

**ENGINEERING DESIGN PHASE
CONTRACT FOR PROFESSIONAL SERVICES
FOR
TREATMENT WORKS**

CITY OF BERLIN, NEW HAMPSHIRE

This AGREEMENT made and entered into at COOS County, New Hampshire, this _____ day of July 2017 , by and between City of BERLIN hereinafter called the OWNER, and WRIGHT-PIERCE hereinafter called the ENGINEER.

WITNESSETH:

WHEREAS, the OWNER intends to conduct a Phase 2, Contract 1 Inflow/Infiltration Reduction preliminary design hereinafter called the PROJECT, and

WHEREAS, professional sanitary engineering services will be required for the preparation of plans and specifications and contract documents, and

WHEREAS, such services are of a distinct professional nature and hence not subject to the bidding process,

NOW THEREFORE, in consideration of these premises and of the mutual covenants herein set forth, the OWNER hereby employs the ENGINEER to furnish the following engineering services in connection with the proposed PROJECT; and it is agreed by and between the OWNER and the ENGINEER as follows:

I. Services to be Performed by the ENGINEER

A. Upon execution of this AGREEMENT, the ENGINEER agrees to proceed with all engineering, surveying, drafting, calculations, borings, and other work as required and necessary to develop and produce preliminary design plans and technical memorandum final plans, specifications, and associated contract documents involved in the construction of ~~treatment works~~ for the Phase 2, Contract 1 Inflow/Infiltration Reduction Project as recommended in an Engineering Report entitled Wastewater Transport System Evaluation, Phase 2 Infiltration and Inflow Reduction Project, dated July 2017 ~~and/or modified by a Report dated _____~~. The ENGINEER further agrees that said services shall include, but shall not necessarily be limited to:

1. Plans, Specifications, and Contract Documents

a. The preparation of detailed plans, ~~specifications, and contract documents~~ in accordance with the rules and regulations of the New Hampshire Department of Environmental Services, Water Division, hereinafter called the DIVISION, ~~ready for the receipt of bids and the award of construction contracts for said construction;~~ the work shall also include the preparation of estimates of the cost of construction based on the preliminary design plans contract documents. ~~Prepare applications with supporting and associated documents for Federal, State and other grant or loan programs. Assists the OWNER in securing grants or loans by State, Federal and other agency.~~

b. The furnishing of all the necessary ~~subsurface investigations and field surveys~~ required for the preparation and completion of preliminary design plans approved plans, specifications, and contract documents.

c. The furnishing of ten (10) copies of the preliminary design plans and technical memorandum final plans, specifications, and contract documents to the OWNER; three (3) copies of which are to be submitted to the DIVISION. Additional copies to be available at cost to the OWNER.

~~2. Site Acquisitions~~

~~a. Assistance to the OWNER including preparation of documents for the acquisition of lands, easements, and rights of way essential to the construction of the PROJECT.~~

II. The OWNER'S Responsibilities

A. Assist the ENGINEER by placing at his disposal all available information pertinent to the PROJECT, including previous reports and other data relative to the reports.

B. Make provisions for the ENGINEER to enter upon public and private lands, municipal facilities and industrial establishments as required to perform work under this AGREEMENT.

C. The OWNER also agrees to comply with DIVISION and Federal requirements (where applicable) and further agrees to acquire with the assistance of the ENGINEER all the necessary easements, options or outright purchases of land for the locations of said treatment works as shown on the contract plans. The provisions of this section shall be satisfied prior to submission of documents referred to in III (A) below. It is also understood that no approvals of reports or plans and specifications or other associated documents will be made by the DIVISION without fulfillment of this requirement.

III. Time Of Completion

A. The ENGINEER agrees that he will submit to the DIVISION for approval after modification or revision as recommended by the DIVISION and agreed to by the ENGINEER, the completed preliminary design plans and technical memorandum final plans, specifications, contract, and associated documents in compliance with the current issue of the DIVISION's standards of design within 85 consecutive calendar days following the execution of this AGREEMENT, and deliver same to the OWNER within 14 calendar days following the date of final approval by the DIVISION.

B. It is agreed by the parties to this contract that failure by the ENGINEER to complete the work within the time stipulated under III, A, above may be considered sufficient basis for the debarment of the ENGINEER from the DIVISION'S Roster of Prequalified Engineers as provided for under New Hampshire Code of Administrative Rules Env-Wq 603.08, or the Assess-

ment of liquidated damages as provided for under RSA

485-A: 4, XII.

IV. Compensation to be Paid the ENGINEER

A. Method of Payments - Amounts of Fees

1. Payment to the ENGINEER, for services rendered, shall be according to the following schedule:

Monthly billing based on hours and rates by labor category with mark-up and incidental expenses in accordance with the attached fee schedule.

2. The OWNER agrees to pay and the ENGINEER agrees to accept for all services under this AGREEMENT, a fee not to exceed

Sixty-One Thousand, Two-Hundred and Fourteen Dollars
(\$61,214.00).

3. If separate documents are required for additional construction contracts on this PROJECT, an additional fee as approved by the DIVISION shall be paid to the ENGINEER.

4. Prior to formal approval of ~~contract~~ preliminary design documents by the DIVISION, the ENGINEER shall make such revisions in them as recommended by the DIVISION and agreed to by the ENGINEER without additional compensation. After formal approval, if it becomes necessary to revise the ~~contract~~ preliminary design documents for reasons beyond the control of the ENGINEER, payment for such revision or revisions shall be made to the ENGINEER subject to approval by the DIVISION.

B. Limits of All Payments

1. The ENGINEER hereby assures the OWNER and agrees that the following fee for his services (exclusive of surveys, borings, and certain special services which follow) in connection with the preparation of final plans, specifications, and contract documents and other work as generally described under I(A) is adequate to complete the assignment and shall not exceed

Fifty-Three Thousand, Seven Hundred and Fourteen Dollars

\$53,714.00).

2. It is also agreed that payment to the ENGINEER for services in relation to engineering surveys, ~~including layout and logging of borings, probings or seismic surveys,~~ together with plats and project related special services shall be at actual cost. Actual cost shall include compensation to the ENGINEER for his work performed on these services. The ENGINEER further agrees that the work proposed under this item is enough to satisfactorily complete the contract documents and that the moneys to be paid under this item are adequate for the work proposed and shall not exceed

Seven-Thousand, Five Hundred Dollars
(\$7,500.00).

3. ~~It is again agreed that payment to the ENGINEER for services in relation to subsurface exploration, including borings, probings or seismic surveys, shall be at actual cost as defined in IV (B) 2. The ENGINEER further agrees that the work proposed under this item is enough to satisfactorily complete the contract documents and that the moneys to be paid under this item are adequate for the work proposed and shall not exceed~~

_____ Dollars
(\$_____).

4. ~~It is also agreed that payment to the ENGINEER for services in relation to cadastral surveys and other work associated with the acquisition of lands, easements, and rights of way essential to the construction of the PROJECT shall be at actual cost as defined in IV (B) 2. The ENGINEER further agrees that the work proposed under this item is enough to provide adequate sites, easements, and rights of way to permit the unencumbered construction, operation, and maintenance of the completed project without interference in any way. The ENGINEER also assures the OWNER that the moneys to be paid under this item are adequate for the work proposed and shall not exceed~~

_____ Dollars

(\$ _____).

V. Additional Covenants

A. The ENGINEER agrees to provide in active charge of this PROJECT for the life of the contract a Project Engineer who is a permanent employee of the ENGINEER and who is a “qualified sanitary engineer” as defined under the DIVISION'S “Rules and Regulations for the Prequalification of Consulting Engineers.” The Project Engineer shall be*

Chris A. Dwinal, PE

(name and address)

99 Main Street, Topsham, Maine 04086

* *Resume clearly describing the candidate's qualifications for the assignment is appended for convenience of reference.*

Any proposed change in identity of the Project Engineer on the PROJECT shall first be approved by the DIVISION before transfer of responsibility is made. Failure of the ENGINEER to abide by the above covenant may be considered basis for debarment of the ENGINEER from the DIVISION'S Roster of Prequalified Consulting Engineers as provided for under New Hampshire Code of Administrative Rules Env-Wq 603.08.

B. The ENGINEER agrees to be solely responsible for all bills or claims for payment for services rendered by others and for all services and materials employed in his work, and to indemnify and save harmless the OWNER, and all of the OWNER'S officers, agents and employees against all suits, claims or liability of every name and nature arising out of or in consequence of the negligent acts or failures to act of the ENGINEER or others employed by him in the performance of the work covered by this AGREEMENT.

C. The ENGINEER further agrees to procure and maintain at his expense such workmen's compensation insurance as is required by the statutes and public liability insurance in amounts adequate to provide reasonable protection from claims for bodily injury, death or property damage which may result from his performance and the performance of his employees under this AGREEMENT.

D. All documents, including original drawings, design calculations, work sheets, field notes, estimates, and other data shall remain the property of the OWNER, and shall be transmitted to the OWNER in clean and orderly condition on demand; however, these may be left in the possession of the ENGINEER at the OWNER'S discretion.

E. The ENGINEER shall not sublet, assign or transfer any part of the ENGINEER'S services or obligations (except surveys and borings and other special services) under this AGREEMENT without the prior approval and written consent of the OWNER.

F. It is further agreed that the ENGINEER will assist the OWNER or his authorized agent in providing the DIVISION with clear documentation certifying that the necessary easements, options or outright purchases of land have been secured to provide for location of treatment works and other associated structures and equipment as shown on the contract plans or described in the specifications. Similar documentation will be submitted on approvals from the State Department of Transportation and/or other state agencies regarding location of treatment works within rights-of-way and other lands under their jurisdiction.

VI. Termination

A. The OWNER shall have the right at any time for any reason whatsoever to interrupt or terminate any part of or all of the work required of the ENGINEER under this AGREEMENT, with a seven (7) day written notice of such interruption or termination transmitted to the ENGINEER by the OWNER. In the event of termination of any part of or all of this AGREEMENT, without fault on the part of the ENGINEER, the ENGINEER shall be entitled to compensation for all work performed to the satisfaction of the DIVISION and the OWNER, and pursuant to this AGREEMENT. In order that the ENGINEER shall receive payment under termination notice of any part of the work, all plans, drawings, tracings, field notes, estimates, specifications, proposals, sketches, diagrams, and calculations, together with all other materials and data collected or prepared in connection with the PROJECT shall be transmitted to the OWNER in a form acceptable to the OWNER and DIVISION.

IN WITNESS WHEREOF, the parties hereto have affixed their hand and seals at Coos County, New Hampshire, the day, month, and year first above written.

ENGINEER:

WRIGHT-PIERCE

By: Paul F. Birkel, PE, Senior Vice President
(Authorized Representative*)

Date: _____

OWNER:

CITY OF BERLIN, NEW HAMPSHIRE

By: James A. Wheeler, PE, City Manager
(Authorized Representative*)

Date: _____

APPROVED: **

DEPARTMENT OF ENVIRONMENTAL SERVICES
Water Division

By: _____
(Authorized Representative)

Date: _____

* Signatures should be supported by appropriate document.
** It is agreed that as an act in furtherance of its statutory authority to approve engineering agreements for treatment works, the DIVISION's approval does not impose any contractual obligation or liability on the State of New Hampshire, the Department of Environmental Services or the Division.

PART I - GENERAL

1. GRANTEE / LOANEE - City of Berlin, New Hampshire		2. GRANT/LOAN NO. D2017-0409	
3. NAME OF CONTRACTOR OR SUBCONTRACTOR - Wright-Pierce		4. DATE OF PROPOSAL 5-Jul-17	
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include ZIP)		6. TYPE OF SERVICE TO BE FURNISHED Professional Engineering Services	

PART II - COST SUMMARY

7. DIRECT LABOR (Specify labor categories)	HOURS	HOURLY RATE	ESTIMATED COST	TOTAL
Principal in Charge	6	\$ 58.00	\$348.00	
Project Manager	48	\$ 50.00	\$2,400.00	
Lead Project Engineer	60	\$ 32.00	\$1,920.00	
Project Engineer	188	\$ 29.00	\$5,452.00	
CADD Technician	124	\$ 32.50	\$4,030.00	
Clerical/Administrative	60	\$ 18.00	\$1,080.00	
DIRECT LABOR TOTAL:				\$15,230.00
8. INDIRECT COSTS (Specify indirect cost pools)	RATE	x BASE =	ESTIMATED COST	
	1.68	15,230.00	\$25,586.40	
INDIRECT COSTS TOTAL:				\$25,586.40
9. OTHER DIRECT COSTS				
a. TRAVEL			ESTIMATED COST	
(1) TRANSPORTATION			\$1,275.00	
(2) PER DIEM			\$2,325.00	
TRAVEL COSTS TOTAL:			\$3,600.00	
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify categories)			ESTIMATED COST	
Phone, fax, printing, copies, postage, CADD			\$1,550.00	
EQUIPMENT SUBTOTAL :			\$1,550.00	
c. SUBCONTRACTS			ESTIMATED COST	
Survey (York Land Services, Berlin, NH)			\$7,500.00	
SUBCONTRACTS SUBTOTAL :			\$7,500.00	
d. OTHER (Specify categories)			ESTIMATED COST	
OTHER SUBTOTAL :			\$0.00	
e. OTHER DIRECT COSTS TOTAL :				\$12,650.00
10. TOTAL ESTIMATED COST				\$53,466.40
11. PROFIT				\$7,747.60
12. TOTAL PRICE				\$61,214.00

PART III - PRICE SUMMARY

13.	COMPETITOR'S CATALOG LISTINGS, IN-HOUSE ESTIMATES, PRIOR QUOTES (Indicate basis for price comparison)	MARKET PRICE (S)	PROPOSED PRICE

PART IV - DIRECT LABOR BY CATEGORY

14. INSERT THE APPROPRIATE WORK CATEGORY IN THE TABLE BELOW. WORK CATEGORIES WOULD INCLUDE BUT NOT BE LIMITED TO THOSE CATEGORIES SHOWN IN THE CONTRACT DOCUMENTS SUCH AS DESIGN, SURVEY, SUBSURFACE, CADASTRAL, O&M MANUAL, ADMINISTRATION, INSPECTION, RECORD DWGS., START-UP, SPECIAL SERVICES, ETC.

Work category →							Estimates Hours	Average Rate	Estimated Cost
Principal in Charge							6	\$ 58.00	\$ 348.00
Project Manager							48	\$ 50.00	\$ 2,400.00
Lead Project Engineer							60	\$ 32.00	\$ 1,920.00
Project Engineer							188	\$ 29.00	\$ 5,452.00
CADD Technician							124	\$ 32.50	\$ 4,030.00
Clerical/Administrative							60	\$ 18.00	\$ 1,080.00
							0		\$ -
							0		\$ -
							0		\$ -
							0		\$ -
							0		\$ -
							0		\$ -
							0		\$ -
Total - Direct Labor Cost									\$ 15,230.00

WRIGHT-PIERCE

CERTIFICATE OF VOTE

I, Walter J. Flanagan III, hereby certify that I am the duly elected Clerk of Wright-Pierce.

I certify that the following is a true copy of a vote taken at a meeting of the board of directors of the corporation, duly called and held on April 5, 2017, at which a quorum of the board was present and voting.

VOTED:

That any one or all of the following officers of Wright-Pierce, on behalf of the corporation, are authorized to execute all Wright-Pierce contracts, both service agreements and general contractual obligations:

John W. Braccio, President
William E. Brown, Corporate Advisor
Paul F. Birkel, Vice President
Richard N. Davee, Vice President
Jonathan C. Edgerton, Vice President
Walter J. Flanagan III, Vice President
Michael D. Giggey, Vice President
Jeffrey P. Musich, Vice President
John R. Nelson, Vice President
Christopher N. Pierce, Vice President

I hereby certify that said vote has not been amended or repealed and remains in full force and effect.

Attest:



Walter J. Flanagan III, Clerk

Seal

Date: _____

**SCOPE OF SERVICES FOR PRELIMINARY DESIGN AND SURVEY FOR
PHASE 2, CONTRACT 1 INFILTRATION/INFLOW REDUCTION PROJECT FOR
THE CITY OF BERLIN, NH**

In 2007, Wright-Pierce completed an infiltration and inflow (I/I) reduction study focused in five distinct sanitary sewer drainage areas in the City of Berlin, New Hampshire (City). The study recommended improvements to the collection system in 4 of the 5 drainage areas studied as well as additional, future investigations. The City has since completed three construction projects aimed at reducing extraneous sources of I/I into the sanitary sewer system, including the following:

- Phase I, Contract 1: Pipe lining in Submeter Area (SMA) 3B/3D, at a total project cost of approximately \$477,900 (W-P Project No. 10973C)
- Phase I, Contract 2: Manhole rehabilitation, removal of private connections, sewer replacement and stormwater separation in SMA 1G/1I, 3B and 3D, at a total project cost of \$766,900 (W-P Project No. 10973G)
- Phase I, Contract 3: Removal of private connections, sewer replacement and stormwater separation in SMA 1I/1J, 3D and 2A, at a total project cost of \$777,400 (W-P Project No. 10973N)

In December 2013, Wright-Pierce issued a memorandum entitled Recommendations on Supplemental Field Investigations (included as Appendix C in Volume II of the 2014 Draft Long Term Control Plan). A task list of 16 priority field investigations in areas of elevated I/I were identified in that memorandum. In 2016/2017, Wright-Pierce completed an additional study focused on seven of the sixteen tasks of the 2013 memorandum (Tasks 1 through 6 and Task 10). Table 1 is a summary of the seven task areas included in the 2016/2017 study. The purpose of the 2016/2017 study was to identify project(s) for detailed design and construction that fit within the City's available budget and to identify potential future, phased projects and costs. The study included TV inspection of select sewers, manhole inspection, and house to house inspections. Based on the results of the 2016/2017 study, Wright-Pierce issued a report entitled, *Wastewater Transport System Evaluation, Phase 2 Infiltration and Inflow Reduction Project* (July 2017). Table 2 is a summary of recommended projects by sub-area as a result of the 2016/2017 study.

In June 2016, the City applied for a New Hampshire Department of Environmental Services (NHDES) 2016 Clean Water State Revolving Fund (CWSRF) loan for an I/I Reduction, Phase 2, Contract 1 project in the amount of \$848,250. The City was notified that the project was included on the 2016 CWSRF NHDES Priority List, which included \$103,400 in principal forgiveness. The City also has \$362,400 set aside from a payment made by the Burgess Biomass facility specifically for I/I removal projects. Therefore, the City has elected to pursue an approximately \$1.2 M Phase 2, Contract 1 I/I removal project, using the results of the 2016/2017 study to focus the effort. However, the project costs in Table 2 exceed the City's currently available funding. Therefore, a preliminary design will be conducted of the Sub-Area 1 recommended projects under this Scope of Services in order to refine the project scope and costs. In addition, because Wright-Pierce was unable to obtain access to all (or a majority) of the homes within Sub-Area 1 to identify illicit private connections, this phase will include additional house to house inspections to further define the complete scope of work within Sub-Area 1 to remain within the \$1.2 M budget.

Table 1: Findings of 2007 Field Investigations

Task	Area	Task	Quantity	Unit	Reasoning	Comments
1	1G	TV inspect (select streets not inspected in 2012) (6/8-inch piping)	4,900	LF	SMA 1G/1H/1I/1J: 24,633 Gal/Acre/In, 2,676,000 gallons of I/I, 2.09 MGD peak flow, 2.68" rain; SMA 1F/1G/1H/1I/1J/1K: 262 GPM dry weather infiltration	Smoke testing completed 2007
		MH inspect (select streets not inspected in 2012)	40	EA		
2	1H	TV inspect (select streets not inspected in 2012)	6,000	LF	SMA 1G/1H/1I/1J: 24,633 Gal/Acre/In, 2,676,000 gallons of I/I, 2.09 MGD peak flow, 2.68" rain; SMA 1F/1G/1H/1I/1J/1K: 262 GPM dry weather infiltration	Smoke testing completed 2007
		MH inspect (select streets not inspected in 2012)	35	EA		
		Identify source of line entering the manhole at the corner of Columbia Street and Hutchins Street from biomass facility	--	--	Continuous clear water, unknown source	
3	1B	TV inspect (select streets not inspected in 2012) (10/15-inch piping)	650	LF	0.2 to 0.4 MGD I/I estimated for this small area	
		MH inspect (select streets not inspected in 2012)	10	EA		
4	1K	TV inspect (entire meter area) (8-inch piping)	1,000	LF	High average and peak flows at the Napert Village Pump Station	
		MH inspect (entire meter area)	10	EA		
5	1E	TV inspect (select streets)	350	LF	Higher flows noted in Sullivan St. between Forbush Ave. and Coos St. after small storm; elevated dry weather infiltration	
		MH inspect (select streets)	3	EA		
6	6B	Smoke test (entire sub-meter area)	4,800	LF	42,227 Gal/Acre/In, 861,000 gallons of I/I, 0.32 MGD peak flow, 1.26" rain; 229 GPM instantaneous from 7 block area	
		Investigate potential break in Charron Avenue sewer (8-inch piping)	--	--		
10	5E	TV inspect (Dead River Pump Station drainage area and unknown culvert at Public Works Garage) (12/15-inch piping)	400	LF	High average and peak flows at the Dead River Pump Station; Unknown source of clear water entering the system via the culvert at the Public Works Garage	
		MH inspect (Dead River Pump Station drainage area)	2	EA		

**TABLE 2
JULY 2017 I/I REDUCTION PROJECT COSTS BY SUB-AREA**

Sub-Area	Estimated Total Project Costs
1G - Project 1	\$231,000
1G - Project 2	\$244,000
1G - Project 3	\$108,000
1H - Project 1	\$127,000
1H - Project 2	\$19,000
1H - Project 3	\$494,000
1B - Project 1	\$56,000
1K - Project 1	\$107,000
1E - Project 1	\$500 ⁽¹⁾
Subtotal	\$1,386,500
6B - Project 1	\$57,000
6C - Project 1	\$107,000
5E - Project 1	\$1,000
Subtotal	\$165,000
Collection System Mapping	\$50,000
TOTAL	\$1,601,500

Notes: 1. Includes inspection costs only.

During the 2016/2017 study, Wright-Pierce was able to access approximately 50% of the homes within Sub-Area 1. Of the properties inspected, approximately 50% had illicit connections (or approximately 25% of the total number of homes). However, there were many homes within Sub-Area 1 that could not be accessed (either no one home and/or no response to access inquiries). Table 3 summarizes the house to house inspection results. The accompanying figures at the end of this Scope of Services are from the July 2017 study report. The red squares on the figures represent identified illicit connections, green squares identity inspected homes with no illicit connections, and yellow squares represent homes that were not accessed for inspection.

**TABLE 3
SUMMARY OF HOUSE TO HOUSE INSPECTIONS**

Sub-Area	Total Properties In Sub-Area ⁽¹⁾	Total Homes Inspected	Total Properties Not Inspected ⁽¹⁾	Percent Inspected	Illicit Connections Found	Remaining Homes to Inspect	Figures (See Attached)
1G	89	40	49	45%	18	43	3-2, 3-3, 3-4
1H	87	43	44	49%	20	41	3-5, 3-6, 3-7
1B	22	12	10	55%	3	10	3-1
1K	20	10	10	50%	5	10	3-8
1E	5	0	5	0%	-	4	3-9
Total	223	105	118		46	108	

Notes: Some of the properties in Sub-Area 1 are vacant parcels, not requiring inspection.

Wright-Pierce recommends conducting (or attempting to conduct) additional house to house inspections of the remaining 108 homes in Sub-Area 1 to further identify illicit connections that can be included in the preliminary design of the Phase 2, Contract 1 separation project (or subsequent projects over the identified \$1.2M). Although it is unlikely that 100% of the homes in Sub-Area 1 can be inspected, reducing the unknowns will allow for a greater understanding of the scope and costs of the future construction project(s).

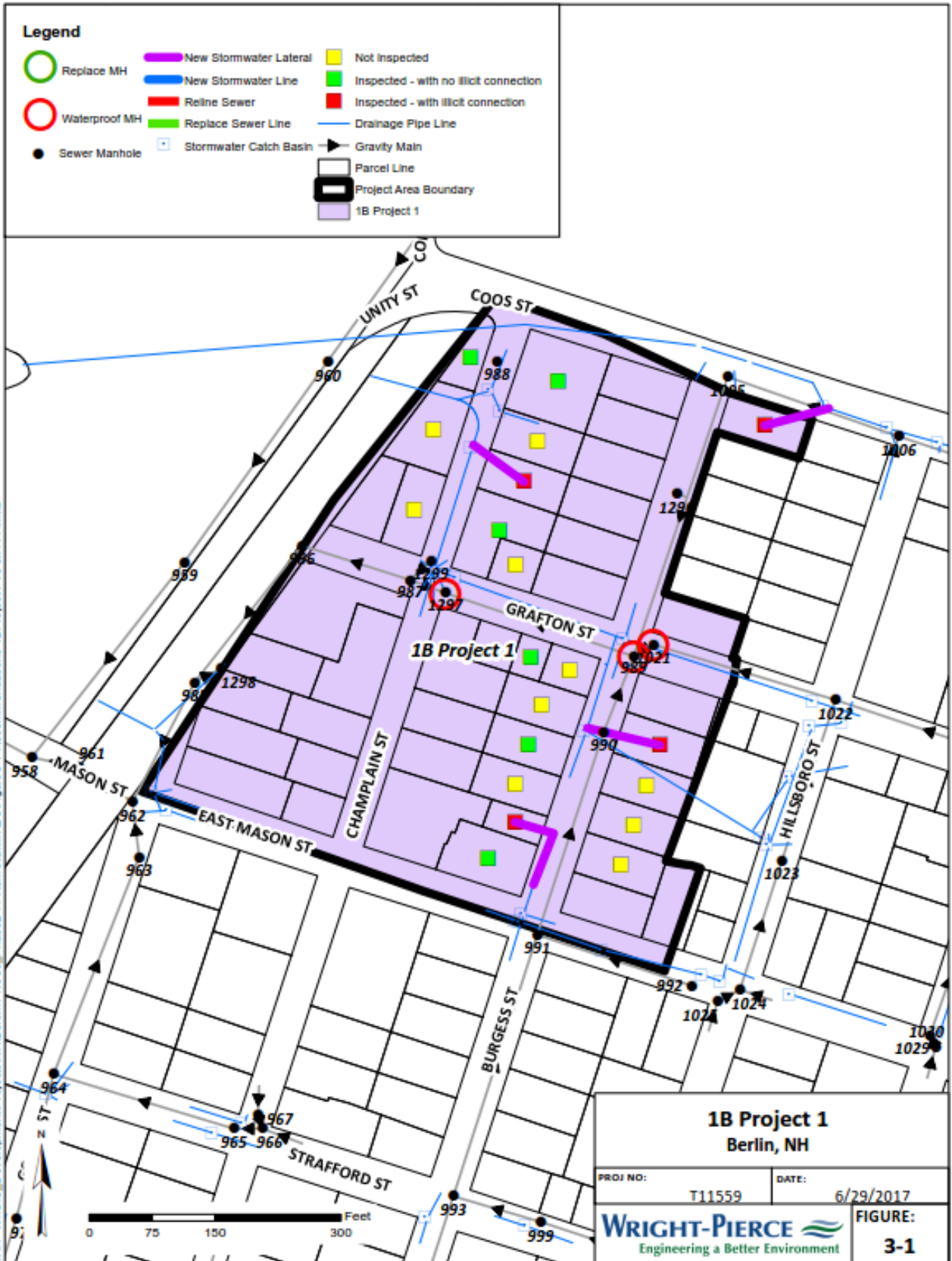
The following is a detailed summary of the Preliminary Design Scope of Services for Sub-Area 1 included in this Agreement.

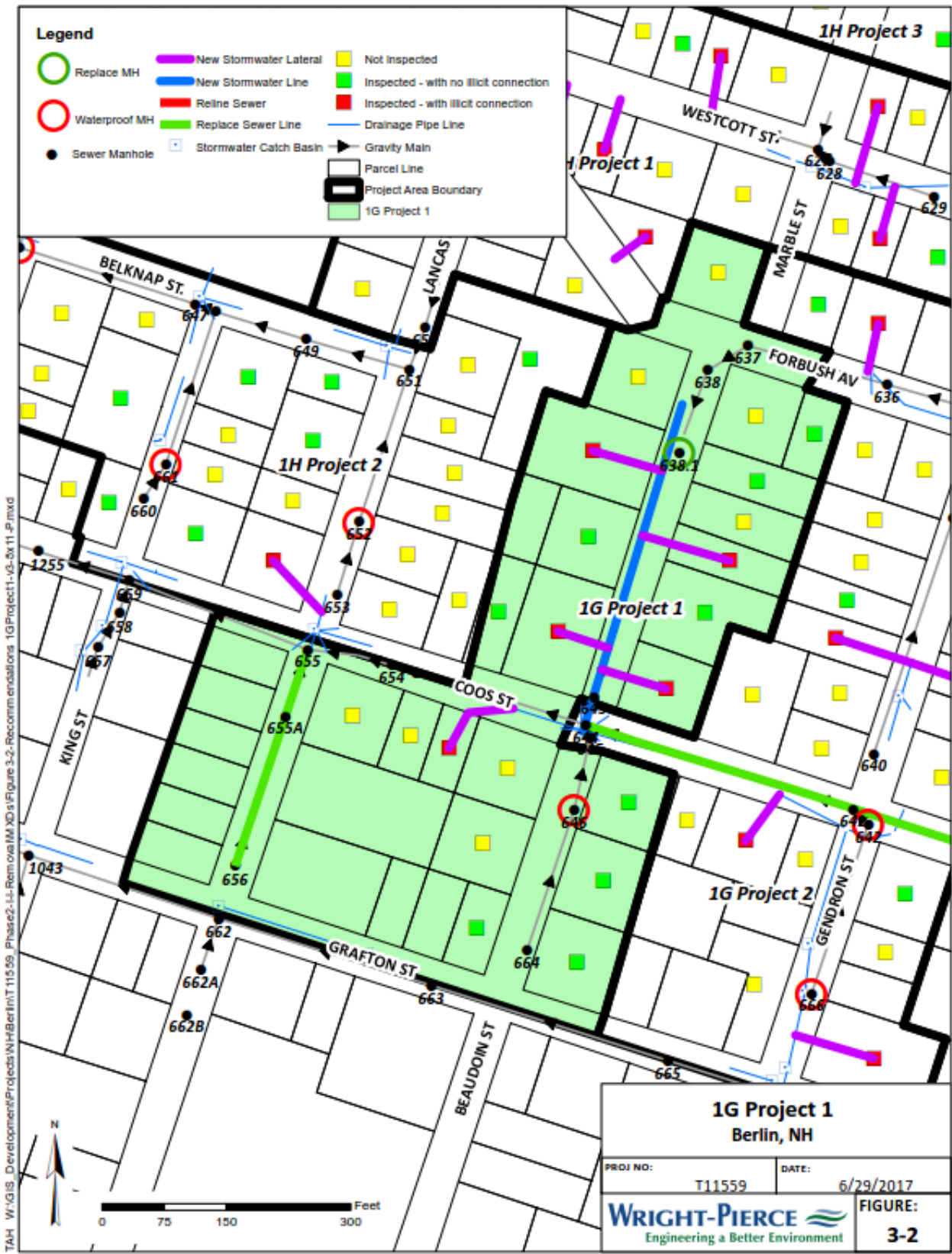
Preliminary Design Phase Scope of Services

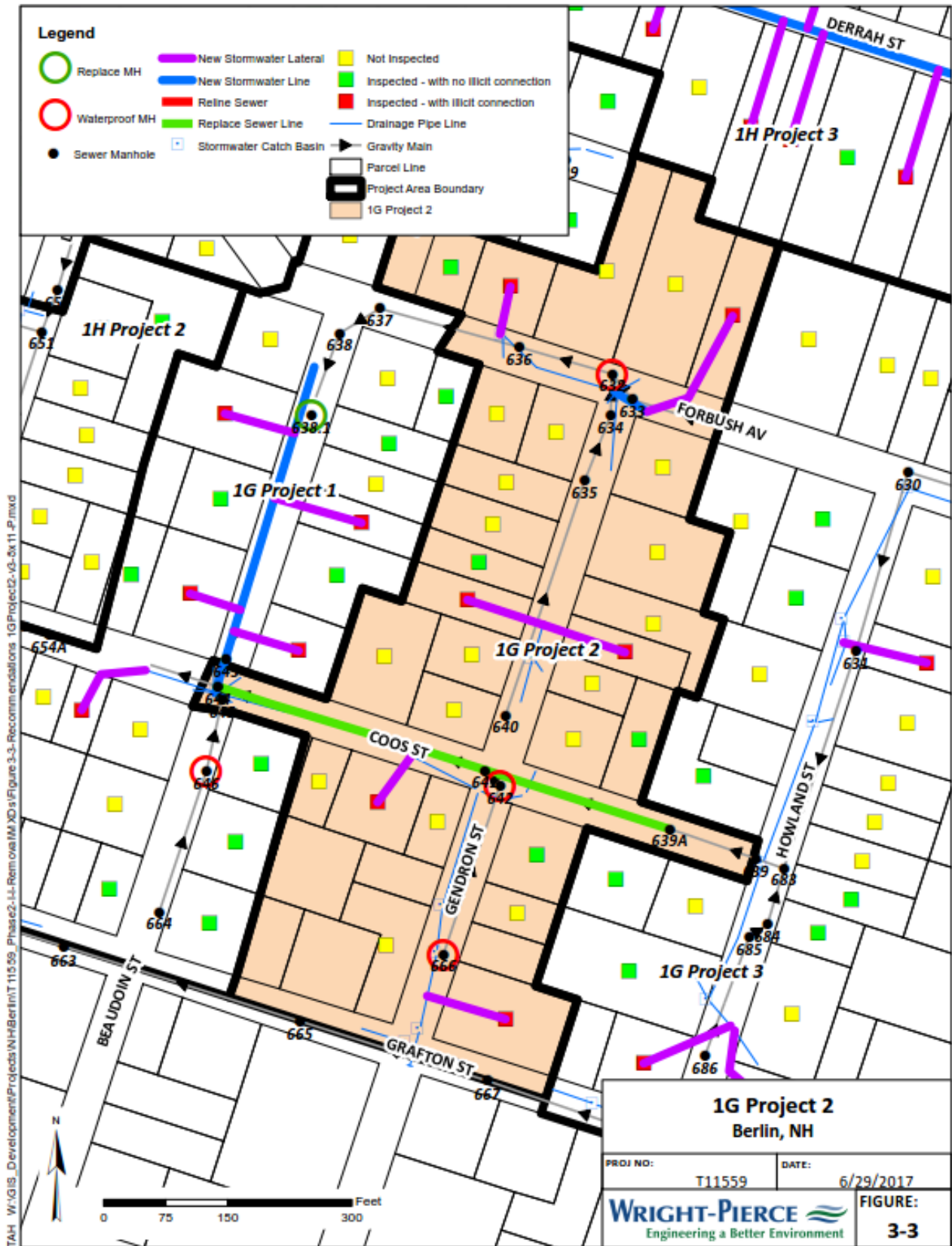
- 1) **Kick-Off Meeting and Inspection Coordination:** Wright-Pierce will conduct a kick-off meeting with the City to discuss the scope of work, project schedule, and coordination items. The Wright-Pierce Project Manager and Project Engineer will attend the meeting. Wright-Pierce will provide the addresses of the properties that remain to be accessed for inspection in Sub-Area 1 and will provide a mailer for the City to mail to each resident with Wright-Pierce contact information to schedule the house inspection. A three-week period will be identified to conduct the inspections and included on the mailing. The City will also provide the names and phone numbers for each property to be accessed; Wright-Pierce staff will attempt to contact each resident to schedule specific dates/times to conduct the inspections within the three-week window. This is expected to increase the successful inspection rate within Sub-Area 1.
- 2) **House to House Inspections:** Wright-Pierce will conduct additional house to house inspections of the approximately 108 homes remaining to be inspected within Sub-Area 1. This will be conducted over an approximately three-week period. The figures at the end of this Scope of Services identify the properties that we will attempt to enter for inspection based on Table 3. While on site, Wright-Pierce will identify the approximate routing of new services for homes to be separated and delineate the areas to be surveyed under this scope of work.
- 3) **Additional Manhole Inspections:** There were a number of manholes that could not be located during the June 2017 Study. These are presumably buried under the paved roadway. With the City's assistance in locating and uncovering these structures, Wright-Pierce will perform inspections on the following manholes during the house to house investigation:
 - a) **Sub-Area 1B:** SMH-990
 - b) **Sub-Area 1G, Project 1:** SMH-643, SMH-656, SMH-655A
 - c) **Sub-Area 1G, Project 2:** SMH-639A and SMH-643
 - d) **Sub-Area 1H, Project 1:** SMH-626 and SMH-650
 - e) **Sub-Area 1H, Project 2:** SMH-651
 - f) **Sub-Area 1H, Project 3:** SMH-621A, SMH-623A, SMH-627, SMH-628, and SMH-629
 - g) **Sub-Area 1K, Project 1:** SMH-615A, SMH-613, and SMH-614

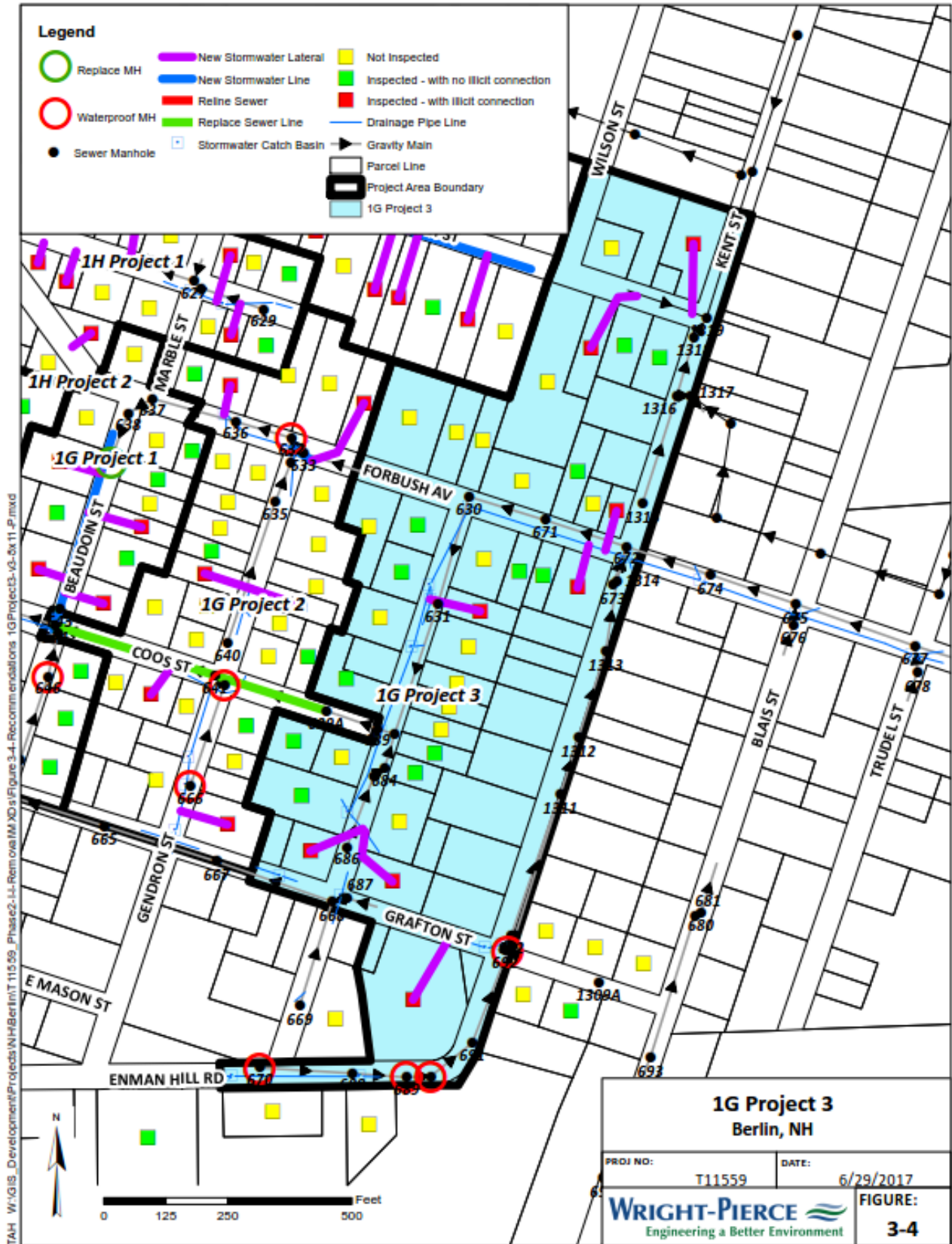
- 4) Preliminary Design Technical Memorandum and Final Phase 2, Contract 1 Scope Determination: Based on the results of the additional house to house inspections, Wright-Pierce will update the quantities used to develop the estimates of cost in Table 2 to define the \$1.2 M project to carry forward into preliminary design of a Phase 2, Contract 1 project. The updated findings and costs will be summarized in a Technical Memorandum. This task includes a meeting with the City to discuss the findings of the inspections and recommended scope of the project, as outlined in the Technical Memorandum. Meeting minutes will be developed and distributed to all attendees electronically, via e-mail.
- 5) Field Survey: Based on the final scope determination, Wright-Pierce will subcontract with York Land Services, LLC for survey of project areas to be included in the Phase 2, Contract I separation project. It is expected that the survey will include: 1-foot contour topography, sill elevations of each home, property boundaries, locations of the front two corners of the homes/structures, above-grade features in the expected path of the new services, right-of-way boundary, existing easements, sidewalks, telephone/electric poles, hydrants, trees (over 3-inches in diameter), manholes (rim and inverts), catch basins and storm sewers (rim and inverts) and valve boxes and other, above-grade features.
- 6) Draft Preliminary Design (30% Drawings): Based on the investigations and survey, Wright-Pierce will develop draft 30% drawings of the proposed improvements. The scope of work identified in the July 2017 study report included the following recommendations:
 - a) Sub-Area 1B
 - i) Regrout and waterproof SMH-989, SHM-1021, and SMH-1297
 - ii) Disconnect four houses with illicit connections (and potential others identified upon further investigation)
 - b) Sub-Area 1E, Project 1
 - i) Disconnect houses found with illicit connections (four homes to be inspected)
 - c) Sub-Area 1G, Project 1
 - i) Replace existing gravity sewer piping on Lancaster Street between SMH-656 and SMH-655 (approximately 190 feet).
 - ii) Replace SMH-638.1 with new flat slab manhole and re-grout and waterproof SMH-646.
 - iii) Install approximately 400 feet of new storm drain piping on Beaudoin Street and tie into existing storm drain system on Coos Street
 - iv) Disconnect five houses with illicit connections (and potential others identified upon further investigation). Install new storm drain laterals and connect to new storm piping.
 - d) Sub-Area 1G, Project 2
 - i) Replace existing sewer on Coos Street between SMH-644 and SMH-639A (approximately 575 feet)
 - ii) Re-grout and waterproof SMH-666, SMH-642, and SMH-632
 - iii) Install approximately 50 feet of new storm drain piping on Forbush Avenue and tie into existing storm drain system at the intersection of Forbush Avenue and Gendron Street.

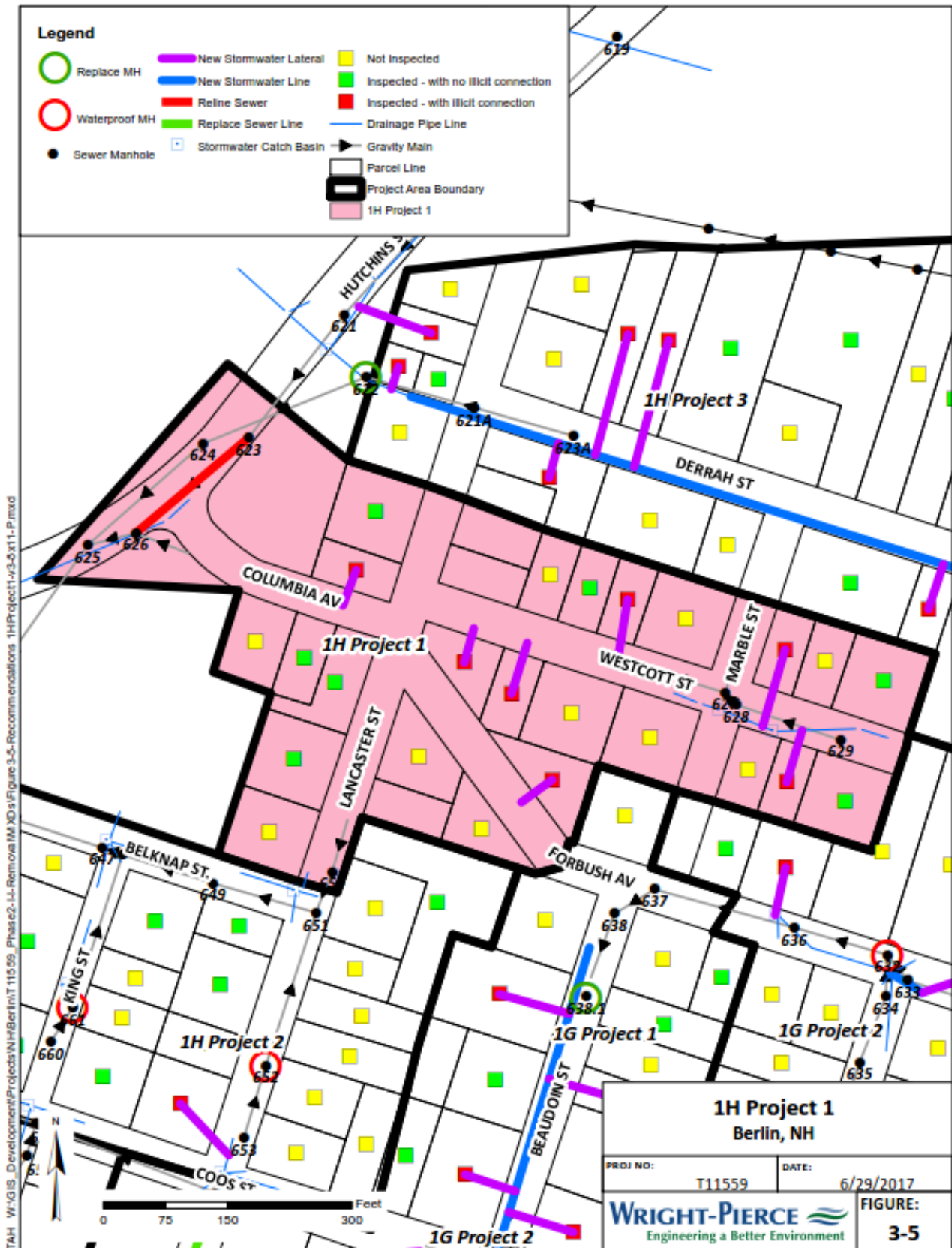
- iv) Disconnect six houses with illicit connections (and potential others identified upon further investigation). Install new storm drain laterals and connect to new storm piping.
- e) Sub-Area 1G, Project 3
 - i) Re-grout and waterproof SMH-670, SMH-683, SMH-689, SMH-690, and SMH-1309.
 - ii) Disconnect eight houses with illicit connections (and potential others identified upon further investigation). Install new storm drain laterals and connect to existing storm piping.
- f) Sub-Area 1H, Project 1
 - i) Reline existing sewer on Hutchins Street between SMH-626 and SMH-623 (approximately 180 feet).
 - ii) Disconnect seven homes with illicit connection (and potential others identified upon further investigation). Install new storm drain laterals and connect to existing storm piping in six homes and reroute one connection to the yard.
- g) Sub-Area 1H, Project 2
 - i) Re-grout and waterproof SMH-661, SMH-652, and SMH-1014.
 - ii) Disconnect one house with illicit connection (and potential others identified upon further investigation). Install new storm drain laterals and connect to existing storm piping.
- h) Sub-Area 1H, Project 3
 - i) Replace SMH-622 with new flat top manhole
 - ii) Install approximately 1,100 feet of new storm drain piping on Derrah Street and tie into existing storm drain system on Hutchins Street.
 - iii) Disconnect ten homes with illicit connections (and potential others identified upon further investigation). Install new storm drain laterals and connect to new storm piping.
- i) Sub-Area 1K, Project 1
 - i) Replace existing sewer on Napert Street from SMH-613 (approximately 125 feet).
 - ii) Replace SMH-618.1 with new flat top manhole
 - iii) Re-grout and waterproof SMH-616.
 - iv) Install approximately 100 feet of new storm drain piping on Napert Street and tie into existing storm drain system at the intersection with Gauthier Street.
 - v) Disconnect three houses with illicit connections (and potential others identified upon further investigation). Install new storm drain laterals and connect to new storm piping.
- 7) Following submission of the draft Preliminary Design drawings to the City and NHDES, Wright-Pierce will meet with the City to obtain comments on the draft documents. Meeting minutes will be developed and distributed to all attendees electronically, via e-mail.
- 8) Wright-Pierce will address City and NHDES comments on the draft Preliminary Design drawings. The Preliminary Design drawings will form the basis of a subsequent Scope of Services for final design, bidding and construction phase services.



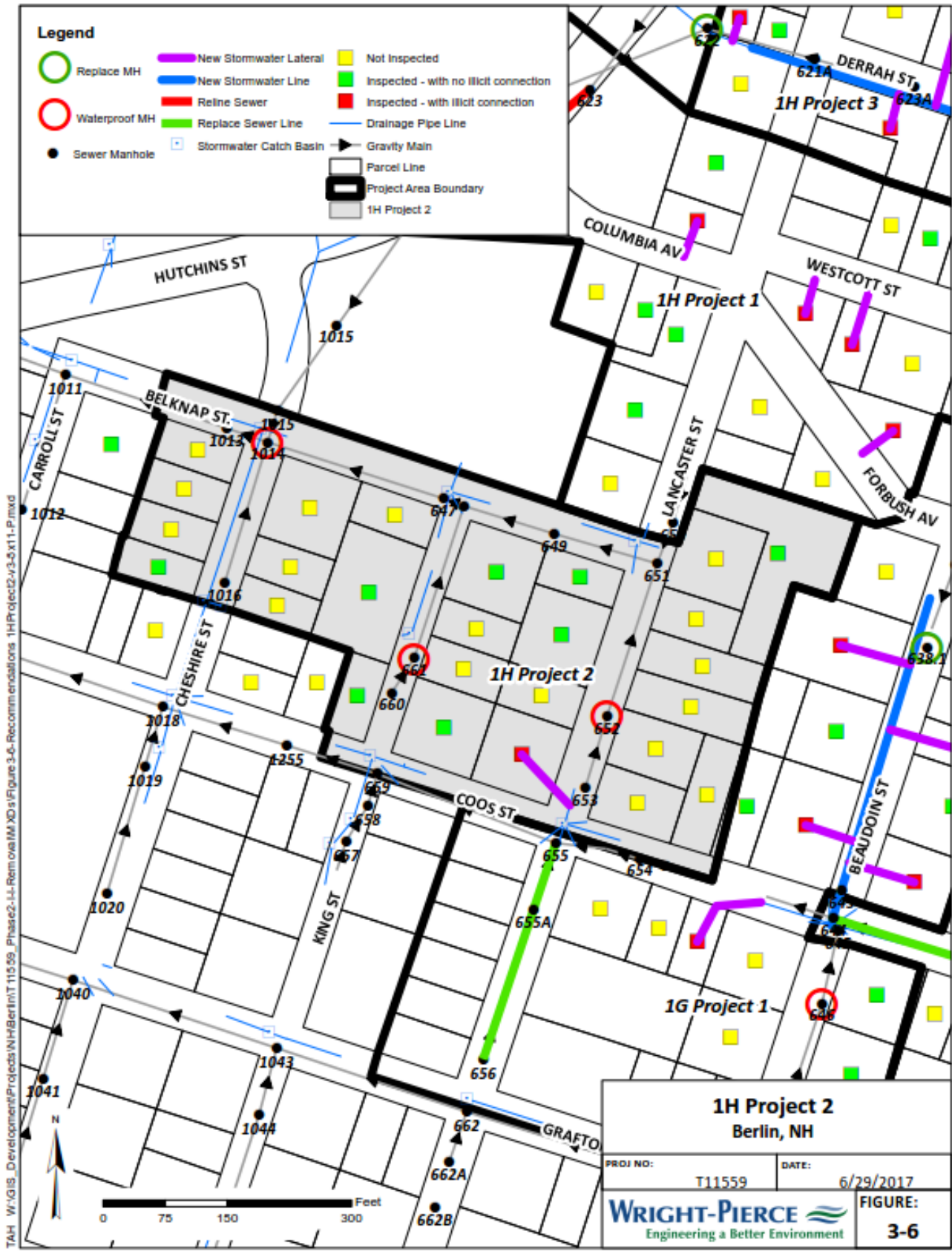


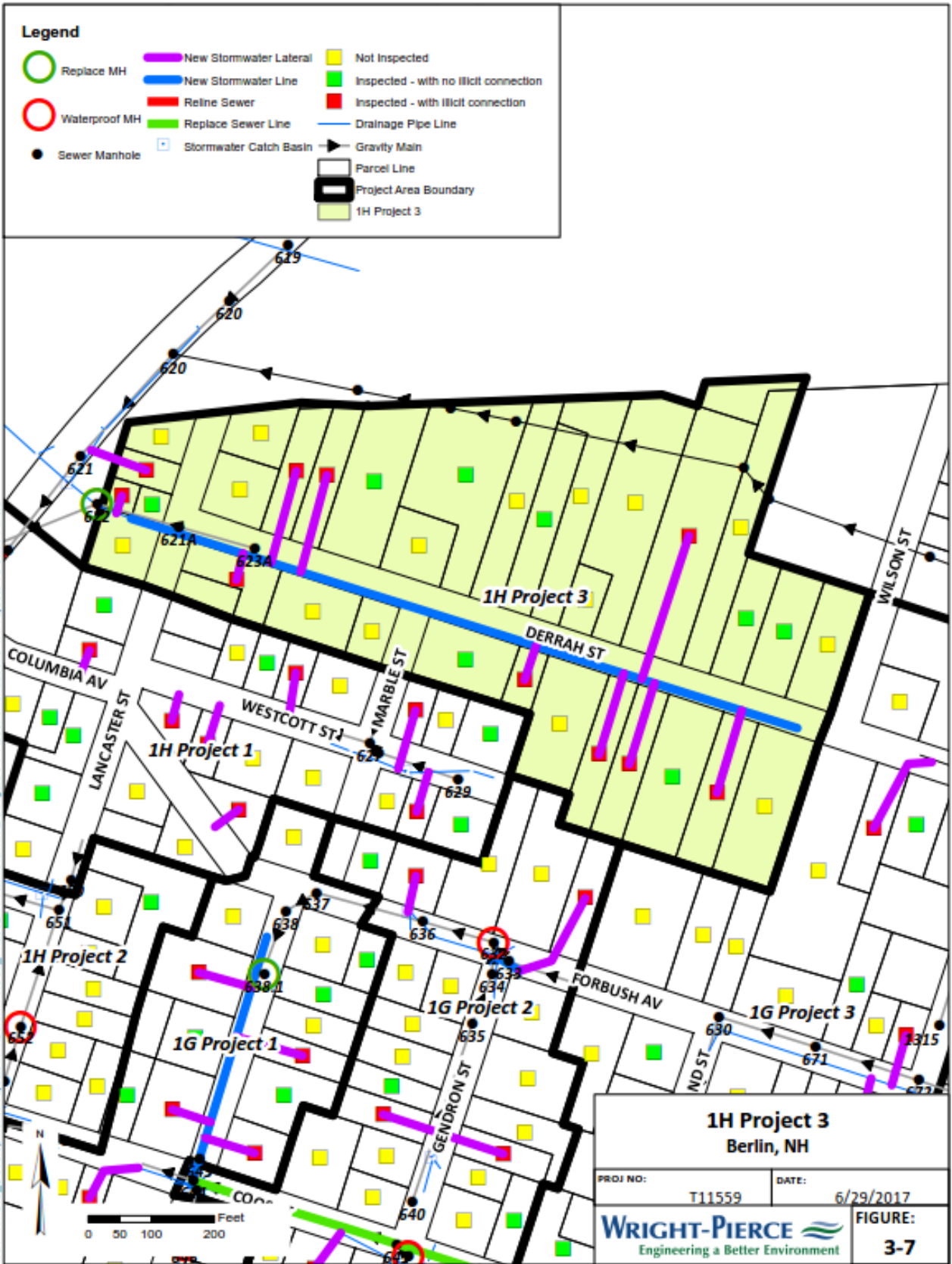


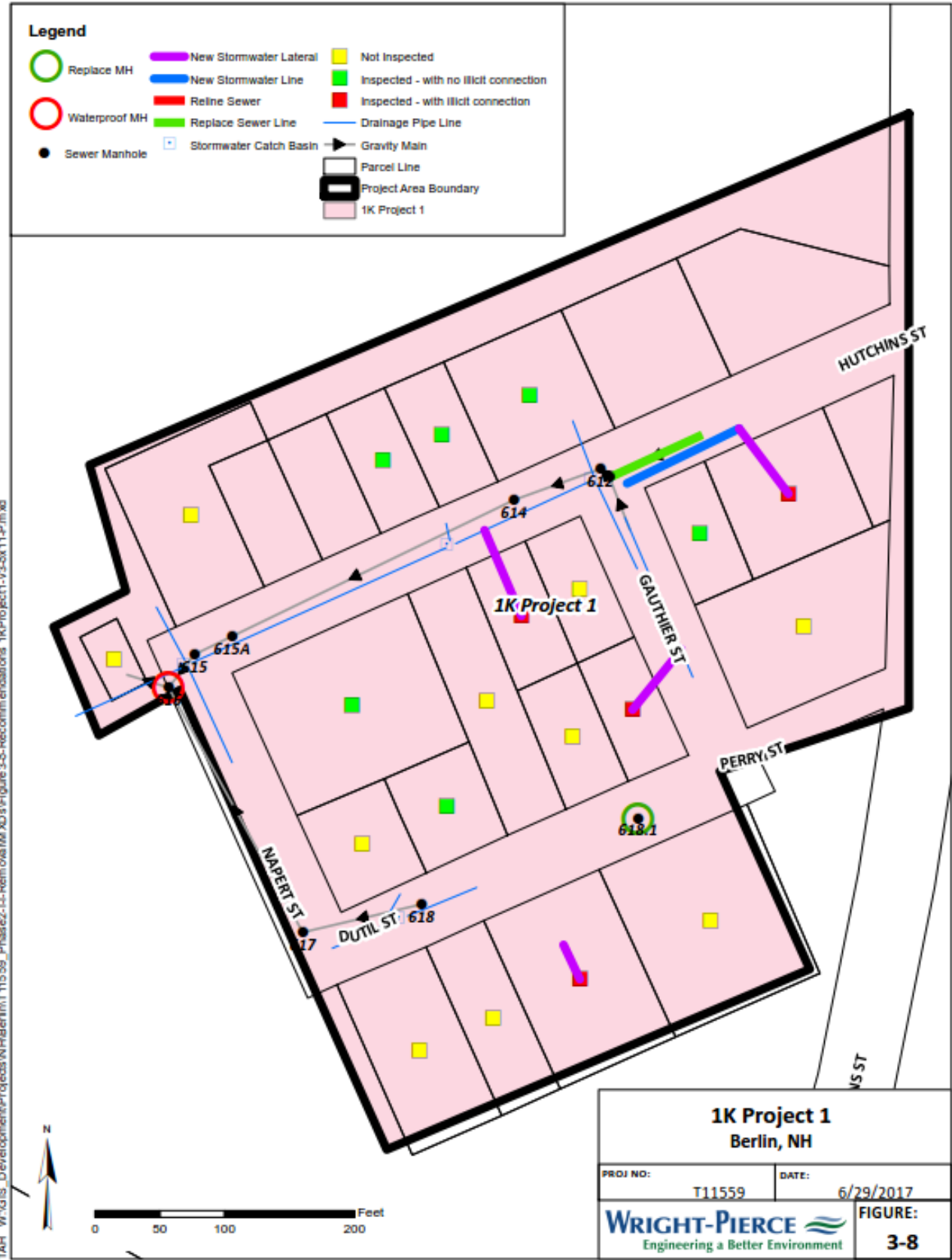




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**FIGURE 3-9
SUB-AREA 1E - HOMES TO BE INSPECTED**

