet:	Not Reported
Remedial Action Start:	Not Reported
Remedial Action Completed:	Not Reported
Date Oper/ maintenance Started:	Not Reported
GW monitoring:	Not Reported
Remediation complete Approved DEP/Verified by LEP:	Not Reported
Order Id:	Not Reported
Order Number:	Not Reported
Date order issued:	Not Reported
Staff Assigned:	Not Reported
Type of Order:	Not Reported
Order Respondent:	Not Reported
Admin Appeal Date:	Not Reported
Date of Admin Appeal Ruling:	Not Reported
Date of Admin Appeal Ruling:	Not Reported
Date of Final Order:	Not Reported

DETAILS

WILLINGTON TIRE COMPANY, INC., 1733 STORRS ROAD MANSFIELD, CT (Continued)

Date of Court Appeal:	Not Reported
Date of Court Ruling:	Not Reported
Date of Court Ruling:	Not Reported
Date Order Modified:	Not Reported
Date Referred to AG:	Not Reported
Judgement:	Not Reported
Date of AGR judgement:	Not Reported
Penalty assessed:	Not Reported
Order Complete:	Not Reported
In compliance:	Not Reported
Comments:	Not Reported

▼ SPILLS: Oil & Chemical Spill Database

SPILLS:

Year of Database:	1998
Case Number:	9803957
Who Took Spill:	916
Assigned To:	0
Report Date:	06/22/1998
Report Time:	11:39:00
Date Release:	06/22/1998
Time Responded:	11:30:00
Reported By:	dispatcher 10
Phone:	860 8752543
Representing:	Fire Department
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	Closed
Continuous Spill:	False
Released Substance:	MOTOR VEHICLE FLUIDS
Qty:	1 (Gallons)
Emergency Measure:	motor vehicle fluids
Water Body:	Not Reported
Discharger:	mva
Telephone:	Not Reported
Responsible Party:	NO
RP Address 1:	Not Reported
RP City,St,Zip:	CT
Historic:	False
Waterbody:	False
Time Stamp:	1998-06-22 11:33:53
Sr Inspector:	Stavola, Rosanne
At Inspctor:	**NO RESPONSE
User Stamp:	Not Reported
Comments:	Not Reported
Action:	Sanded
Other Action:	Not Reported
Agency ID:	DEP
Other Agency:	Not Reported

DETAILS

WILLINGTON TIRE COMPANY, INC., 1733 STORRS ROAD MANSFIELD, CT (Continued)

DEP Bureau:	BUREAU OF WASTE MANAGEMENT
DEP Agency:	OIL AND CHEMICAL SPILL RESPONSE
Agency ID:	LOCAL FIRE DEPARTMENT
Other Agency:	Not Reported
DEP Bureau:	Not Reported
DEP Agency:	Not Reported
Cause ID:	MV Accident
Other Cause:	Not Reported
Media ID:	Ground Surface
Other Media:	Not Reported
Media ID:	Other
Other Media:	pavement
Release Type:	petroleum
Other Release:	Not Reported

▼ PROPERTY: Property Transfer Filings

CT Property:

Seller Name:	Holiday Mall Associates Limited Ptrnsp.
Buyer Name:	E & I Associates, LLC
Certifying Party:	Holiday Mall Associates Limited Ptrnsp.
Certifying Attention Person:	Not Reported
Title Of Certifying Person:	Not Reported
Certifying Person Address:	Not Reported
Certifying Person City, St, Zip:	Not Reported
Property Transfer Forms:	Form I (DEP-PERD-PTP-201) when no release of hazardous waste has occurred at the parcel being transferred.
Date Recieved:	04/02/1998
Ackn Date:	08/06/1998
Determination Date:	Not Reported
LEP Verified/DEP Approval Date:	Not Reported
Rem Id:	3813
Remediation Location Id:	2647
Date Entered:	Not Reported
Program:	Property Transfer Program
GAO Site:	False
Staff Full Name:	Not Reported
Super/Date:	Not Reported
Stage Of Project:	Not Reported
RP Level Of Activity:	Not Reported
RP Needed Level Of Activity:	Not Reported
Staff Level Of Activity:	Not Reported
Staff Needed Level Of Activity:	Not Reported
Public Intrest:	Not Reported
PRP Cooperation:	Not Reported
Enforcement Status:	Not Reported
Level Of Complexity:	Not Reported
Complex Eng Or Sci:	False

DETAILS

WILLINGTON TIRE COMPANY, INC., 1733 STORRS ROAD MANSFIELD, CT (Continued)

Complex Due To Public Involvement:	False
Politically Complex:	False
Complex Enforcement:	False
Coordination With Other Bureaus:	False
EPA Involvement:	False
Staff Preference:	Not Reported
Readiness For Transfer:	Not Reported
Project Transfer Time:	Not Reported
Transfer Comments:	Not Reported
Staff As Of July 2000:	Not Reported
Initial Staff:	Not Reported
Type Of Transfer:	Not Reported
Salutation:	Not Reported
Relationship To Transfer:	transferor
Audit Date:	Not Reported
Verif Type:	Not Reported
Audit Outcome:	Not Reported
GW:	Not Reported
Basin:	Not Reported
1st Payment:	200
Pay Tag1:	Not Reported
2nd Payment:	Not Reported
Pay Tag2:	Not Reported
RTN:	04/27/1998
Revised:	07/01/1998
ECAF Received:	Not Reported
Old Determination Date:	Not Reported
Redeterminationdate:	Not Reported
Previous Determination:	Not Reported
Monitoringoption:	Not Reported
Postremedialmonitoring:	Not Reported
Schedule Of I/R:	Not Reported
Schedule Overdue:	Not Reported
Aprvl Sched:	Not Reported
Yr 1 Report:	Not Reported
Yr 2 Report:	Not Reported
Report Overdue:	Not Reported
Ext Aprvl Sched:	Not Reported
License #:	Not Reported
Project Phase:	Not Reported
PT Comments:	Not Reported
EPA Id Number:	Not Reported
GW Class:	Not Reported
SW Class:	Not Reported
AO/CO:	Not Reported
Water Lead(Y Or N):	Not Reported
Priority:	Not Reported
Project Status(A, I Or D):	Not Reported
Last Updated:	Not Reported

DETAILS

WILLINGTON TIRE COMPANY, INC., 1733 STORRS ROAD MANSFIELD, CT (Continued)

SR Comments:	Not Reported
Priority Or Work-Load:	Not Reported
Status:	Not Reported
Notes:	Not Reported
Special Project Name:	Not Reported
Special Project Comments:	Not Reported
DOT Project:	Not Reported
Pt Counter:	Not Reported
Project Complete:	False
Project Inactive:	False
Int Deposit #:	Not Reported
Deposit #:	Not Reported
Spill Case #:	Not Reported
Diversion Id:	Not Reported
Public Notice:	Not Reported
RAP Received:	Not Reported
RAP Approved:	Not Reported
Compliance Category:	Not Reported
Delete Record:	False
ECAF Reviewed By:	Not Reported
Not Locatable:	False
Primary Address:	True
AKA Site Name:	False
Primary Site Name:	True
AKA Site Address:	False
Lead:	Not Reported

DATABASE DESCRIPTIONS

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

Source: Date of Government Version:
Telephone: Database Release Frequency: Varies

SEH: List of Significant Environmental Hazards Report to DEEP

Source: Date of Government Version: 09/30/2014
Telephone: Database Release Frequency: Varies

CPCS: Contaminated or Potentially Contaminated Sites

Source: Date of Government Version: 02/27/2015
Telephone: Database Release Frequency: Quarterly

SDADB: Site Discovery and Assessment Database

All sites reported to Permitting, Enforcement, and Remediation Division where it is suspected that hazardous waste may have been disposed of sites that are eligible for listing on the State Inventory of Hazardous Waste Disposal Sites.

Source: Department of Environmental Protection Date of Government Version: 04/23/2010
Telephone: 860-424-3721 Database Release Frequency: No Update Planned

LUST: Leaking Underground Storage Tank List

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Source: Department of Environmental Protection Date of Government Version: 01/30/2015
Telephone: 860-424-3376 Database Release Frequency: Semi-Annually

MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Source: Department of Environmental Protection Date of Government Version: 07/30/2013
Telephone: 860-424-3375 Database Release Frequency: No Update Planned

SPILLS: Oil & Chemical Spill Database

Oil and Chemical Spill Data.

Source: Department of Environmental Protection Date of Government Version: 02/02/2015
Telephone: 860-424-3024 Database Release Frequency: Semi-Annually

NPDES: Wastewater Permit Listing

A listing of permits issued by the DEP.

Source: Department of Environmental Protection Date of Government Version: 04/01/2015
Telephone: 860-424-3832 Database Release Frequency: Varies

PROPERTY: Property Transfer Filings

A listing of sites that meet the definition of a hazardous waste establishment. They can be generators, dry cleaners, furniture strippers, etc. These sites have been sold to another owner.

Source: Department of Environmental Protection Date of Government Version: 01/15/2015
Telephone: 860-424-3789 Database Release Frequency: Semi-Annually

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APPENDIX F

Proposed Town of Mansfield Regulations and Guidelines

DRAFT STORMWATER MANAGEMENT REGULATIONS

MANSFIELD DEPARTMENT OF PLANNING AND DEVELOPMENT ■ NOVEMBER 20, 2015

AMENDMENTS TO ARTICLE SIX OF THE MANSFIELD ZONING REGULATIONS

Add new Section B.4.t:

t. **Stormwater Management**

1. **Definitions.** For the purpose of this section, the following definitions shall be used:
 - a. *Low Impact Development (LID).* A stormwater management strategy designed to maintain or replicating the predevelopment hydrologic regime. Hydrologic functions of storage, infiltration and groundwater recharge, as well as the volume and frequency of discharges are maintained through the use of integrated and distributed micro-scale stormwater retention and detention areas; reduction of impervious surfaces, and the lengthening of run-off flow paths and flow time. Other strategies include the preservation/protection of environmentally sensitive site features such as riparian buffers, wetlands, steep slopes, valuable (mature) trees, floodplains, woodlands and highly permeable soils.
 - b. *Impervious Surface.* The area of a building site or lot that is covered by materials that prevent the infiltration of surface water into the ground beneath. Such materials may include, but are not limited to, roofs, paved driveways, concrete slabs, sealed-joint paving blocks or stones, and pools. Impervious surface shall be expressed in terms of square footage or acreage, and percentage of total site or lot area.
 - c. *Predevelopment site hydrology.* The water balance between runoff, infiltration, storage, groundwater recharge, and evapotranspiration prior to the development of a site.
2. **Purpose.** The purpose of these stormwater management regulations is to:
 - a. Promote the goals and objectives for the conservation of the town's water resources as identified in the Plan of Conservation and Development;
 - b. Preserve the predevelopment site hydrology to the extent practical in order to maintain stream base flow conditions; maintain groundwater recharge; and minimize flooding, erosion, and the effects from runoff on downstream properties;
 - c. Minimize the sources and amounts of pollution transported by stormwater runoff to wetlands, watercourses, groundwater, and other natural resources, and minimize impacts to downstream properties; and
 - d. Promote the use of Low Impact Development (LID) practices in the planning, design, and execution of land development activities.
3. **Applicability.** These regulations are applicable to any new development and modifications to existing land uses that meet the following criteria:
 - Any development resulting in the disturbance of one or more acres of land;

- Residential development of five or more dwellings or residential development involving the construction of a new road;
 - Any development where stormwater will discharge to a wetland or watercourse;
 - Nonresidential development having greater than 10,000 square feet of impervious surface; or
 - Other activities as described in the CTDEEP 2004 Connecticut Stormwater Manual (the Manual) as may be amended.
4. Stormwater Management Plan. A Stormwater Management Plan (SWM) shall be included in any application that requires the submission and approval of a Site Plan and shall be consistent with the purpose set forth in subsection 2 above, the Mansfield Standards and Specifications, and the principles set forth in the Manual.
- a. The SWM shall be consistent with sound engineering and site planning practices, and shall include best management practices and Low Impact Development practices where feasible. The plan shall include a summary report describing the nature of the improvement; a SWM improvement plan; supporting computations where appropriate; a description of construction sequence; and a program for operation, maintenance, and monitoring. The professional engineer shall sign and seal all documents which they prepared.
 - b. The design report shall include:
 - Description of existing site and relevant off-site conditions that may be affected by the selection of water quality measures;
 - Rainfall data for the design storms as identified by the NOAA Atlas 14;
 - An evaluation of existing on-site and off-site hydrology including estimates of preconstruction and post-construction development from the 1-, 2-, 10-, 25-, and 100-year, 24-hour storm events;
 - A discussion of the function for the stormwater management system during typical operation and during a possible failure of a component; and
 - A discussion of the proposed treatment and control measures and their estimated effect on improving the quality of stormwater runoff, specifically for the removal of 80 percent of total suspended solids.
 - c. The improvement plan shall be designed to:
 - Maintain the predevelopment site hydrology to the maximum extent feasible;
 - Provide zero net increase in peak runoff from the 2-, 10-, 25-, and 100-year storm events unless the applicant demonstrates that this would be a detriment to downstream properties;
 - Provide treatment of stormwater runoff in accordance with the Manual;
 - Reduce peak runoff from 2-year, 24-hour postdevelopment event to 50 percent of the predevelopment conditions for that storm event or to the equivalent of the 1-year, 24-hour storm event unless the Commission determines that such reduction is impractical;
 - Have conveyance systems meeting the applicable provisions of the CTDOT Drainage Manual; and
 - Incorporate vegetative measures where appropriate.
 - d. When the proposed development involves modification to an existing developed area, the applicant shall demonstrate that the stormwater quality treatment is being provided to the maximum extent practicable for all undisturbed impervious areas. New impervious areas shall meet the standards set forth in subsection (c), above.