Technical Memorandum

The Seventh Ward Urban Flooding Investigation

Technical Memorandum

GreenPoint ENGINEERING

NATIONAL ACADEMIES *Sciences Engineering Medicine*

GULF RESEARCH PROGRAM

NAS 7th Ward Acknowledgement Statement

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1 Background

1.1 Flooding Challenges in New Orleans and The Seventh Ward

New Orleans continues to face chronic urban flooding challenges due to its low elevation, aging drainage infrastructure, and increasingly intense rain events linked to climate change. The city's drainage system, much of it designed over a century ago, struggles to manage today's rainfall volumes and runoff patterns in neighborhoods like The Seventh Ward, one of the city's oldest and predominantly black communities, these system limitations are more pronounced.

Dense development, extensive impervious surfaces, lack of routine maintenance and interstate runoff have left the area highly vulnerable to flooding. Recent flooding events, worsened by runoff from I-10, aging infrastructure, and conveyance issues have taken a toll on both residents' property and well-being. According to the New Orleans Data Center, the Seventh Ward has a population of 16,955. 67% of which are home renters and nearly 37% of people live below the poverty line. These statistics highlight the need for equitable infrastructure investments that directly support long-term resilience and quality of life in the neighborhood. Residents in the community have reported experiencing anxiety, stress, property loss, and daily disruptions during and after rain events. This persistent flooding not only threatens infrastructure but also the stability, economics and cultural identity of the neighborhood itself.

In response, community-based organizations have taken the lead in advancing resilience. Water Wise Gulf South and Healthy Community Services (HCS) launched the Water Wise Seventh Ward Initiative in 2017, building on years of neighborhood engagement. These organizations have promoted community-based green infrastructure through workshops, neighborhood events, and demonstration projects such as a rain garden and rain barrel installations. These efforts have helped residents see green infrastructure in action while fostering greater awareness of how local interventions can reduce flooding and improve community health. Through this partnership, GreenPoint Engineering was engaged to conduct a neighborhood-scale flooding investigation, combining technical analysis with resident knowledge to identify causes, impacts, and recommendations for stormwater management in the Seventh Ward.

1.2 Investigation Objectives

The primary objectives of this investigation are to:

1.2.1 **Understand the Root Causes of Recurring Flooding in The Seventh Ward**

This investigation aims to identify areas within The Seventh Ward that experience frequent flooding. GreenPoint's approach integrates data from city records and local resident reports to bridge the gap between technical infrastructure assessments and residents' experiences. By bringing together technical data, field observations, and community input, the team aims to create a more accurate picture of how The Seventh Ward's drainage system is functioning and where it's falling short.

The primary deliverables will be a detailed overview of our findings, as outlined in this report, and to recommend targeted next steps that can be implemented with support from the Sewerage and Water Board of New Orleans (SWBNO) and the City of New Orleans that improve both drainage and the quality of public spaces.

1.2.2 **Evaluate Green Infrastructure and Grey Infrastructure concurrently**

This investigation focuses on both ***grey infrastructure*** and ***green infrastructure.*** Grey infrastructure refers to the traditional engineered drainage network, including components such as pipes, culverts, catch basins, pump stations, and outfall canals that collect stormwater, convey it through the system, and ultimately discharge it to outfall points. Green infrastructure refers to nature-based solutions that manage stormwater where it falls, such as rain gardens, bioswales, permeable pavement, and vegetated storage areas. These features slow down runoff, promote infiltration, and help reduce the load on the grey system.

Like much of New Orleans, The Seventh Ward system faces inherent maintenance challenges due to the city's low elevations and the need to pump stormwater long distances to its outfall points. This requires extensive maintenance effort from SWB and DPW. In recent years, Water Wise and Healthy Community Services have implemented small-scale green infrastructure interventions in the neighborhood, providing a total storage capacity of over 31,600 gallons. These initiatives are effective in managing frequent, smaller rainfalls and reducing pressure on the grey system. However, flooding remains a serious issue, highlighting the need for continued investigation and system-wide maintenance and upgrades.

This investigation aims to assess the condition of grey infrastructure in The Seventh Ward and explore green infrastructure opportunities that can complement and support the functionality of the existing grey system. A combined approach allows each system to strengthen the other. Green infrastructure can reduce the load on grey infrastructure and grey infrastructure provides the backbone for handling major storm events. Long-term solutions in The Seventh Ward will likely require a combination of both systems working together.

1.2.3 **Support Ongoing Community Engagement and Incorporate Resident Knowledge**

This investigation places a strong emphasis on education and empowerment of residents. By holding resident workshops and involving the community in the data collection process, GreenPoint aims to create opportunities for them to actively participate in the planning process and ensure that residents remain central to the conversation about infrastructure investment and climate resilience in The Seventh Ward.

2 The Seventh Ward Neighborhood

The flooding investigation spans North Claiborne to North Broad Street to the Florida Avenue Canal and from Esplanade Avenue to Elysian Fields Avenue, as illustrated in **Figure 1** below.

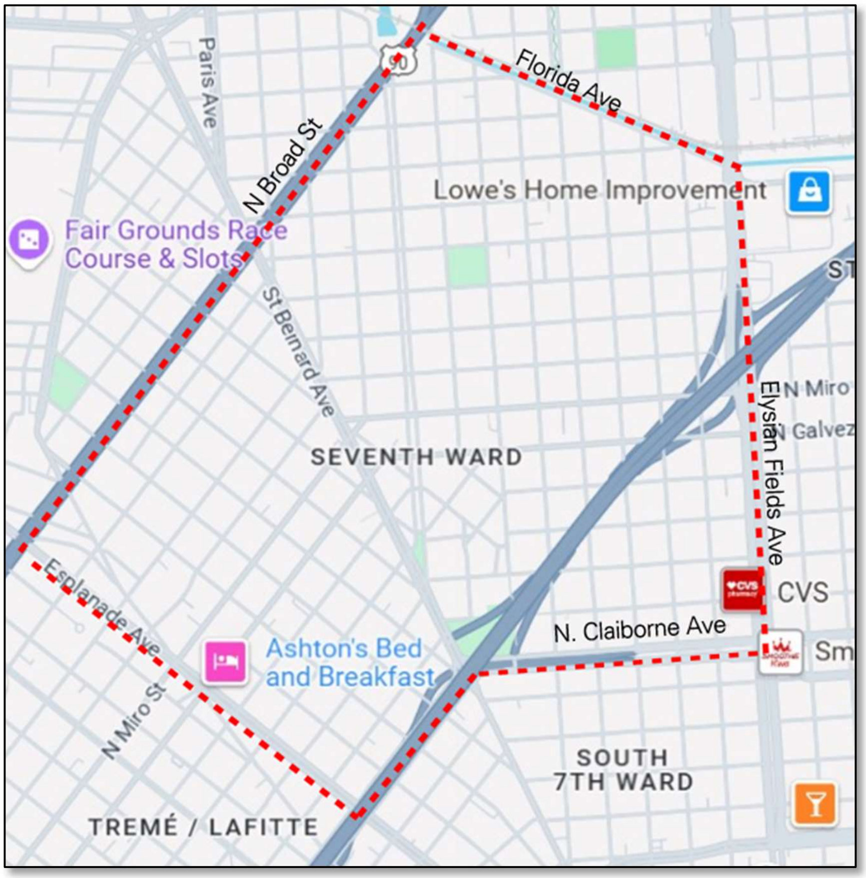

Figure 1: Investigation Vicinity

2.1 Network, Downstream Outfall and Pumping System

The Seventh Ward neighborhood stormwater collection system is part of the Orleans Metro Basin and is serviced by a network of underground pipes that convey rainwater to larger culverts and canals. Because much of New Orleans is below sea level, these canals direct stormwater to drainage pumping stations, which lift and push water out of the low-lying basin into outfall canals. From there, stormwater ultimately reaches Lake Pontchartrain through discharge pumping stations.

The major drainage conduits in the study area include a 28-foot-wide canal along N. Broad Street, a 15-foot canal along St. Bernard Avenue fed by the 5.5 × 4.5-foot box culvert on N. Claiborne Avenue, a 6-foot box canal along N. Rocheblave Street, and the 25-foot-wide Florida Avenue Canal. These canals form the primary skeleton of the neighborhood's stormwater conveyance system and direct flow toward either to Drainage Pump Station 3 (DPS 3) or Drainage Pump Station 19 (DPS 19).

DPS 3, located at the northern end of Broad Street near Florida Avenue and U.S. 90, is the principal pumping station for most of the Orleans Metro Basin, including a large portion of the Seventh Ward. The station houses nine pumps, five of which are high-capacity storm pumps powered by the city's 25-Hz electrical system, providing a combined storm pumping capacity of approximately 4,100 cubic feet per second (cfs), plus 160 cfs for dry-weather flow. (*Source: Ardurra Engineering Study*). "Historic understanding of the system capacity was removal of 1 inch of rainfall per hours for the first hour and one-half inch per hour removed by pumping for each hour thereafter. Rainfall in the first half hour was assumed to be absorbed by storage areas within the system including empty pipes, canals and dry roadways and one-half inch of rain was to be pumped to outfall. The S&WB had held this design basis as the standard of performance even though it is well below the 10-year design basis storm selected by the city." (cited directly from CNO Stormwater Drainage System Root Cause Analysis Report by ABS 2018).

Within the Seventh Ward, drainage is divided between two primary pathways. Blocks west of St. Bernard Avenue and south of N. Rocheblave Street drain into the St. Bernard canal that flows into the N. Broad Street canal, which conveys stormwater to DPS 3. DPS 3 then pumps water into the London Avenue Canal, where it flows north to Lake Pontchartrain. This route serves much of the central and southern portions of the neighborhood. DPS 3 indicated by the blue triangle In **Figure 3** below.

Blocks east of St. Bernard Avenue and north of N. Rocheblave Street drain to the Florida Avenue Canal, a major east–west conduit that carries stormwater toward Pump Station 19 (DPS 19). DPS 19, located along the Industrial Canal, serves the Gentilly Basin and the northeastern portion of the Seventh Ward, pumping stormwater from the Florida Avenue Canal into the Industrial Canal before it ultimately reaches Lake Pontchartrain. During large storm events, DPS 3 can also discharge overflow into the Florida Avenue Canal, creating an additional pathway for excess water to reach DPS 19. Together, these routes form a coordinated drainage system in which DPS 3 handles the majority of the Orleans Metro Basin flow, while DPS 19 receives drainage from the northeastern portion of the neighborhood as well as overflow from DPS 3. **Figure 2** below is Orleans Parish Drainage Map detailing the route that stormwater flows from its collection in The Seventh Ward to its outfall point in Lake Pontchartrain. Both DPS 3 and DPS 19 rely on the city's specialized 25-Hz power system, include backup power generation, and are staffed continuously for system monitoring.

Figure 2: Orleans Parish Drainage Map

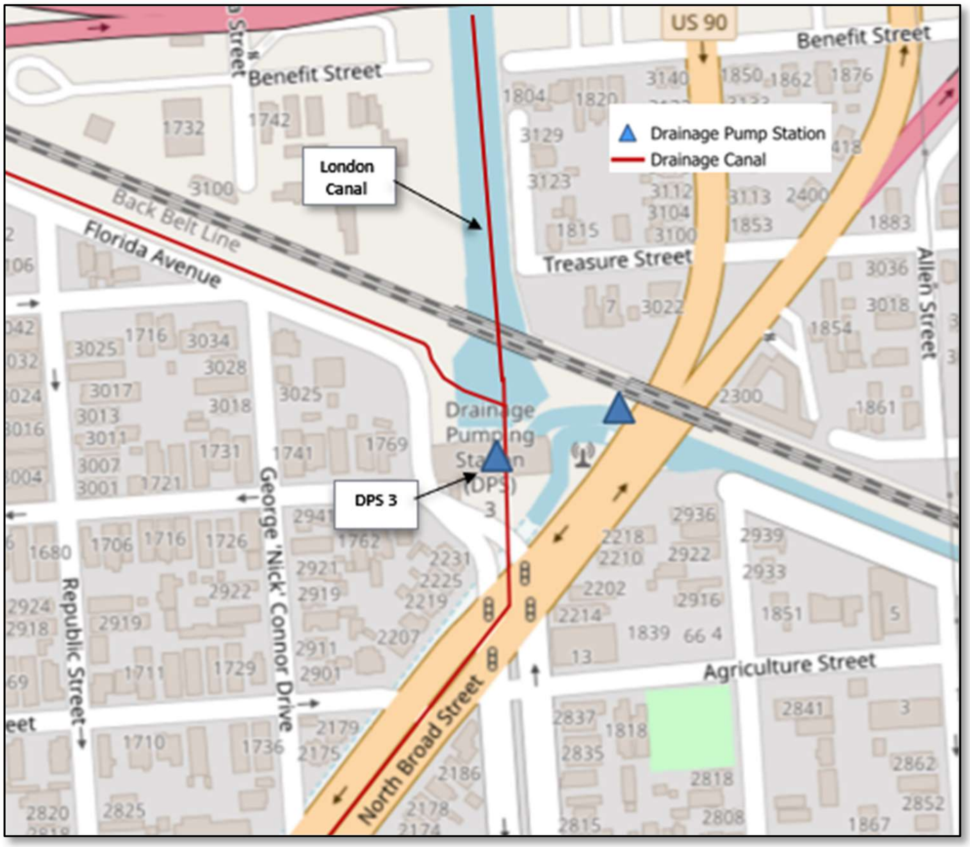

Figure 3: Drainage Pump Station 3 Location

3 Data Analysis

The preliminary step in this flooding investigation involved compiling and reviewing existing data to understand the layout of drainage network in The Seventh Ward neighborhood and identify where targeted improvements could provide the most immediate benefit. Our investigation placed particular emphasis on identifying areas where cleaning, maintenance and new drainage features could address problems in an immediate and cost-effective way. These initial data collection efforts were documented in the **Data Collection Memorandum** submitted previously to the Healthy Community Services as a part of this investigation, which summarized the collection process of as-built drawings, existing drainage reports, Geographic Information System (GIS) shapefiles, 311 records, pump station data, and community input gathered through workshops and resident feedback.

In this section, GreenPoint built upon those findings by organizing and analyzing the information such as previous projects in The Seventh Ward neighborhood, the investigation methodology used in this study, the organization of raw data, GIS data integration, and a review of supporting technical reports. Throughout this analysis, GreenPoint evaluated how each dataset contributed to our understanding of the drainage system, and identify which sources were most helpful, which were limited, and where additional investigation may still be needed to fill data gaps. This sets the foundation for the assumptions and system performance conclusions outlined in the following section.

3.1 Investigation Methodology

This section outlines the approach used to evaluate drainage conditions and flooding behavior in The Seventh Ward neighborhood. The methodology combined field observations, city-supplied data, and resident feedback into a comprehensive analysis of system performance.

The process began with data collection from the City of New Orleans and The Seventh Ward residents, outlined in the **Data Collection Memorandum,** as mentioned in the previous section. In parallel, GreenPoint and Water Wise led community engagement efforts through technical workshops, neighborhood walkthroughs, and a digital flooding questionnaire to gather localized knowledge.

All findings were compiled into a centralized Data Collection Log spreadsheet, organized by blocks. Each entry listed the available data types such as photos, as-builts, GIS records, and resident reports, and included a 1-5 flood severity rating (increasing with severity) to help prioritize areas for follow-up.

GIS served as the primary tool for spatial analysis, allowing mapping of flood severity ratings, drainage infrastructure, and field observations. Color-coded ratings provided a visual summary of neighborhood hotspots, while layers representing catch basins and flow direction helped identify gaps and potential system failures.

Field visits were conducted during both dry days as well as multiple rain events that helped verify reported problem areas and revealed issues not captured in official records, such as clogged drains, ineffective flow paths, or topographic barriers. Historical Google Street View imagery was also used to cross-reference conditions over time and observe changes in drainage infrastructure.

This multi-layered approach helped identify patterns, validate data across sources, and the development of a Project Summary to guide recommendations and next steps.

3.2 Data Collection

3.2.1 Resident Data Collection

The Seventh Ward community has long observed consistent flooding patterns across specific blocks, offering valuable insight into chronic drainage issues. A key part of this investigation involved collecting data directly from residents of The Seventh Ward neighborhood. Their firsthand experiences provided valuable insight into where flooding regularly occurs and helped confirm or challenge the information available in official city records and helped identify areas where flooding is persistent but under-reported. GreenPoint and Water Wise worked closely with local residents to document these conditions through educational workshops, listening sessions and resident data questionnaires.

Resident Workshops

To initiate the community engagement process, GreenPoint and Water Wise met with the Visioning Session Committee- a group of engaged The Seventh Ward residents who have played a long-standing role in voicing neighborhood concerns- to hold workshops and perform walk throughs of the neighborhood. These workshops served two purposes: to listen to residents' observations and concerns about local flooding and to educate participants on how the drainage system works.

The workshop provided a simplified explanation of New Orleans' drainage infrastructure and potential causes of flooding in an urban environment like The Seventh Ward; similar to the overview detailed later in **Section 4** of this report. The objective was to help the residents better understand what factors might be contributing to their flooding and use this knowledge to help prevent or report future flooding issues. A neighborhood walkthrough was conducted to point out roadway elements like manholes, catch basins, and nearby trees and how they're laid out and connected. Many participants reported that they had never previously noticed certain drainage structures or understood their function. This understanding allowed residents to better recognize the deeper causes of flooding and help identify problem areas on their block. Several participants expressed feelings of being empowered by this new knowledge and more confident to take action knowing that their concerns would be heard and taken seriously. Overall, the workshops helped residents to build trust with the city and encouraged them to take a more active role in addressing flooding in their community.

Resident Data Collection

Following the technical workshops, a digital Flooding Questionnaire was distributed online and throughout the neighborhood with support from Water Wise. The goal of the questionnaire was to gather detailed, location-based accounts of flooding and surface drainage issues. Even residents who had not experienced flooding were encouraged to respond to help build a complete picture of conditions across the neighborhood.

The questionnaire included the following types of questions:

- Resident ratings of flooding severity and frequency on a scale from 1 to 5 (1 being no issue and 5 being extreme)
- Whether flooding occurs across the entire block or at specific low points or intersections
- Descriptions of flooding conditions or causes, and resident assumptions of what could be occurring (e.g., blocked drains, poor grading, low elevation)
- Reports of deficient or inactive catch basins, including those suspected of being filled with concrete or clogged with debris
- Observations of contractor malpractice or changes in flooding following recent construction
- Dates of specific flood events, especially those that matched known storm events
- Descriptions of stormwater behavior (where water accumulates, what type of rain triggers flooding)

In addition to structural issues, the questionnaire asked for personal accounts of how flooding has impacted daily life, property, and mental health. Many residents shared the personal toll of stress and anxiety of recurring flooding. Common themes included:

- Vehicle damage and the financial burden of repairs or replacement
- Missed work or appointments due to impassable streets
- Difficulty leaving or returning home during rain events
- Anxiety, stress, and fear associated with routine rainfall

- Loss of trash bins and yard damage from standing water
- Ongoing financial strain and housing-related stress
- Nighttime stress from waking to check flood levels or moving vehicles

Residents were also encouraged to share their own insights into potential causes of flooding. Several noted that flooding on their block began or worsened after Hurricane Katrina, especially in areas where street or infrastructure repairs were performed. The impact of debris and structural integrity from the hurricane could likely still be a factor contributing to flooding in the neighborhood today. In some cases, residents raised concerns about possible contractor malpractice. Others pointed to pump station performance as a potential factor. Overall, clogged catch basins and recurring intersection flooding near the I-10 overpass were among the most common themes. Reports of concrete or foreign material inside basins helps to prioritize CCTV inspections over general cleaning to assess the condition of subsurface infrastructure.

As a part of the data collection, residents were encouraged to upload photo and video evidence documenting flood conditions on their block during or after storms. These submissions were especially valuable, capturing water conditions during storm events and showing where water remains for days without draining. These materials helped verify the severity and extent of flooding and allowed us to assess whether issues were localized, such as in front of a specific catch basin, or spread across an entire block.

Figure 4: Resident Photo of Flooding on 2100 N. Prieur Street

3.2.2 ASLA Legacy Project

American Society of Landscape Architects (ASLA) and Water Wise are partnering to explore green infrastructure opportunities along North Claiborne Avenue and the I-10 corridor in The Seventh Ward, with a focus on Joint Use Agreements (JUA) shared between DOTD, the City, and local organizations. Their effort builds on the Vision to Reality model implemented by Healthy Community Services and Water Wise Gulf South and aims to install a small, maintainable project while identifying long-term opportunities for water management and community benefit.

GreenPoint joined ASLA, Water Wise, and residents for a walkthrough of Claiborne to assess potential GI implementation locations. A listening session with the residents was held prior to the site visit that provided insightful information on the issues the residents are facing with accessing Claiborne and areas around the I-10 overpass during storms and their emotions and anxieties tied to living in these flood prone areas. The walkthrough provided valuable insight into local flooding issues, revealed large underused green spaces, and helped GreenPoint collect additional data on flood-prone areas and possible contributing factors along the corridor.

ASLA mapped ownership of sites, highlighted problem areas, and developed a scorecard ranking potential GI implementation withing the JUA areas based on stormwater management need, cost, and need for community amenities. A range of GI types were considered, including pervious pavement, French drains, rain barrels, detention basins, bioswales, and tree plantings, emphasizing projects with high stormwater benefit at relatively low cost, further detailed in **Section 4.6.2.**

3.2.3 DPW/SWBNO Data Collection Process

Data received from the Department of Public Works (DPW) and Sewerage and Water Board of New Orleans (SWBNO) varied in its usefulness for this investigation. While some records provided valuable insights, others offered limited relevance to drainage conditions or were incomplete in terms of detail and scope.

GreenPoint received three sets of as-built drawings reflecting prior construction projects completed under the Joint Infrastructure Recovery Request (JIRR) program. These records are helpful for understanding recent drainage upgrades and compare updated infrastructure against field observations and community-reported flooding. Of the three sets, the following items were relevant to this investigation:

Asbuilts: RR181 St Roch

- Industry St (1900) - Full reconstruction of street with new catch basins and manholes.
- Industry St (1950) - Full reconstruction of street with new catch basins and manholes.

Asbuilts: RR004

- Allen St (2500) - Catch basin and manhole adjustment
- Pauger st (3000) - Catch basin and manhole adjustment
- 1800-1900 N Johnson - Drain line repairs
- 2400 Bell- Drain line repairs
- 2600 Elysian Fields - Drain line repairs
- 1850 N Miro - Drain line repairs

- 1600 N Tonti - Drain line repairs
- 1800 Onzaga - Drain line repairs

Asbuilts: RR003 consisted primarily of road work, sidewalk and driveway repairs, and sanitary sewer repairs. No drainage improvements were documented in the as-builts, so this set was not useful for drainage analysis.

The **GIS** data provided by the City was one of the most helpful resources received. It served as a foundation for mapping existing conditions and understanding the system layout. GreenPoint used this GIS information alongside unit maps and field visits to cross-reference known infrastructure and identify recent upgrades, system gaps, or inconsistencies. It also provided a basis for recommendations and observations on GIS interface to add onto the existing conditions that were provided by the City.

Although not captured in the JIRR as-builts, updated City GIS files and field visits confirmed several recent drainage upgrades, providing important context for current conditions and system changes in the Seventh Ward.

- The intersection of N Tonti and George Nick Connor Dr
- The intersection of Aubry and Paul Morphy (slightly outside of project boundaries but may affect drainage on N. Broad Ave.)
- 1100-1500 blocks of Touro St
- 1800-1900 blocks of N Dorgenois St

Survey data, while useful to have for background reference, played a more limited role at this stage of the investigation. These documents generally confirmed layout and elevations but did not contribute significantly to understanding performance issues or areas of concern.

GreenPoint also reviewed 311 complaint data provided by DPW. This dataset included locations, dates, and categories of concern; however, the detailed descriptions of resident complaints were not accessible from the City database. As a result, the data was limited to broad identifiers such as "flooding" or "clogged catch basin" without specific context. This information was still useful in flagging locations where drainage concerns had been reported and determine areas that likely need to be cleaned or addressed further, with the assumption and likelihood that many of these complaints have never been addressed.

3.3 Neighborhood Areas

For organizational purposes, The Seventh Ward neighborhood was divided into three distinct areas. These boundaries were created to group blocks based on geographic proximity and shared drainage characteristics, such as flow direction, outfall connection, or alignment with major streets. These neighborhood areas will be referenced throughout this report. This list of blocks in each area is presented in Table 1 below.

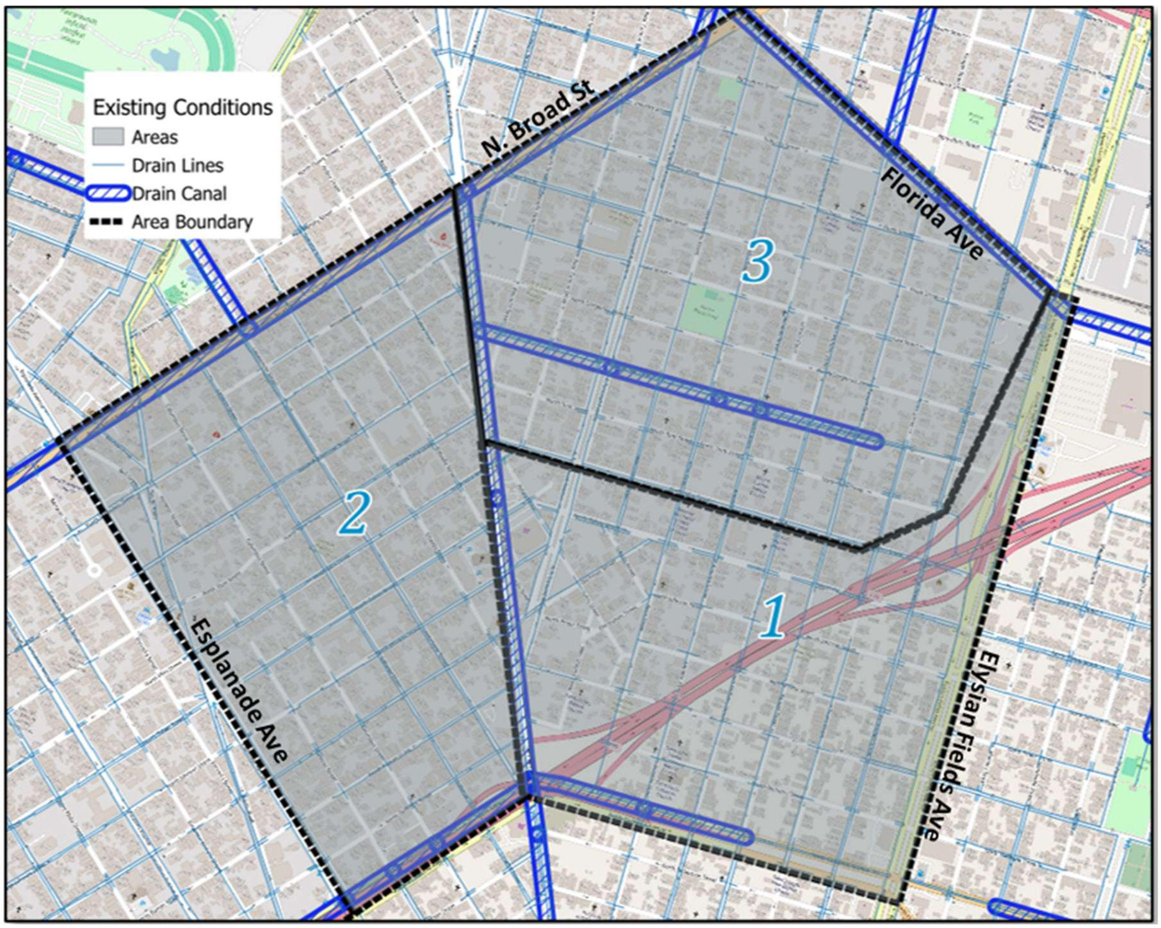

Figure 5: The Seventh Ward Neighborhood Divided into Areas

Table 1: The Seventh Ward Study Areas

Area	Horizontal blocks	Vertical blocks
1	1700 - 1900 N. Claiborne Ave	1600 - 2100 Allen St
	1700 - 2100 N. Derbigny St	1600 - 2100 Annette St
	1700 - 2100 N. Roman St	1600 - 2100 St. Anthony St
	1700 - 2100 N Prieur St	2300 - 2800 Pauger St
	1700 - 2100 N Johnson St	1600 - 2100 Touro St
	1700 - 2100 N Galvez St	1600 - 2300 Frenchman St
	1700 - 1900 Old Prieur St	1600 - 2700 Elysian Fields Ave
	1700 - 1800 Old Roman St	1700 - 2100 N Miro St
	1700 - 2100 Aubry St	1700 - 2100 N. Tonti St
	1800 - 2100 A.P. Tureaud Ave	2300 Republic St
	1700 - 2100 New Orleans St	1600 - 2300 St. Bernard Ave
2	1100 - 1600 N. Claiborne Ave	1800 - 2500 Onzaga St
	1100 - 1600 N. Derbigny St	2000 - 2500 D'abadie St
	1100 - 1300 N. Roman St	2200 - 2500 Aubry St
	1100 - 1600 N. Prieur St	2400 - 2500 O'Reilly St
	1400 - 1600 N. Johnson St	1400 - 1700 N. Rocheblave St
	1400 - 1600 N. Galvez St	1500 - 1800 Rousselin Dr
	1400 - 1600 N. Miro St	1600 - 2500 Esplanade Ave
	1400 - 1600 N. Tonti St	1600 - 2400 Kerlerec St
	2200 - 2500 Bayou Ave	1600 - 2500 Columbus St
	2100 - 2300 Laharpe St	1600 - 2500 Laharpe St
	1600 - 2500 Lapeyrouse St	1400 - 1800 N. Broad St
3	1800 - 2100 N. Rocheblave St	2200 - 2900 Allen St
	1300 - 2100 N. Dorgenois St	2200 - 2800 Annette St
	1900 - 2200 N. Broad St	2200 - 2800 St. Anothny St
	2400 - 2500 Bell St	2900 - 3500 Pauger St
	2500 Desoto St	2200 - 2700 Touro St
	2400 - 2500 St. Bernard Ave	2400 - 2700 Frenchman St
	1800 - 2100 Law St	1800 - 2100 Hope St
	2500 - 2600 Bruxelle St	1700 - 2100 Duels St
	2400 - 2600 Republic St	1700 - 1900 Industry St
	2200 - 2700 George Nick Connor Dr	1800 - 1900 Agriculture St
	2200 - 2900 A.P. Tureaud Ave	1800 - 2100 Florida Ave
	2200 - 2900 New Orleans St	

3.4 Organization of Data

A Geographical Information System (GIS) database served as the primary organizational tool throughout this investigation. The use of a GIS database to organize the data allows observation of the area as a whole and analysis of flooding patterns across the neighborhood spatially. Using the existing conditions geodata provided by the City, shown in **Figure 6** below, GreenPoint developed a base map to layer additional data collected during the investigation. This additional data includes resident ratings, deficient catch basins, drainage infrastructure details, and recommendations for new infrastructure.

Figure 6: GIS of Existing Conditions

To better understand how the drainage system functions, the as-built drawings were cross-referenced and the direction of flow was was input with arrows for each drain line. These arrows were essential in understanding how water moves through the system and where bottlenecks or backups might originate. Identifying the upstream and downstream relationships of drain lines is critical in identifying potential causes of upstream flooding in relation to data relevant to the downstream lines.

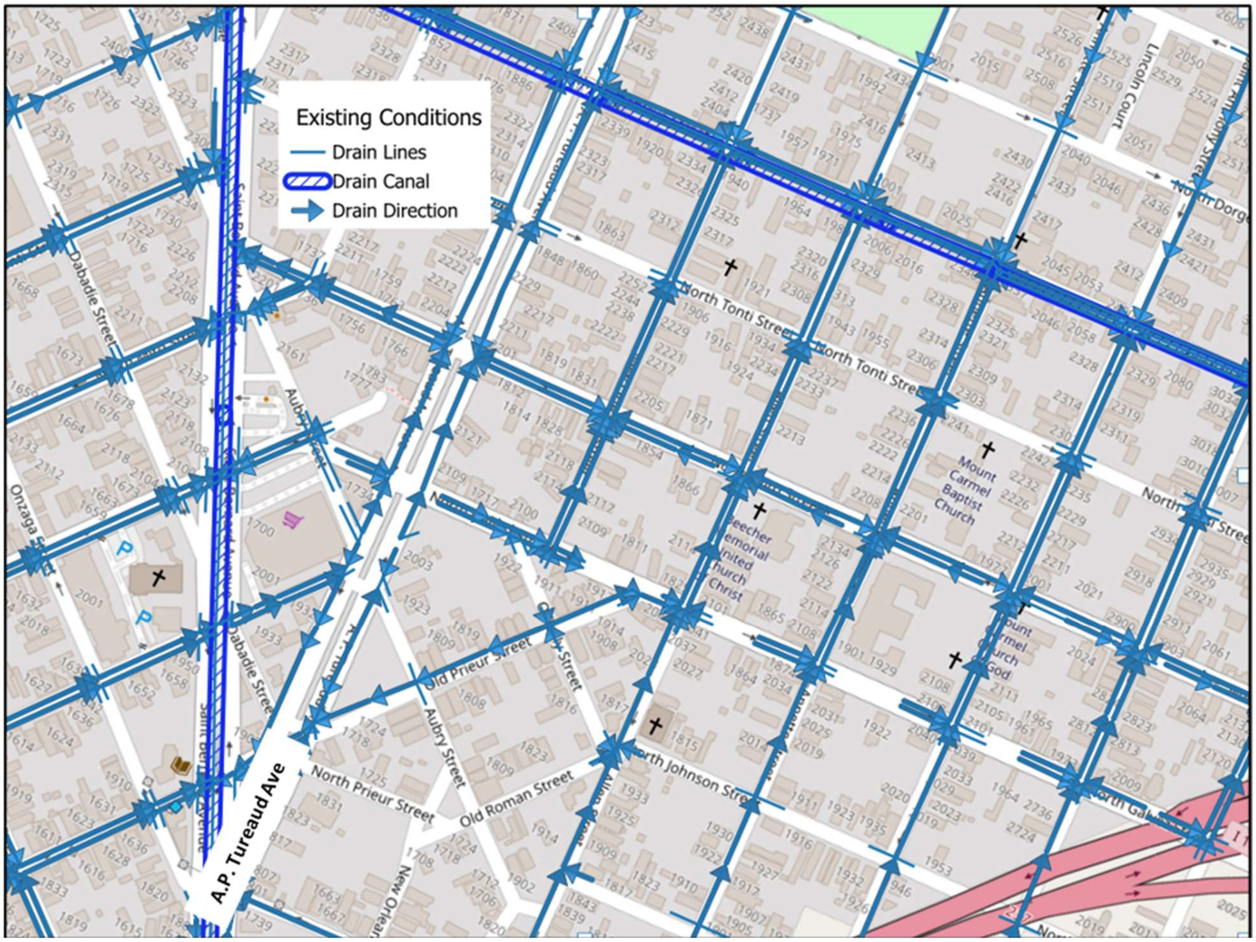

Figure 7: GIS with Drain Direction Arrows

3.4.1 **Ratings**

In addition to mapping drainage infrastructure, resident-provided flooding ratings were integrated into the GIS interface. Each block was color coded relative to the ratings listed in **Section 3.2.1**. as well as field observations. The color ratings are as follows:

- **1 - Green** (No or minimal flooding)
- **2 - Blue** (Minor flooding)
- **3 - Yellow** (Moderate flooding)
- **4 - Orange** (Frequent/severe flooding)
- **5 - Red** (Consistent and critical flooding)

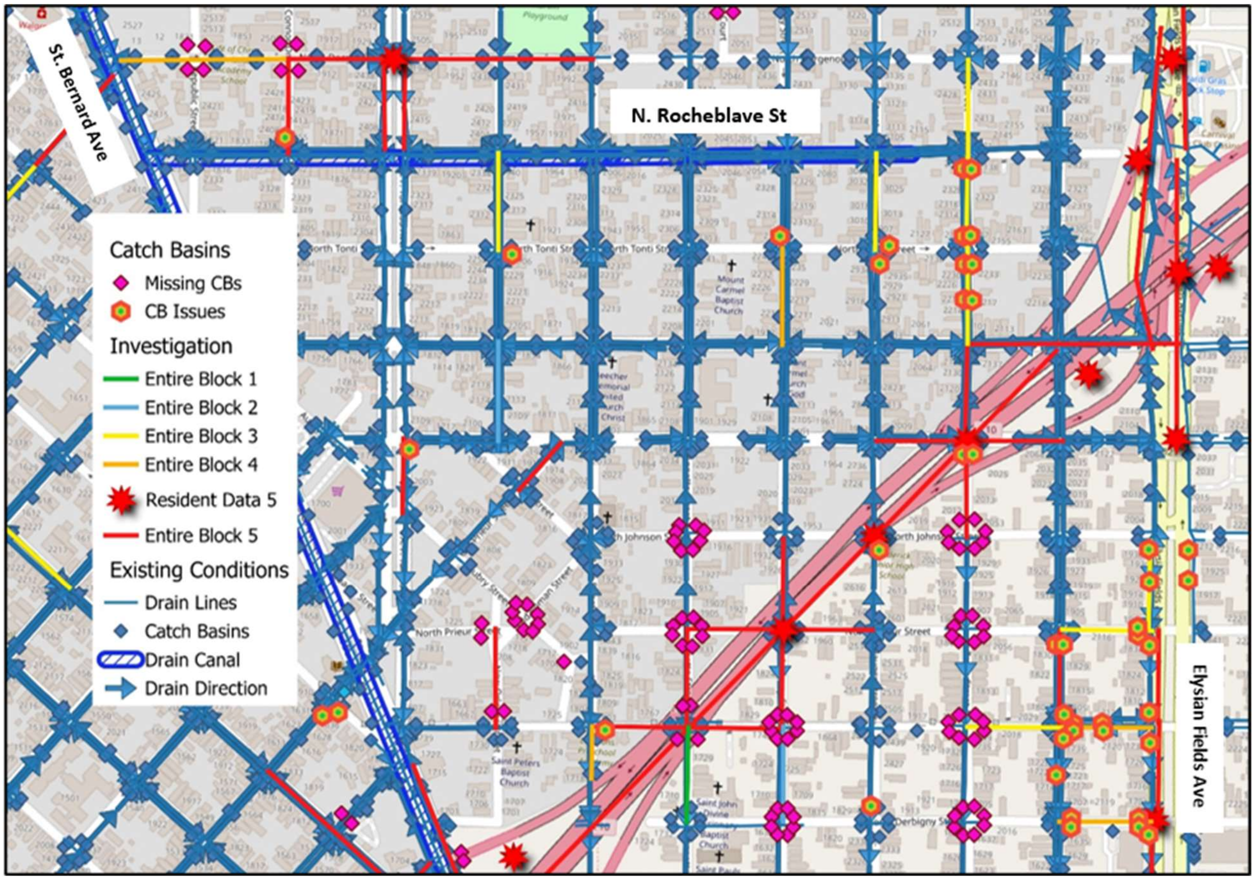

Figure 8: GIS with Resident Ratings

This rating criteria and visual approach made it easier to identify localized problem areas and compare them with topographic features, drainage infrastructure, and known system constraints. Areas with repeated high ratings often aligned with blocks lacking adequate drainage components or located at heavily lined tree areas. This GIS-integrated rating system helped prioritize areas for further field verification and guided subsequent recommendations for investigation and improvements.

3.5 Field Visits

Frequent field visits were conducted throughout the study period to observe how the drainage system in The Seventh Ward performed during both rain events and dry conditions. These visits were guided by prior knowledge and resident flooding ratings to verify reported problem areas and evaluate system behavior in real time.

During rain events, observations focused on where water flowed, where it failed to enter catch basins, and where it pooled. Dry-weather visits were less revealing but still useful for assessing street slopes, low points, and debris trails left by stormwater. While catch basins couldn’t be opened, visual inspections of street-level inlets showed several clogged or blocked drains. In several cases, inlets were visibly blocked with sediment or trash, confirming the need for cleaning and maintenance. Our observations verified reported deficiencies and identified new deficiencies in the field. These findings will be discussed further in **Section 4.6**.

3.6 Review of Previous Drainage Reports

As part of this investigation, key reports from previous consultants were reviewed to better understand drainage behavior in The Seventh Ward and the surrounding Orleans Metro Basin. These reports provided valuable context about drainage system limitations and citywide modeling efforts. These included:

- The *NODA Seventh Ward Drainage System Engineering Analysis* by CDM Smith (2015),
- *the City of New Orleans Stormwater Drainage System Root Cause Analysis* by ABS Group (2018),
- the *Stormwater Master Plan* prepared by Ardurra and ILSI Engineering,
- and additional capital planning documents prepared by CDM Smith.

The Stormwater Master Plan report identified systemic capacity constraints throughout the Downtown-Gentilly model area, which includes DPS 2, 3, 4, and 19. The plan emphasized the need for integrated modeling to combine minor (DPW) and major (SWBNO) drainage systems, which were previously evaluated in isolation. This modeling effort provided a clearer understanding of how individual neighborhoods, including The Seventh Ward, contribute to and are affected by systemwide bottlenecks.

The Root Cause Analysis report confirmed performance deficiencies at DPS 3 during past flood events, primarily due to mechanical failures and reactive maintenance practices. Although this report focused on system-wide operations, findings specific to DPS 3, including the lack of proactive inspection programs and inconsistent maintenance protocols, highlight concerns relevant to The Seventh Ward's drainage reliability.

While these reports were largely systemwide in scope, the *NODA Seventh Ward Drainage System Engineering Analysis* focused specifically on the Seventh Ward. This block-level assessment included approximately 9,200 linear feet of CCTV inspections, with results coded. The analysis documented widespread structural failures, including fractured pipes, broken segments, visible voids through pipe walls, and severe joint offsets. CDM Smith further recommended upsizing all 10- and 12-inch mains to a minimum of 15-inch reinforced concrete pipe, both to address existing failures and to ensure adequate conveyance moving forward. This neighborhood-specific report underscores the extent of deterioration already documented within the system and provides some additional information for understanding current drainage challenges in the Seventh Ward. These provided recommendations that align with blocks with drainage work performed in JIRR project RR004. Since the publishing of this report about 10 years ago, the deterrioration has likely expanded. But it does show that there are potentially similar conditions throughout other parts of the neighborhood.

System-level and neighborhood specific findings helped validate several patterns observed through resident input and field visits. Their modeling outputs and capacity analyses also helped inform assumptions about possible drainage limitations, backflow risks, and upgrade recommendations that will be discussed in the following sections and can be found in Appendix A.

3.7 Analysis

To consolidate all findings from data collection and our recommendations, GreenPoint developed a comprehensive ***Project Summary spreadsheet***. This spreadsheet serves as a final report of observed or reported flooding issues by block, incorporating notes from site visits, 311 data, resident questionnaires, and drainage infrastructure records.

Each entry includes the location, description of the complaint or issue, and a recommended next step, such as cleaning, CCTV inspection, or structural repair. This format allows for efficient tracking, prioritization, and coordination with City agencies or contractors for follow-up actions. The spreadsheet is included in **Appendix B** of this report.

4 Findings and Assumptions of Factors Contributing to Flooding in The Seventh Ward

It is a common misconception that flooding in New Orleans is caused by pumps not being in service or not working properly. While pump performance is of critical importance, the reality is much more complex and involves a range of systemic and environmental factors. New Orleans' unique topography, largely below sea level and surrounded by levees, requires that nearly all storm water be lifted and pumped out of the basin rather than draining naturally, as opposed to other cities with higher elevation gradients.

Reports prepared by other consultants suggest that improvements to the collection system could help the city better accommodate storm events that are occurring with greater frequency and intensity. What were once considered "10-year" storms now occur multiple times within a decade, a pattern largely attributed to climate change. This increasing rainfall volume places enormous stress on an already aging and capacity-limited drainage network. In the Seventh Ward, historic infrastructure compounded by shifting soils, undersized or deteriorating pipes, insufficient maintenance, and the city's limited ability to implement new drainage infrastructure further diminish system performance.

Several reports and data suggest that flooding in The Seventh Ward results from a combination of overlapping causes. Some areas lack storm drains altogether leaving entire blocks without adequate conveyance. Where catch basins do exist, many are clogged with leaves, litter, and sediment, or blocked by poorly constructed driveways that obstruct gutter flow. New residential development has added significant impervious surface, often without being fully addressed by zoning ordinances, further increasing runoff. Runoff from the I-10 overpass intensifies flooding in surrounding streets, while the overpass itself lacks adequate drainage features such as gutters to capture and redirect flow. In other cases, contractor malpractice, such as cement or debris being left in storm lines, has directly reduced system functionality.

At the same time, broader systemic issues magnify these local problems. More intense rainstorms linked to climate change, imbalance in infrastructure investment across neighborhoods, and periods when S&WB pumps are not operating at full capacity, may contribute to chronic flooding in the Seventh Ward. Taken together, these factors create a fragile and overburdened system where even minor rainfall events can leave streets impassable and residents vulnerable.

The following sections highlight some of the general causes of flooding in New Orleans and explain how these broader factors intersect with and influence the conditions specifically observed in The Seventh Ward neighborhood. These sections present key findings and working assumptions based on data collection, resident input, field observations, and previous experience.

4.1 Constraints from Topography of The Seventh Ward Neighborhood

The physical layout and surface conditions of The Seventh Ward significantly influence how stormwater moves and accumulates during rain events. As one of the oldest and most densely built neighborhoods in New Orleans, it has limited green space and with much of the land covered by rooftops, asphalt, and concrete. Most of the neighborhood sits below sea level on poorly draining, clay-rich soils, which further limit infiltration and placing near-total reliance on the subsurface drainage system. Furthermore, in recent years, new residential construction and other developments have further reduced the amount of pervious surface, increasing the volume of stormwater runoff into the storm collection system. While the Esplanade Ridge provides higher ground near Esplanade Avenue and parts of St. Claude, elevations fall sharply moving northwest toward N. Broad, A.P. Tureaud, and Elysian Fields, where some of the lowest points in the area exist below sea level.

The I-10 interstate compounds these vulnerabilities, shedding large volumes of runoff into a neighborhood already lacking adequate catch basin coverage. Furthermore, field evidence and resident input confirm that litter and debris frequently clog inlets, reducing functionality. The neighborhood's mature oak trees, while culturally and visually significant, contribute additional stress through root intrusion and heavy leaf debris that fills catch basins.

The roadway layout presents further challenges. Many blocks have been paved and repaved with little regard for drainage, leaving streets without curbs, positive grading, or clear gutter lines to direct stormwater to inlets. In some locations, repeated resurfacing has raised street elevations above adjacent sidewalks and homes, causing water to flow onto residents' property. Additionally, several blocks lack storm inlets altogether, allowing water to pool and not reach catch basins exist nearby.

Overall, the neighborhood's compact layout, aging infrastructure, low-lying elevation, and limited permeability amplify flood risks and leave the community highly dependent on a system that is already strained and poorly maintained.

4.2 Condition of Drainage Components

One of the major contributors to poor drainage performance in The Seventh Ward is the age and condition of the subsurface infrastructure. Older pipes in the system were constructed from terracotta clay, which is highly susceptible to cracking, breaking, or collapsing under stress, as seen in **Figure 9** below. Modern systems typically use reinforced concrete (RCP) or PVC pipes, which are more resilient. In The Seventh Ward, most visible infrastructure appears to be RCP, but pipe material has not been confirmed due to limited access and visibility.

Over time, the structural integrity of these pipes degrades, particularly in a city like New Orleans where the ground is constantly shifting due to subsidence. These ground movements can lead to joint displacements, cracks, and even full pipe collapses. Additional utility conflicts and failures can occur with the drain system sharing the same roadway with other utilities like gas, water and sewer. **Figure 10** below is an example from a previous drainage project performed by GreenPoint of a gas line bored through a pipe where a water leak is entering the drainage system. These types of failures not only reduce the capacity of the drainage network but can also create conditions for sinkholes, surface flooding, and ongoing infrastructure deterioration.

Figure 9: Example of Broken Terracotta Drain Line

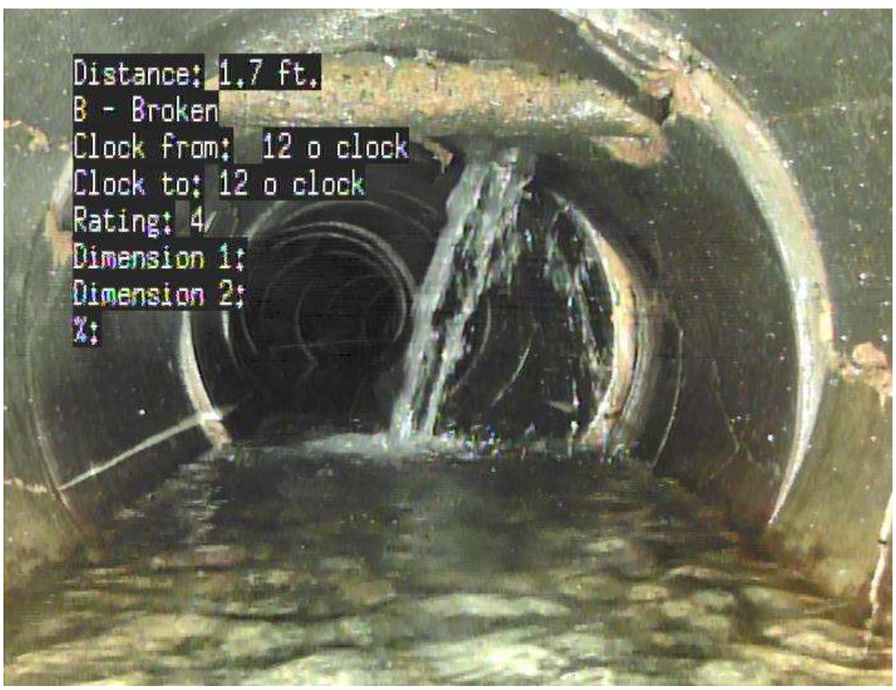

Figure 10: Example of Water Leak Intrusion to Drainage Pipe

In some cases, lateral connections from the catch basins to the drain line can collapse compromising the conveyance of storm water into the system at its entry. When collapses occur at or near the catch basin, it may cause the catch basin to sink narrowing the entry of the basin and potentially severing the connection between the catch basin and the main line.

4.3 Clogs, backups

Clogs within the drainage system are one of the most common causes of localized flooding in New Orleans. When catch basins or pipes are obstructed by grease, trash, pollutants, or natural debris such as leaves and dirt, stormwater cannot enter the system or flow efficiently through it. In other cases, clogs could be the result of contractor malpractice, such as concrete being improperly poured or washed into a drain line during construction. As shown in **Figure 11**, concrete inside a drainage pipe significantly reduces its flow capacity. In more severe cases, concrete can fully block a lateral or main line, particularly near catch basins, leading to immediate flooding during rainfall events.

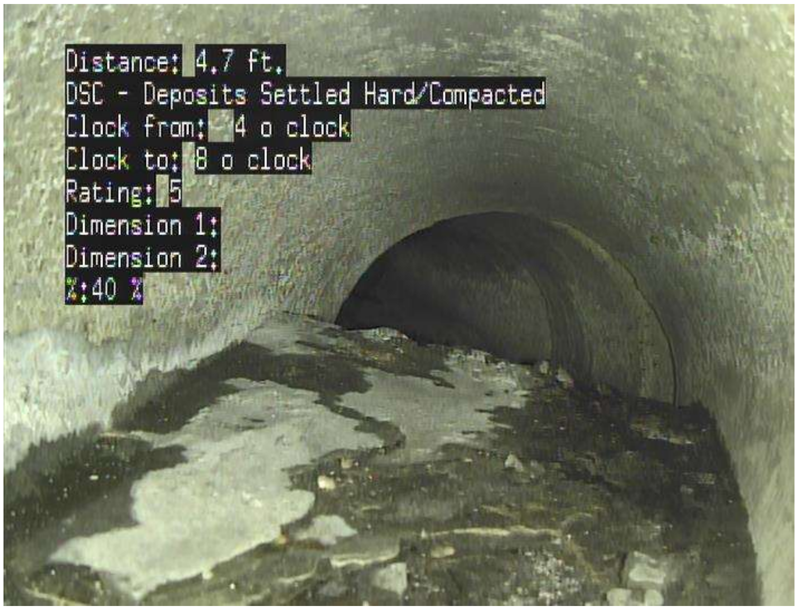

Figure 5: Hardened Concrete in Drain Pipe

This results in surface ponding and street flooding, even during minor rain events. Because the drainage network in the Seventh Ward is highly interconnected, a clog downstream can prevent upstream water from flowing, causing water to back up and flood those upstream blocks that may otherwise function properly.

Field observations and resident reports confirm widespread litter and long-term trash accumulation throughout the neighborhood. The pattern of clogged basins and neglected lines is consistent across the neighborhood, pointing to a lack of routine cleaning and maintenance. In Tremé, SWBNO’s cleanings and GreenPoint’s investigation revealed that some streets in the neighborhood were almost entirely clogged with years of accumulated debris, bottles, sediment, and trash. Evidence suggests that the Seventh Ward has experienced similar long gaps in maintenance, with some areas likely not cleaned since Hurricane Katrina. As a result, many catch basins remain ineffective, particularly in heavily vegetated corridors such as Esplanade and N. Broad, where leaf litter compounds the problem.

Figure 12: Blocked Catch Basin on 1800 Elysian Fields Ave

4.3.1 Tree Roots and Clogs

Oak trees, which are protected and iconic in New Orleans, contribute greatly to the character of The Seventh Ward neighborhood. These mature trees have grown alongside the community for generations and are deeply embedded in its identity. However, their powerful root systems present serious challenges to nearby drainage infrastructure, especially in a historic neighborhood like The Seventh Ward where aging pipes and subsurface structures are common.

Tree roots naturally seek out moisture and can grow into small cracks or joints in older pipes, as shown in Figure 13 below. Once inside, they can trap debris such as grease, leaves, and sediment, creating blockages that restrict or completely obstruct water flow. Over time, expanding roots can place pressure on pipe walls, causing cracks, separations, or even full collapses. Additionally, large root systems may shift surrounding soil, leading to misalignment or slope displacement of drain lines.

In The Seventh Ward, there are several locations where oak trees are situated directly adjacent to intersections and drainage structures such as catch basins and lateral connections. Given the age of the system, it is likely that roots have become intertwined or collapsed the drainage network. From our experience conducting CCTV inspections in similar urban neighborhoods in New Orleans, it is possible that drain lines in areas like this can be completely collapsed and blocked. CCTV will be recommended for areas of inoperable catch basins that are located in close proximity to oak trees or large trees.

Figure 6: Tree Roots Intrusion in Drain Line

Areas of dense tree cover, particularly along St. Bernard, Elysian Fields, Esplanade, Bayou Road, and portions of N. Dorgenois Street, frequently experience flooding due to leaf litter and organic debris clogging inlets and catch basins. These streets often lack sufficient grading to promote runoff, causing water to pond in low spots. Reports of inoperable or slow-draining catch basins consistently align with these heavily vegetated corridors, reinforcing the need for more frequent cleaning and proactive maintenance in tree-lined areas.

4.4 Lack of Drainage Infrastructure

Within The Seventh Ward, several areas were identified as lacking modern drainage infrastructure. This presents one of the largest factors contributing to localized flooding and persistent standing water in the Seventh Ward.

The areas lacking drainage infrastructure in the Seventh Ward are most concentrated south of N. Galvez Street, where many intersections rely on outdated surface features such as shallow ditches or French drains. These systems provide only minimal storage and conveyance, leaving water to pond during even moderate storms. The concentration of missing infrastructure in this portion of the neighborhood is particularly problematic. Rather than having these areas lacking coverage dispersed sparsely throughout the neighborhood, there exists large clusters of blocks where stormwater has nowhere to go, placing additional strain on the few catch basins that do exist nearby.

On streets where new drainage has been recently added in areas where the adjacent blocks are lacking drainage infrastructure, it is important to recognize that these blocks are often designed with additional catch basins to accommodate not only runoff from their own street but also from adjacent blocks that lack drainage. When designing new infrastructure in a neighborhood with incomplete coverage, engineers may plan their design with the possibility that upstream blocks may never receive upgrades. For this reason, newly constructed drainage blocks are frequently built with additional inlets and larger conveyance capacity to handle both current and potential future flows. However, for these improvements to function properly, the grading on the upgraded block must be lower than the surrounding streets without catch basins. Without intentional grading to direct water toward the new inlets, runoff from adjacent blocks will continue to bypass the drainage system and contribute to ponding.

In other cases, such as N. Claiborne Ave, adequate catch basin coverage is missing with only one or two catch basins serving entire blocks that regularly flood during rain events. The most significant gap is directly under the I-10 overpass, where the absence of drainage infrastructure leaves a major deficit that contributes heavily to flooding issues, as discussed further in **Section 4.6.2**.

These gaps are mapped and documented in the GIS recommendations dataset, which identifies locations requiring new catch basins (highlighted in pink). A complete list of these areas and proposed infrastructure upgrades is provided in the Project Summary spreadsheet in Appendix B.

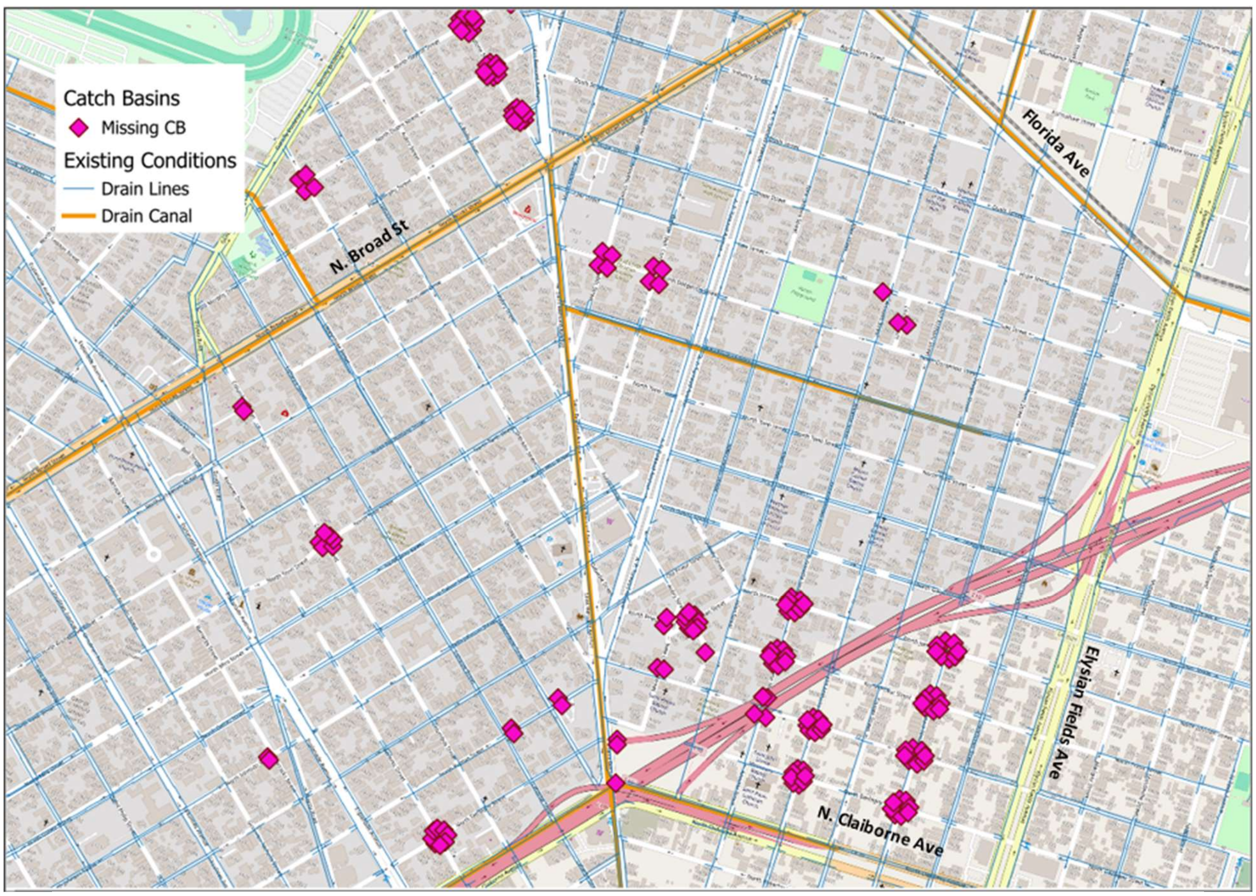

Figure 14: GIS Map of Missing Catch Basins

4.5 System Capacity

While most flooding in The Seventh Ward is suspected due to lack of stormwater conveyance capacity at the source, the capacity of the city's drainage and pumping system must be considered as well. The system is operated by a combination of constant-duty and variable-speed pumps that are activated based on water level thresholds in the intake basins. When rainfall occurs at rates exceeding system design capacity, stormwater can accumulate faster than it can be removed, leading to street flooding. This risk increases during intense storms or hurricanes when power outages may occur, or when pumps are taken offline for scheduled or emergency maintenance.

The hydraulic behavior of the drainage system also plays a key role. When the stormwater network is full it becomes pressurized and the hydraulic grade line, or natural water level in a closed pipe system, can exceed the elevation of catch basin inverts or adjacent roadways. This can result in water backing up through the system and emerging at surface inlets or manholes. This water level will not recede until the overall hydraulic grade in the system is lowered. In essence, water at any given catch basin cannot flow into the drainage system until the water level at the outlet is lowered to allow natural gravity flow. This is particularly true in areas where conveyance relies on older, undersized and in some cases damaged pipes.

More rarely, coastal hazards such as storm surge can also affect drainage conditions. Water pushed inland by hurricanes or strong storms can raise water levels in the canals and outfalls, reducing the system's ability to discharge runoff and compounding inland flooding issues. DPS 3 is integrated into the Sewerage and Water Board of New Orleans (SWBNO) 25-cycle power loop, ensuring continuous operation during storm events. Water from the subsurface drainage network is pumped into the London Avenue Canal, which normally drains by gravity into Lake Pontchartrain. At the lake's edge, a discharge gate remains open under typical conditions to allow continuous outflow by gravity. As a part of post-Katrina flood protection, the U.S. Army Corps of Engineers installed flood gates at the mouths of the drainage canals at Lake Pontchartrain, to be closed if the lake water level rises as a flood protection measure to prevent storm surge from entering the city's drainage canals. While this barrier protects against lake backflow, it can, under certain conditions, limit the system's ability to discharge stormwater during active rainfall, creating a potential bottleneck until the gate is reopened. However, for most day-to-day storm events, the gates remain open and do not impact normal drainage operations.

Even with fully operational pumps, physical constraints and hydraulic bottlenecks within the canal network can severely limit system performance during peak storm events. While recent anecdotal information suggests ongoing issues with flow routing and system capacity, a full investigation of pump hydraulics and pump station connectivity is beyond the scope of this report. Addressing such deficiencies, both mechanical and operational, will be critical to improving drainage outcomes for The Seventh Ward. However, meaningful upgrades to outfall system features are likely constrained by operational risks, such as the need to take pumps offline, which can introduce short-term vulnerabilities during rain events. It is also worth noting that SWBNO may not currently have the capital, staffing, or system redundancy needed to undertake significant outfall system upgrades without external support. Further evaluation by the City or SWBNO would be needed to assess feasibility, capacity limits, and opportunities for phased improvements.

4.6 Localized Problem Areas a.k.a. "Hot Spots"

Within the Neighborhood Areas detailed in **Section 3.3,** "hot spot" zones were identified for each indicating priority areas for this investigation. Using the rating criteria outlined in **Section 3.4.1**, GreenPoint categorized localized flooding issues by severity and frequency, then grouped blocks that fell within the same neighborhood area (defined in Section 3.3) or shared a common drainage outfall or system constraint. These localized problem areas, or hot spots, represent areas where flooding likely stems from a shared underlying issue. Identifying these hot spots helps prioritize investigation and improvement efforts by highlighting localized patterns of flooding that require targeted solutions.

4.6.1 Neighborhood Area 1

Area 1 has three major hot spot zones characterized by impact from the I-10 overpass, insufficient draining along Esplanade Avenue, and outdated infrastructure tied to the neighborhood's older street grid and drainage configuration. The St. Bernard canal, the N. Clairborne canal, and Esplanade Ave are the main outfall points of this area.

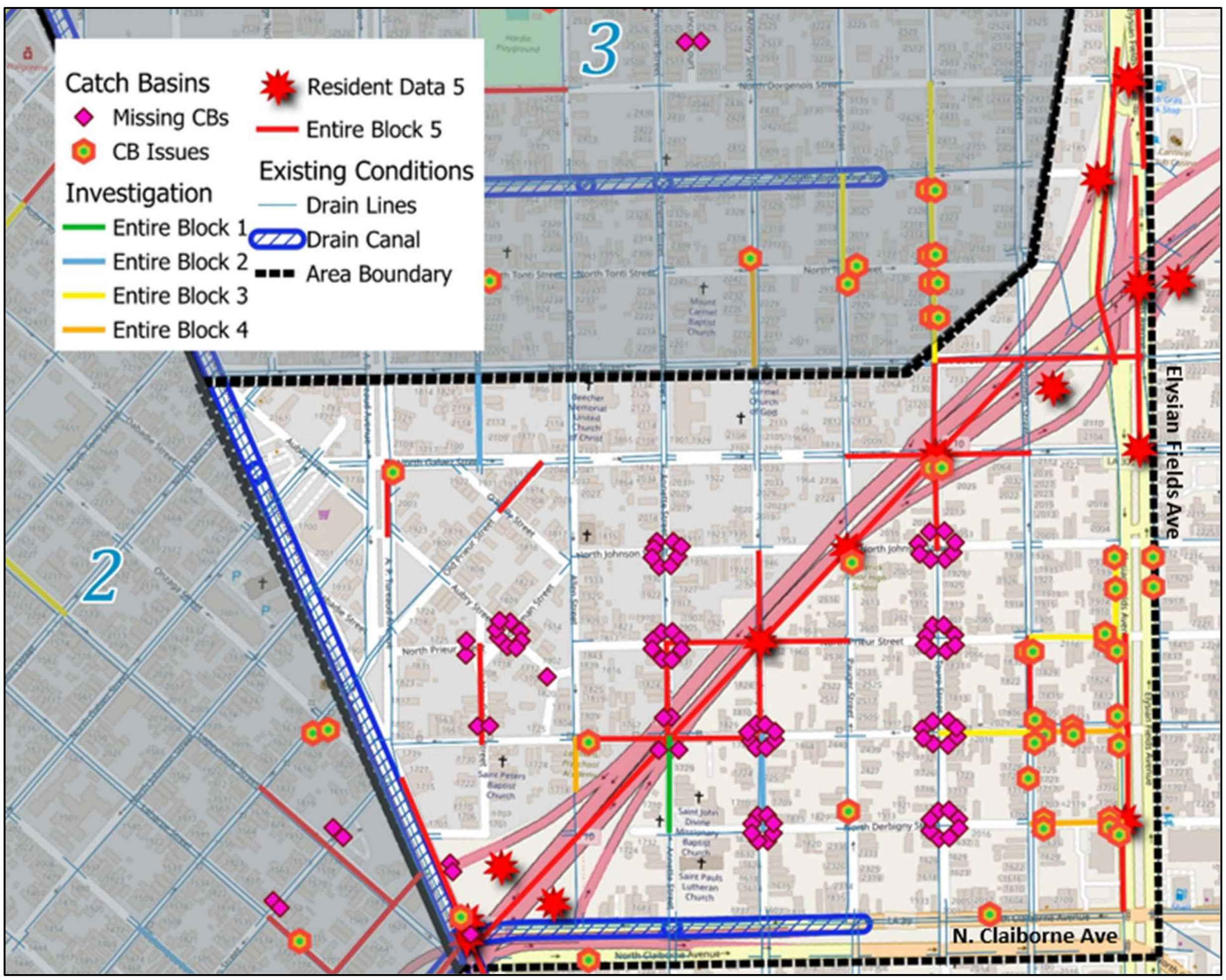

Figure 7: Neighborhood Area 1 Map

4.6.2 **Zone 1.1: The Impact of I-10 Overpass**

This area is a priority zone and one of the most frequently reported flooding hotspots in the Seventh Ward. Flooding here is directly tied to the construction of the I-10, which dramatically altered neighborhood hydrology by introducing large volumes of uncontrolled runoff without corresponding drainage upgrades to accommodate the additional runoff that the interstate introduced. With undersized or absent drainage infrastructure in place, residents continue to experience frequent and severe flooding.

The flood-prone corridor extends from Hunter's Field at St. Bernard Avenue and N. Claiborne to N. Miro and Elysian Fields, encompassing the streets beneath the I-10 including Touro, Pauger, St. Anthony, and Allen. Flooding is driven by the combination of intense sheeting from the I-10 deck, on/off ramps, and overhangs, and the lack of adequate drainage on surrounding streets. During rain events, stormwater sheets off the elevated interstate with force, splashing onto vehicles and flowing into adjacent streets, backyards, and parking areas.

At St. Bernard and Claiborne, residents report the intersection from the I-10 off-ramp becomes impassable, with Hunter's Field quickly flooding along its rear walkways even in moderate rainfall. St. Bernard Avenue is heavily lined with oak trees and the inlet openings near the park are undersized and clogged with mud and leaves. Flooding here is exacerbated by runoff from the interstate ramps that overwhelms the poorly functioning drainage at this location. **Figure 16** below is from Google Earth and shows a clogged inlet at this off-ramp on St. Bernard, with persistent blockage dating back to 2011.

Figure 8: Google Earth 2011 to 2025 Imagery of Clogged Inlet at St. Bernard and N. Claiborne

Low spots on the block are designed to collect water to drain but this low spot now functions as a permanent basin, holding excess runoff with no working outlet. It is likely the other catch basins and drain lines along St. Bernard are in similar condition creating a backup along the avenue and upstream blocks like N. Claiborne and the back of Hunter's Field. At the rear of Hunter's Field, around the 1600-1700 blocks of Allen Street, the residents have documented knee-deep flooding during minor storms, with repeated 311 reports and prior repair attempts that failed to improve conditions. Though it can be deduced that I-10 is a driving factor in flooding at this location, CCTV and cleaning of the drain lines will be necessary to truly determine the root cause. Considering green infrastructure in the short term at Hunter's Field is recommended and discussed in the following sections.

Other streets beneath or adjacent to the overpass, including Annette, St. Anthony, N. Johnson, N. Roman, N. Galvez, and N. Tonti, show a pattern of missing and inoperable catch basins. Residents report constant flooding, unsanitary standing water, worsening potholes, and unsafe conditions for both vehicles and bicycles. The lengths of Annette, St. Anthony and Touro St have little to no existing drainage infrastructure, leaving these areas extremely vulnerable to normal flooding combined with excess interstate runoff. The flooding is compounded at intersections such as Annette and Roman, St. Anthony and Prieur, and N. Johnson and Pauger, where runoff collects at low points where the limited drainage at these locations have reports of being inefficient and clogged with debris, further reducing the already limited capacity.

Figure 9: Flooding and Clogged CB Under I-10 at N. Johnson St

As shown in **Figure 18** below, flooding reports align closely with areas lacking drainage infrastructure or with reported catch basin issues.

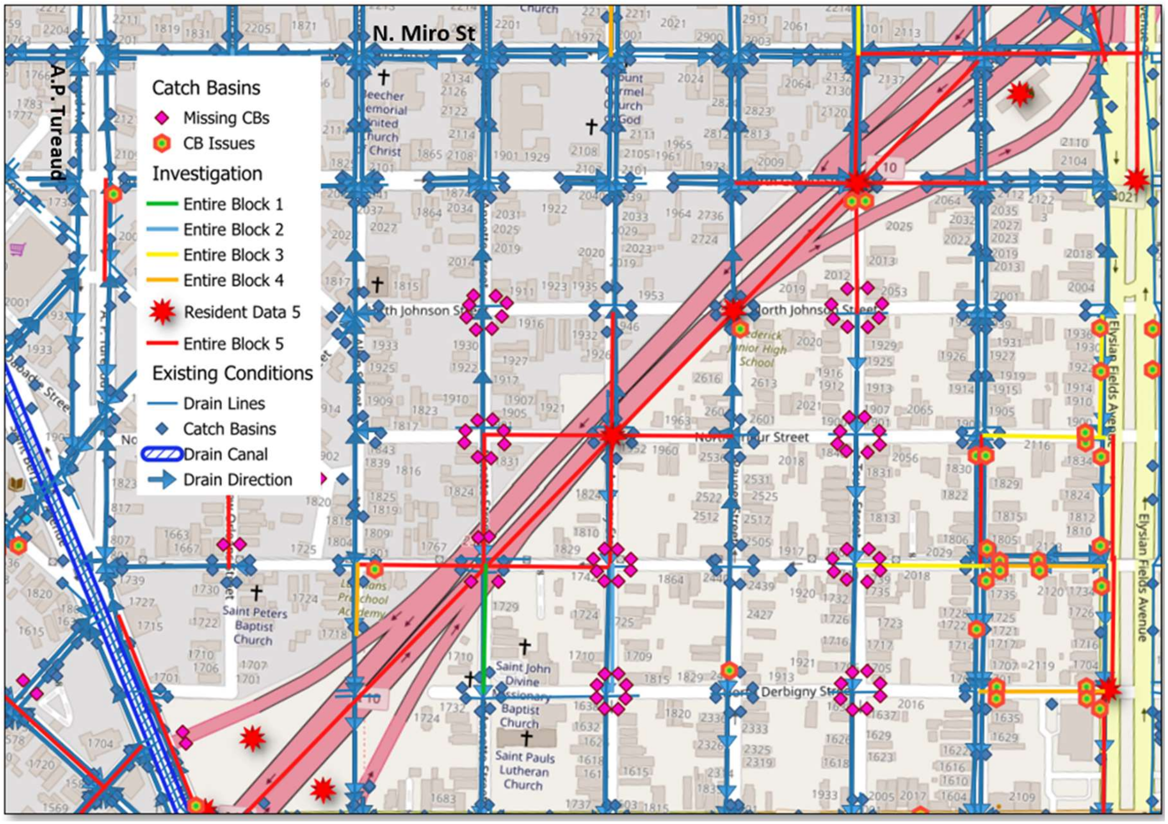

Figure 18: Map of Area 1

Flooding continues east to Elysian Fields and N. Miro near the fire station, another priority location where the I-10 split generates concentrated runoff. All four ramps surrounding the station are frequently reported as impassable, forcing vehicles, including emergency responders to reroute. N. Galvez is also consistently cited as impassable during rain events, with downstream clogging on Elysian Fields likely exacerbating conditions. The convergence of on- and off-ramps, combined with the twin I-10 bridge structure, creates a surge of runoff that the limited drainage infrastructure at the base of these ramps cannot manage. These conditions underscore how both inadequate infrastructure and poor maintenance contribute to chronic flooding in this area. To fully understand system limitations, drainage calculations and elevation surveys would be needed to evaluate system capacity and surface grading, as this location ultimately outfalls into the Florida Avenue Canal, which is presumed to have sufficient downstream capacity.

The underlying pattern suggests the construction of the I-10 introduced large volumes of additional runoff into a neighborhood that never received parallel drainage upgrades. Entire blocks remain without catch basins, while existing lines are clogged with litter, sediment, and tree debris. The system is undersized for the hydrologic load, leaving low points at Hunter’s Field, St. Bernard Avenue, and the Elysian Fields ramps to collect runoff without adequate conveyance.

Zone 1.1: Recommendations

Recommended first steps for this zone include a combination of cleaning, infrastructure upgrades, and runoff management strategies. Comprehensive cleaning and CCTV inspection should be conducted across the entire zone, with prioritized focus on blocks with reported flooding.

Eventually, the most impactful resolution will be installing new drainage infrastructure throughout this area. At targeted locations such as Hunter's Field and the base of interstate ramps, small, debris-prone mountable inlets should be replaced with larger curb inlets to reduce clogging. New catch basins at key intersections, including Galvez/Touro, Annette/Roman, and St. Anthony/Prieur, as well as at ramp bases, like 1600 N. Claiborne Ave, where runoff from the I-10 concentrates will alleviate much of the flooding experienced by residents.

Green infrastructure opportunities for this area were evaluated in partnership with ASLA, as described in Section 3.2.2. Priority sites were identified along the I-10 corridor in Area 1, where flooding is most severe, ranking them based on highest need for stormwater management at lowest cost and not needing any community amenities. **Figure 19** below shows a map of numbered sites considered by ASLA.

Sites 25, 24, and 22, between Touro Street and Marigny Street, were ranked as highest priority due to the concentration of flooding issues on Elysian Fields, along with lowest cost of implementation and no need for amenities. Potential interventions here include detention basins or trees being implemented between the bridge decks, and open space enhancements. For Site 22, ASLA recommended a dry creek between the bridge decks to help capture stormwater sheeting off the interstate, with potential for grass swale or cypress trees. Sites 24 and 25, across from Elysian Fields, for detention basins and street tree plantings. Site 25 was identified as the most expensive due to excavation and soil removal requirements. ASLA recommended that DOTD be considered as a long-term partner for annual maintenance of these areas.

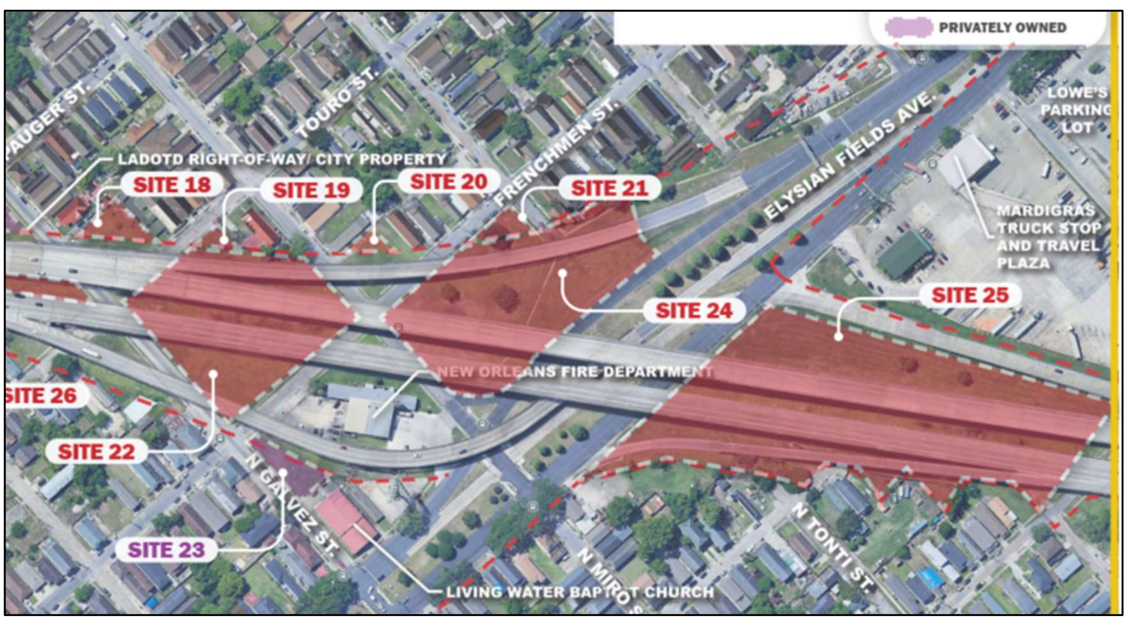

Figure 10: ASLA Numbered Sites 18-25

Another priority site was the rear of Hunter's Field (Site 9), where a medium-cost project ranked high on stormwater need and no need for amenities. Recommended interventions include a French drain leading to a detention basin at the base of the I-10 off ramp and additional street trees. This would spread stormwater management capacity across the neighborhood rather than concentrating improvements solely near Elysian Fields. Because portions of the site closest to St. Bernard Avenue are owned by DOTD, collaboration will be essential.

Figure 20: ASLA Numbered Sites 9-11

ASLA's cost evaluations emphasized strategies to reduce long-term maintenance, such as planting water resilient plants and trees, like cypress, to reduce need for mowing and absorb extra water, while ensuring DOTD can still access the area for maintenance. They also suggest adding green infrastructure over time as funding becomes available rather than focusing on tackling it all at once.

In addition to these proposals from ASLA, smaller-scale interventions could help relieve flooding in the near term. To better manage runoff under the overpass, additional downspouts, scuppers, or controlled channels should be considered to direct stormwater into designated capture points, such as rain gardens, that will provide immediate capture of stormwater cascading from the bridge decks, similar to installations on 600 N. Claiborne in Tremé. Additionally, installing bioswales and tree trenches along Pauger, St. Anthony, and St. Bernard could intercept runoff and reduce leaf-related clogging.

Zone 1.2: Impact from Elysian Fields

Elysian Fields Avenue, particularly between N. Dorgenois and Florida Ave, has been identified as a priority corridor in the Seventh Ward, however flooding concerns have been reported along nearly the entire stretch of the Elysian Fields Avenue. Residents consistently note that even moderate rain events result in standing water, impassable conditions, and damage to vehicles and property. Residents report that heavy or long-duration rainfall can take days to drain, with floodwaters reaching vehicles and front yards.

The drainage system along Elysian Fields is split at N. Johnson and drains in two different directions. The 1600-1900 blocks drain flows into a 24-inch line on N. Claiborne Ave that flows westward along N. Claiborn and ties into the 5.5-foot box canal. The 2000-2700 blocks flow northward to Florida Avenue where it outfalls in the 25-foot Florida Avenue canal. Flooding is widespread and recurrent along this corridor in both directions.

Blocks 1600-2100 are heavily lined with mature oak trees, contributing to recurring clogging of inlets and potential compromise of buried lines due to root intrusion. Landscapers have been reported to be blowing leaves into the street exacerbating the problem, clogging inlets and filling parking lanes with debris. Reports confirm clogged catch basins and sediment or leaves buildup across the length of the block.

Figure 21: Evidence of Leaves and Clogged Catch Basin on 1900 Elysian Fields

Several side streets, including the 2000-2100 blocks of N. Derbigny, N. Roman, and N. Prieur, all drain toward Elysian Fields. Because Elysian Fields is already reported to have severe backups and clogged lines, flooding on these blocks is likely tied to downstream capacity issues.

Conditions worsen on blocks 2100-2700 toward Florida Avenue, particularly under the I-10. Water from the interstate overpass sheets directly onto Elysian Fields near the Lowe's at Florida Avenue, with runoff collecting in low spots and remaining long after rain events. Residents reported that as little as two inches of rainfall rendered both northbound and southbound lanes impassable, with vehicle wakes forming along the roadway. Multiple listening session participants confirmed that portions of the corridor never dry, with standing water, debris, and clogged catch basins noted even during dry weather.

Figure 22: Flooding at N. Dorgenois and Elysian Fields

Zone 1.2: Recommendations

While it appears this area has sufficient drainage infrastructure in place, field evidence and resident reports show that the system is compromised. There are less trees in this area, so while there is potential for clogged lines, CCTV, rather than cleaning, for this portion is more recommended to identify if there is a bigger issue at hand.

Recommendations for this corridor include a full system cleaning from N. Claiborne to 1600-2100 and CCTV inspection onwards towards Florida Avenue, with particular attention to downstream segments where backups are affecting adjacent streets. Catch basins already reported should be prioritized for rehabilitation to restore functionality. Runoff from the I-10 overpass should be evaluated with potential features to intercept flow before it reaches Elysian Fields, in addition to what is already being considered for Zone 1.1.

Zone 1.3 Old Prieur and Old Roman

This portion of the Seventh Ward presents a different type of drainage issue compared to other zones. Streets such as Old Prieur and Old Roman are visibly older, with narrower cross-sections and an irregular street grid that does not match the surrounding neighborhood. These conditions have left this pocket with almost no modern drainage infrastructure, making it highly vulnerable to flooding during even small rain events.

The Old Prieur, Old Roman, and New Orleans corridor has almost no functional drainage infrastructure, leaving the area highly vulnerable to flooding. Residents have described the 1900 block of Old Prieur as being a low spot where water ponds for days, with debris accumulation and repeated property damage. Old Roman Street, including the 1700 block and the intersections with Aubry and N. Prieur, has no catch basins at all, leaving the entire triangle without drainage coverage and prone to standing water after every storm. On New Orleans Street, residents report that catch basins were removed or covered during recent road work, causing the entire 1800 block to remain flooded after rain events.

It is likely that this area is also impacted by downstream issues along St. Bernard Avenue, where clogged or non-performing drainage is reducing conveyance. Together, the lack of catch basins and downstream blockages leave this zone with persistent standing water and repeated flood damage.

Zone 1.3: Recommendations

To address the chronic flooding issues in this zone, new drainage infrastructure could be installed at Old Roman and Aubry, New Orleans and N. Prieur, and along the 1900 block of Old Prieur and tied into St. Bernard Avenue, given capacity allowance of the canal. Existing drains in this zone should be cleaned and verified, while localized low spots and roadway conditions should be improved to reestablish positive flow to new or existing inlets.

4.6.3 Neighborhood Area 2

Area 2 has four major hot spot zone, along N. Claiborne Ave, N Derbigny St, N. Broad St, and N. Dorgenois St. The primary outfall of Area 2 is the St. Bernard Avenue canal.

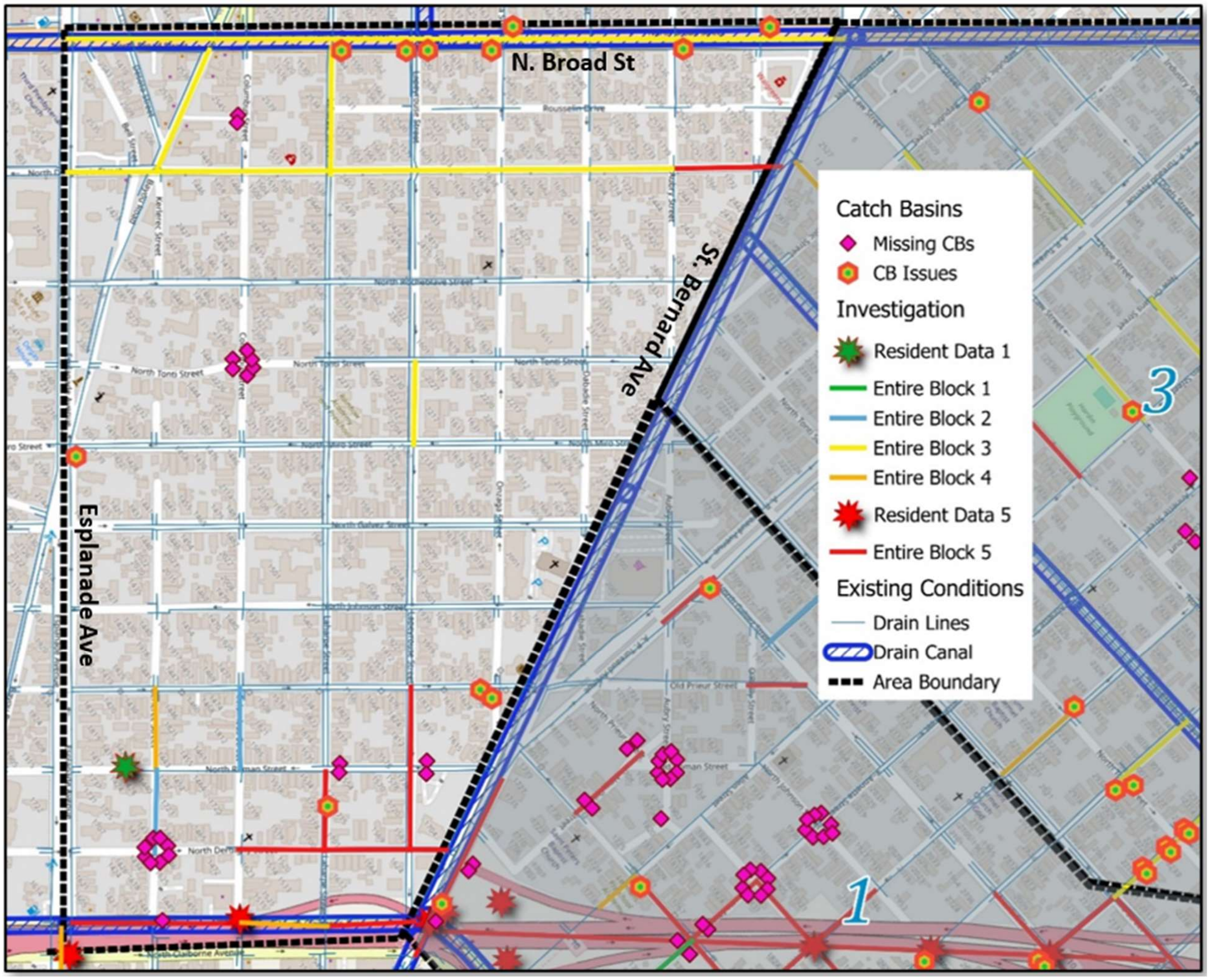

Figure 11: Neighborhood Area 2 Map

Zone 2.1 N. Claiborne Avenue and I-10

North Claiborne Avenue experiences chronic flooding throughout its corridor in Area 2, particularly from the 1400-1600 blocks, with severity ratings reported between 3 and 5. Listening sessions and field visits confirmed that flooding impacts are widespread, particularly near the Esplanade exit and interstate ramps. Runoff is particularly acute beneath the I-10 overpass, where water sheets in the same way described in Zone 1.1, impacting residential and commercial business and creating hazardous driving conditions along the street. The corridor beneath the interstate lacks green space or permeable surfaces, with parking lots, such as those near Cajun Seafood, extending to the roadway. Although new

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green infrastructure has been installed in isolated areas, such as near the 1550 block, these improvements have not been sufficient to address the broader flooding issues, and residents continue to report slow-draining conditions even after short rain events. Additionally, in some locations, runoff from disconnected interstate pipes discharges directly into the roadway rather than toward any drainage infrastructure.

The existing drainage system along N. Claiborne consists of 10-inch lines that discharge into the Claiborne Avenue canal. The corridor consists only of catch basins along the outer curbs of the block, with no inlets beneath the I-10 overpass where runoff consistently accumulates and pools directly in the travel lanes. Furthermore, the inlets that are present are reported to either be clogged or poorly functioning. Given the size and condition of the canal, it is unlikely that downstream conveyance in the canal is the limiting factor; instead, the issue appears to stem from localized conditions, including undersized and clogged lines and inadequate amount of drain inlets for runoff quantity.

As observed in areas of Tremé, Esplanade Avenue also contributes to drainage problems in the N. Claiborne corridor. Esplanade's elevation is higher than that of the surrounding blocks and its inoperable or catch basins prevent capture on the block, allowing stormwater to flow into adjacent lower-lying streets. This runoff compounds flooding conditions along Claiborne Avenue and upstream streets.

Together, it can be suspected that limited inlet coverage, clogged drains, and uncontrolled interstate runoff continue to undermine drainage performance, leaving this cultural and transportation hub highly susceptible to chronic flooding.

Zone 2.1: Recommendations

To address flooding along N. Claiborne Avenue and the I-10 overpass, a combination of cleaning, infrastructure upgrades, and runoff management is recommended. Comprehensive cleaning and CCTV inspection should be performed across the corridor, with priority on the 1400-1600 blocks where blockages are most likely. Runoff from the I-10 deck should be redirected into the drainage system through new downspouts, scuppers, or connected pipes to reduce uncontrolled sheeting into neighborhood streets. Building on recent Water Wise installations, rain gardens, bioretention cells, and permeable surfaces could be added where space allows, particularly in parking areas beneath the overpass. In the longer term, additional catch basins should be installed along the inner curbs of Claiborne, especially beneath the overpass and at intersections like Kerlerec Street, with upsizing of downstream conveyance considered in areas of repeated flooding, in consideration of CDM Smith's recommendations. Finally, a routine maintenance schedule for catch basins and laterals is essential in this debris-prone corridor to prevent recurring blockages from litter, leaves, and sand.

Zone 2.2 N. Derbigny and N. Roman (West of St. Bernard Ave)

North Derbigny and North Roman Streets both serve as major outfall points to St. Bernard Avenue serving upstream blocks of Lapeyrouse and Laharpe. Chronic clogging and missing infrastructure have left this corridor highly flood prone. As mentioned in Zone 1.1, St. Bernard Ave is heavily lined with oak trees, effecting adjacent blocks both east and west of this corridor.

On N. Derbigny, the 1400-1600 blocks consistently flood due to poorly graded inlets, missing catch basins at the Kerlerec intersection, and heavy leaf buildup that suggests downstream blockages at St.

Bernard. Residents have repeatedly requested additional basins, noting severe ponding and standing water after nearly every rain event.

N. Roman shows similar issues. The intersections of Laharpe and Lapeyrouse lack inlets, while others are clogged with trash, wood, and leaf litter. Reports of stagnant, foul-smelling water continue even after recent street work.

Lapeyrouse and Laharpe Streets both report severe flooding, with inoperable or missing basins on the 1700-1800 blocks. Since both tie into N. Roman and N. Dorgenois, and ultimately outfall to St. Bernard, it appears that backups near these downstream blocks may be reducing the ability of these upstream streets. Upstream improvements will not be effective unless the downstream system is fully cleaned and restored.

Zone 2.2: Recommendations

To address flooding in this zone, a combination of cleaning, infrastructure upgrades, and grading improvements is recommended. All drainage lines on N. Derbigny and N. Roman, including upstream blocks like Laharpe and Lapeyrouse, to the St. Bernard Canal should be cleaned to confirm capacity and remove downstream blockages, with priority given to catch basins already observed to be filled with heavy leaf litter. Lines near oak trees near St. Bernard should be CCTVed to ensure the integrity of the line is okay. Future infrastructure improvement to be considered would be new catch basins added at critical intersections currently lacking coverage, such as Kerlerec and Laharpe, while roadway and gutter lines be regraded to restore positive flow.

Zone 2.3: 1400-1700 N Dorgenois West of St. Bernard Ave

North Dorgenois Street experiences flooding during nearly every rain event, with conditions reported from the 1300 block through the 1900 block. The corridor is heavily influenced by its tree canopy and downstream outfall conditions, with both sides of N. Dorgenois ultimately draining to the St. Bernard Canal. Unlike other nearby streets, Esplanade Avenue does not impact drainage here; instead, conditions are shaped primarily by tree-lined blockages, maintenance deficits, and downstream conveyance at St. Bernard.

The 1300-1700 blocks of N. Dorgenois are fully lined with large, mature oak trees. Residents consistently reported standing water after rainfall, with one report at the 1500 block citing flooding directly in front of a residence due to drains packed with leaves. At the 1700 block, poor drain maintenance at the Aubry Street intersection has led to standing water covering the street for days. Field evidence suggests that heavy leaf litter and root intrusion may be clogging or damaging underground lines. While there are few formal reports on the 1300-1600 blocks, the pattern of flooding and the scale of tree coverage indicate that drainage deficiencies are widespread.

In contrast, the 1800-1900 blocks of N. Dorgenois represent a hotspot of severe flooding despite having little tree coverage. These blocks drain differently than those west of St. Bernard Avenue, tying instead into a separate pathway closer to Allen Street. Resident reports note that flooding in this section is chronic, suggesting that downstream conveyance may be restricted or that infrastructure gaps are present. The fact that both heavily treed and non-treed segments of N. Dorgenois experience flooding underscores the likelihood of systemic issues, both clogging and capacity limitations, along the corridor.

Conditions on adjacent streets, including Bayou Road, further point to N. Dorgenois as a critical outfall point. If the corridor is not functioning as intended, tributary streets will also experience persistent flooding

Zone 2.3: Recommendations

To address flooding along N. Dorgenois Street, storm lines from the 1300-1700 blocks should be cleaned and CCTV'ed to remove debris and assess for root damage. Clogged catch basins, particularly at Aubry and other key intersections, require maintenance, and a seasonal cleaning schedule is needed due to heavy oak tree litter. Street grading and low spots should be evaluated to restore positive flow toward inlets, while tie-ins at the St. Bernard Avenue Canal must be confirmed clear to prevent upstream impacts. Finally, improvements on N. Dorgenois should be coordinated with adjacent streets such as Bayou Road to ensure system-wide performance.

Zone 2.4 N Broad

The entirety of the 1400-1800 blocks of N. Broad Street has been reported for flooding. Given this area's proximity to the N. Broad Canal and DPS 3, could be possible that backwater effects or pump station overflows contribute to localized flooding. However, there are few resident reports of flooding on the blocks directly adjacent to the canal itself, suggesting that widespread pump or canal backwater issues are not the primary driver here. Localized clogs, grading problems, or collapsed drain lines are more likely causes.

The entire corridor of N. Broad is lined with large oak trees, in many instances which have matured directly adjacent to catch basins. The root systems of these trees are likely breaking or dislodging drain lines, causing blockages and preventing water from flowing properly. In the photo below you can the roots behind and along the sides of the catch basin. The root system below this tree is probably extremely dense, collapsing the drain line. Of course, CCTV would need to be performed on this lateral and the drain line to confirm this assumption.

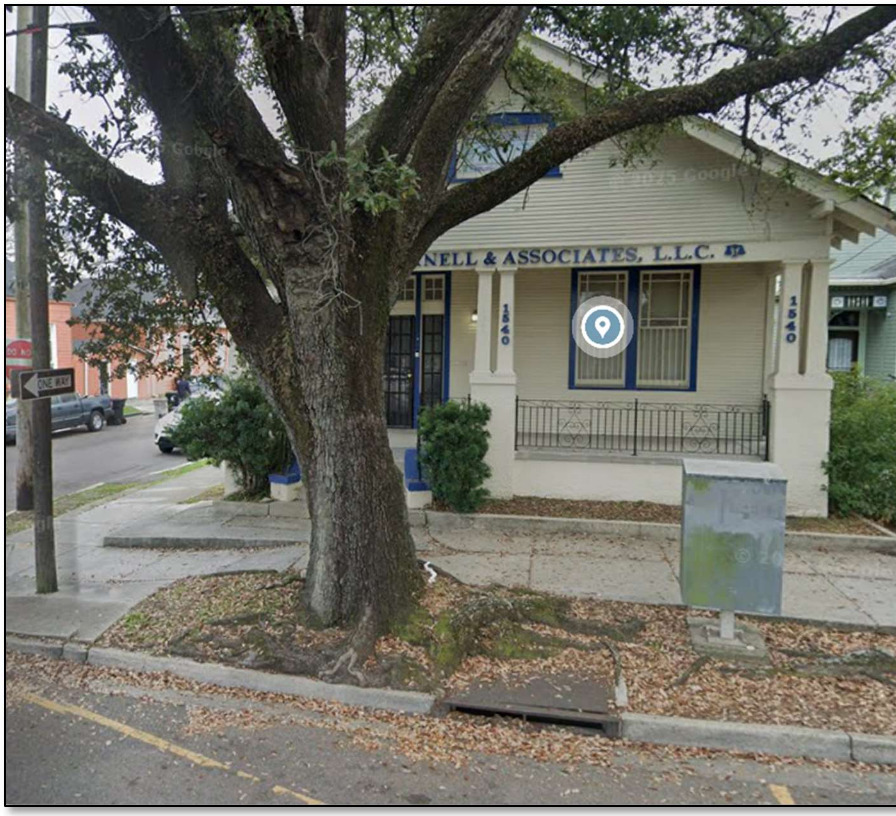

Figure 24: Catch Basin and Oak Tree Proximity at 1540 N. Broad St.

Almost every block along this corridor has a mature oak tree growing next to a catch basin like in **Figure 24**. Resident and field reports confirm this pattern across multiple addresses reporting catch basins clogged with debris, displaced or collapsed due to tree root intrusion, and standing water remaining long after rainfall. In some cases, basins appear completely inoperable or missing, while in others, damaged inlets have created sidewalk hazards. Together, these conditions indicate that tree-related damage, basin clogging, and broken connections are widespread along N. Broad and is the more likely suspect of the flooding along this corridor.

Still, this area would likely be among the first impacted if DPS 3 or the canal were to surcharge during a major storm, though confirming this would require further hydraulic evaluation. The possibility of additional contributing factors such as undersized lines or backwater effects from the Broad St. Canal cannot be ruled out and would require further study. At present, however, the evidence points primarily to localized blockages and a lack of drainage capacity at this corridor and likely at adjacent blocks as well.

Zone 2.4: Recommendations

Flood mitigation for N. Broad will require targeted cleaning, CCTV, and structural repair to restore functionality. Every location where trees are adjacent to catch basins should be CCTVed and evaluated for repair.

4.6.4 **Neighborhood Area 3**

Area 3 has one major hot spot zones centered around the blocks that outfall into the N. Rocheblave and St. Bernard canals.

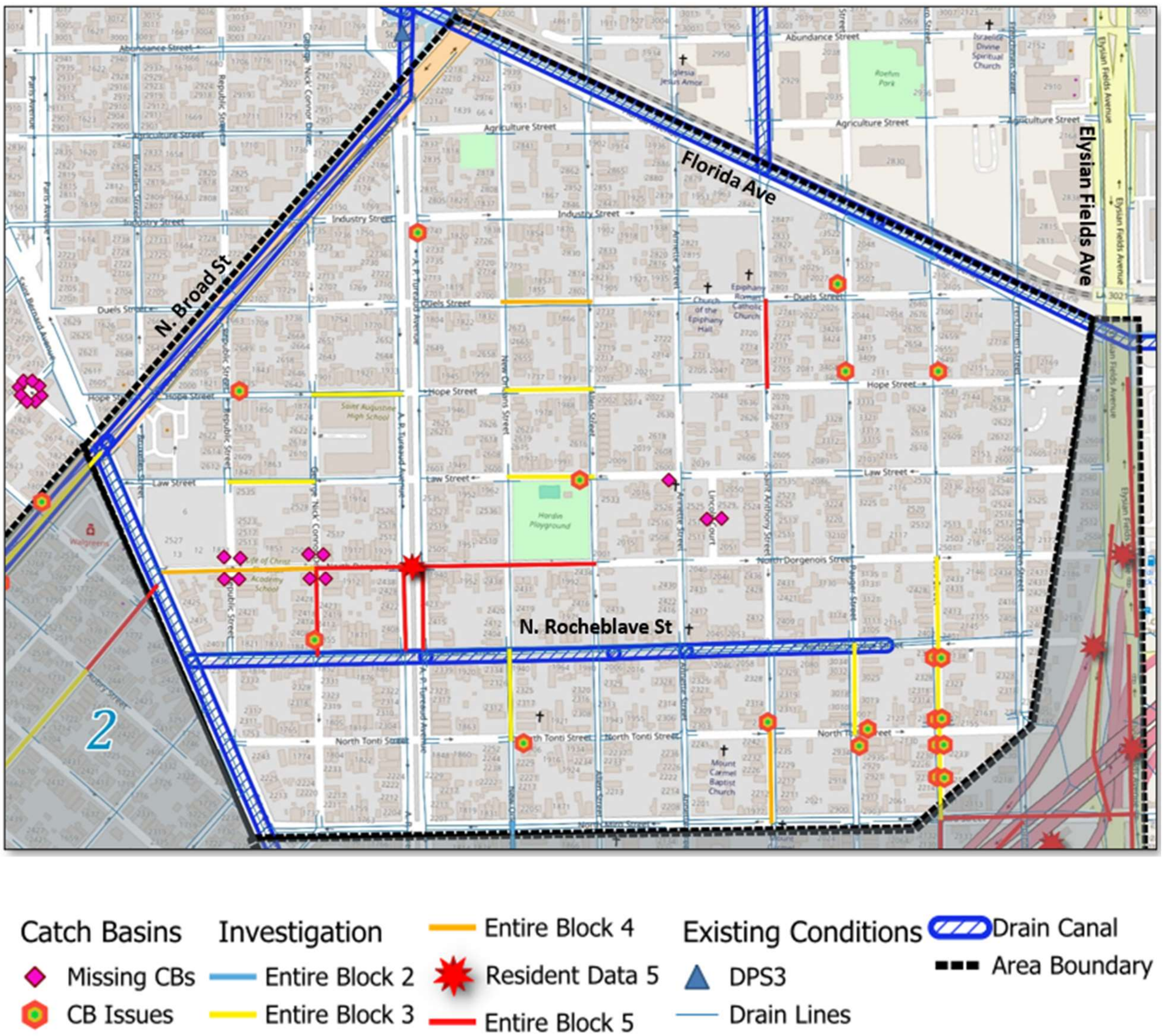

Figure 25: Neighborhood Area 3 Map

Zone 3.1: N Dorgenois East of St. Bernard Ave. and N Rocheblave Canal

This zone captures the 1800-1900 blocks of N. Dorgenois Street and the surrounding blocks between N. Dorgenois and N. Rocheblave. N. Dorgenois consistently floods during nearly every rain event, with reports covering the entire corridor from Esplanade Avenue to Allen Street. Flooding has been documented at multiple intersections, and residents describe conditions as severe and repetitive. Although new catch basins were recently installed along the 1800-1900 blocks, no information is available on where these new basins outfall. Their discharge could tie into either the St. Bernard Canal or the N. Rocheblave Canal, and further clarification is needed.

As described in Section 4.6.3, the 1300-1700 blocks of N. Dorgenois experience flooding largely due to tree-related debris and possible root intrusion. In contrast, the 1800-1900 blocks remain severe hotspots despite fewer trees and recently reconstructed roadways. Persistent flooding appears to extend onto adjacent streets such as the 2300-2500 blocks of George Nick Connor Drive and Republic Street, which lack catch basins at their intersections with N. Dorgenois.

The N. Rocheblave Canal serves as the primary outfall for many of the north-south streets between 2200-2500. Field observations suggest that clogged lines or obstructions near this canal may be backing up drainage from N. Dorgenois, A.P. Tureaud, Touro, and other tributary streets. Repeated flooding reports along the 2300-2400 blocks of Touro, A.P. Tureaud, and nearby streets further reinforce concerns about downstream limitations. These streets often hold water for extended periods after storms, suggesting that stormwater may not be able to discharge efficiently toward the Rocheblave Canal. The clustering of reports across consecutive blocks indicates a shared bottleneck rather than isolated drainage issues.

Because so many of the repeatedly flooded blocks in this area drain toward the N. Rocheblave Canal, the canal itself should be inspected to confirm that stormwater can move freely through this outfall. A restriction or blockage at this canal would affect multiple upstream streets at once, which aligns with the widespread reports of standing water throughout this section of the neighborhood. If the new drainage improvements on N. Dorgenois discharge into the Rocheblave Canal, then a blockage within the canal could also be contributing to the ongoing flooding along N. Dorgenois.

Overall, this zone reflects a complex interaction between localized problems, such as clogged inlets, tree-root intrusion, and roadway depressions, and potential downstream blockages near canal tie-ins. The persistence of flooding, even after recent infrastructure upgrades, suggests that lines discharging to the St. Bernard or Rocheblave Canals, or the canals themselves, may be obstructed or underperforming. Without CCTV inspections and a clearer understanding of the drainage layout, it is impossible to determine whether failures are localized or the result of downstream constraints. While the St. Bernard Canal is a large conduit unlikely to reach capacity, the volume and frequency of reports from N. Dorgenois, George Nick Connor, A.P. Tureaud, and Touro underscore the urgent need for comprehensive cleaning and CCTV inspection of both the local network and its outfalls. Only then can the root cause, whether backwater effects or localized failures, be confirmed.

Zone 3.1: Recommendations

To address flooding along N. Dorgenois, GreenPoint recommends a combination of system cleaning, CCTV inspection, and targeted upgrades. Storm lines from the 1300-1900 blocks should be cleaned and CCTVed, with particular focus on the 1800-1900 blocks where flooding is most severe, as well as cleaning downstream tie-ins at the 2200-2500 blocks of the tie into that street. All lines discharging to the N. Rocheblave Canal, along with the full length of N. Dorgenois, require cleaning to restore conveyance. The outfall locations of newly installed catch basins on N. Dorgenois should be confirmed, and CCTV inspections at both the St. Bernard Avenue and N. Rocheblave canals are recommended to determine whether downstream blockages are contributing to backups. In the long term, infrastructure upgrades such as additional catch basins along the 1800-1900 blocks around intersections that are currently lacking and regrading low spots to restore positive flow toward inlets and reduce long-term ponding. Collectively, these measures will help reestablish drainage function on N. Dorgenois and improve conditions on adjacent streets that depend on it for outfall.

4.6.5 Isolated Street Flooding

Aside from the identified hot spot zones, several blocks in the Seventh Ward experience isolated street flooding. These locations do not appear tied to a broader systemwide failure but instead reflect localized issues such as clogged catch basins, poor road grading, or broken lines. Some blocks lack any catch basins, while others require targeted cleaning, CCTV inspection, or street restoration.

Some examples include the 1700 block of Kerlerec Street that floods regularly largely due to the absence of catch basins. New drainage tied into the 1600 block and N. Claiborne is recommended to relieve conditions. On Duels Street, multiple residents reported severe flooding, claiming flooding worsened after construction, suggesting a clog or break in the line. While green infrastructure has been installed here and has improved conditions somewhat, full relief will require cleaning and CCTV of this block and downstream lines to Allen Street.

In Area 3, minor east-west streets between N. Dorgenois, Florida Avenue, Elysian Fields, and A.P. Tureaud also experience continuous flooding. At the 2900 block of New Orleans Street, catch basins are in poor condition, with low spots and potholes in the parking lane trapping water. Paving adjustments and restoration of gutter lines are needed to restore positive flow.

While Esplanade Avenue itself had fewer resident flooding reports in this study, its conditions mirror those of St. Bernard and N. Dorgenois. The corridor is similarly lined with dense tree coverage and has multiple reports of clogged catch basins. Although no flooding was formally reported in this investigation, the consistent tree canopy along Esplanade suggests that sedimentation and leaf litter are widespread. These conditions are likely exacerbated by neighborhood topography, as Esplanade Ridge sits at a higher elevation and surface water flows downslope toward Bayou Road, compounding existing drainage deficiencies. There is no indication that Esplanade Avenue has undergone systematic cleaning in recent years. The pattern of flooding, combined with heavy tree cover and resident reports of neglected basins, strongly points to a systemic lack of maintenance rather than isolated structural defects.

Recommendations

A full list of isolated street flooding locations, along with block-level recommendations, is provided in the Project Summary spreadsheet in Appendix B.

4.7 Model Results Evaluation

To support and validate our findings, GreenPoint briefly examined existing drainage model results from Ardurra's Stormwater Master Plan and CDM Smith's capital planning reports. These models provided useful context for systemwide behavior and were cross-referenced with localized observations in The Seventh Ward.

Ardurra's report included design storm inundation maps for both the 10-year and 100-year storm events. **Figure 26** below shows the 10-year storm inundation map, which highlights the theoretical expected flooding depths across the neighborhood. The most notable high-inundation zones occurred in Area 3 and along the I-10 corridor.

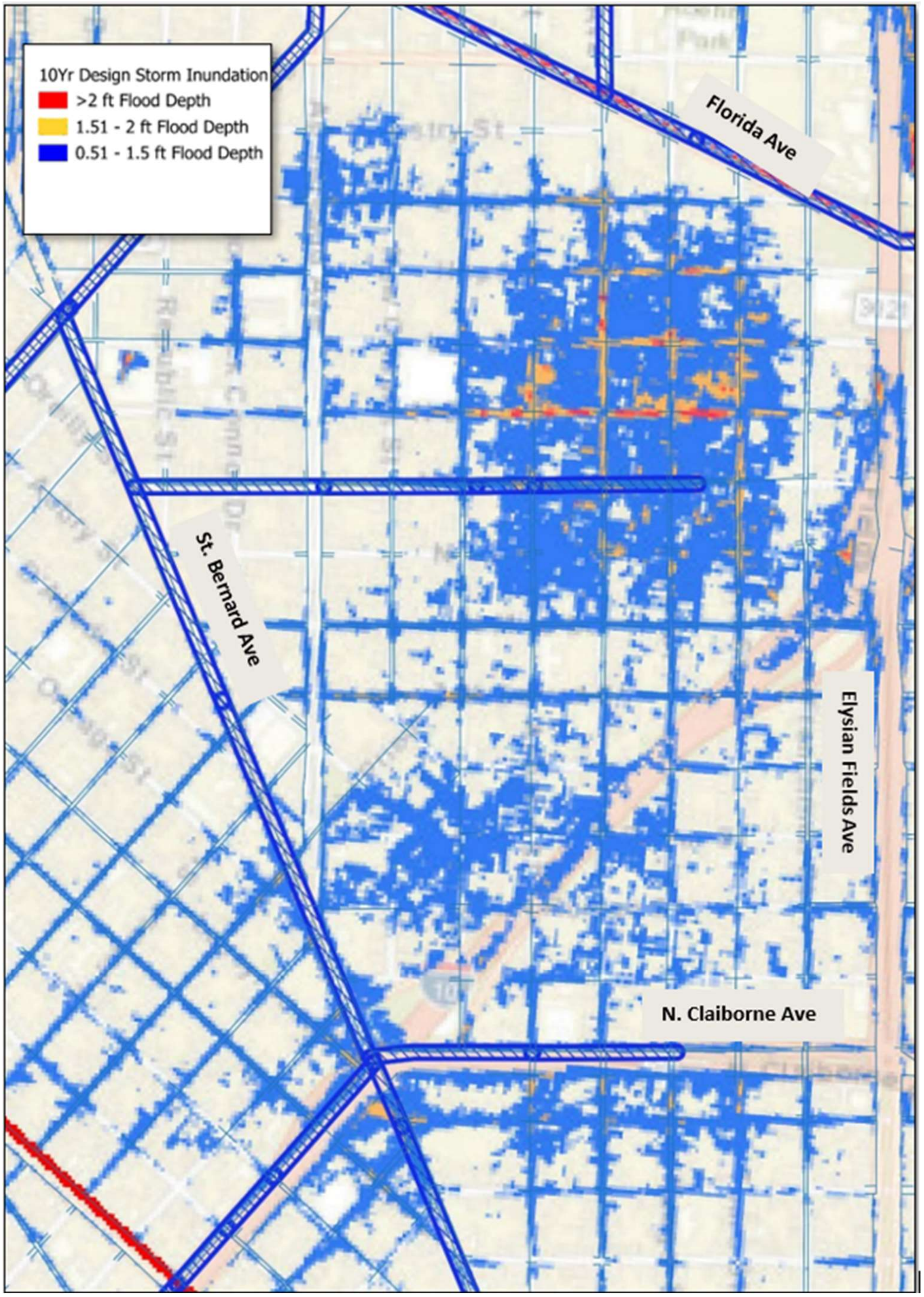

Figure 26: 10-Yr Inundation Map with Resident Ratings

The high-inundation zones in Ardurra's 10-year storm model align with known low spots documented in the Seventh Ward Lookbook. By overlaying resident ratings onto these inundation maps in GIS, we can identify patterns where theoretical flood risks match actual behavior of storm floods, and where flooding occurs even during smaller, more frequent storms.

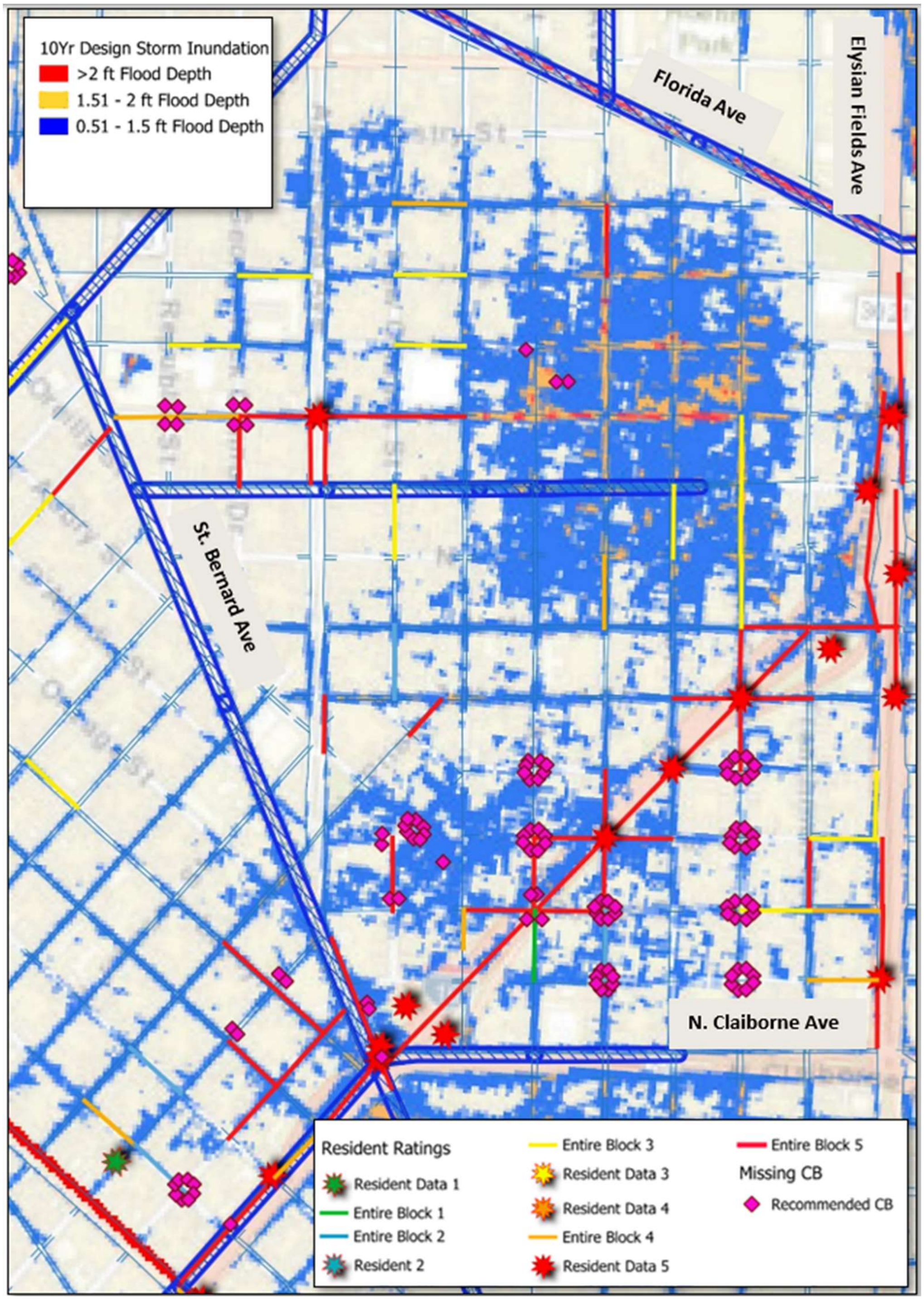

Figure 27: 10-Yr Inundation Map with Resident Ratings

When overlaid with our resident ratings database, the modeled patterns showed both alignment and differed. The Ardurra model highlights the upper right quadrant of the neighborhood as susceptible to flooding during a 10-year storm, yet resident reports and field investigations did not identify this as a current problem area. Additionally, there exist several locations not identified in the model but clearly experiencing drainage failures on the ground, like that west of St. Bernard Ave. These comparisons demonstrate that while the models capture long-term risks tied to undersized infrastructure, they do not fully reflect the real-world flooding that occurs during more frequent, smaller storms.

Conversely, the modeled inundation zones along the I-10 corridor closely align with resident reports, reinforcing that uncontrolled interstate runoff is a major driver in this area. Similarly, the modeled hotspot surrounding Hunter's Field matches community accounts of chronic flooding, which is consistent with the lack of drainage infrastructure at that location.

Overall, the model outputs provide useful context and help confirm certain patterns, but resident-reported data remains essential for identifying present-day flooding conditions and prioritizing immediate actions such as cleaning, CCTV inspection, and, where needed, upsizing of key drainage infrastructure.

GreenPoint also reviewed CDM Smith's recommendations, which included several proposed upgrades for canals, drain lines and other critical outfall points. These suggestions aligned with many of our assumptions, particularly in areas like N. Claiborne Ave, where capacity limitations or system backups are suspected. Select inundation maps and relevant excerpts from both reports are included in Appendix A for reference.

4.8 Lidar Results

The LiDAR data used for this study was obtained from the ATLAS Louisiana GIS database, which provides statewide elevation information derived from laser-based aerial mapping. LiDAR, short for *Light Detection and Ranging*, operates on the same principle as radar but uses laser pulses instead of radio waves to measure ground elevation and generate detailed surface models. One of its primary uses is the measurement of elevation and topographic variation across large areas.

This dataset provides a useful visualization of the Seventh Ward's topography, allowing for identification of low-lying areas, evaluation of street grading, and observation of how stormwater collects and flows across the neighborhood's surface. The dataset has a horizontal resolution of approximately five meters with two-foot contour intervals, sufficient for understanding overall elevation patterns.

Figure 28 presents a topographic heat map of the investigation area, illustrating relative surface elevations throughout the neighborhood. Blue and green tones indicate the lowest points (-1 to -5 feet), while yellow through red represent higher elevations (0 to +5 feet). Consistent with field observations, high points were identified along Esplanade Avenue, N. Claiborne Avenue, and Elysian Fields Avenue. The lowest elevations occur in the upper right quadrant of the neighborhood, where grades drop below -3 feet. This pattern suggests that stormwater generally flows from the higher perimeter streets toward the lower-lying interior blocks, especially in areas where catch basins may be clogged or underperforming. This reinforces the need for a well-maintained drainage system throughout the area, especially in low points where flow concentrates.

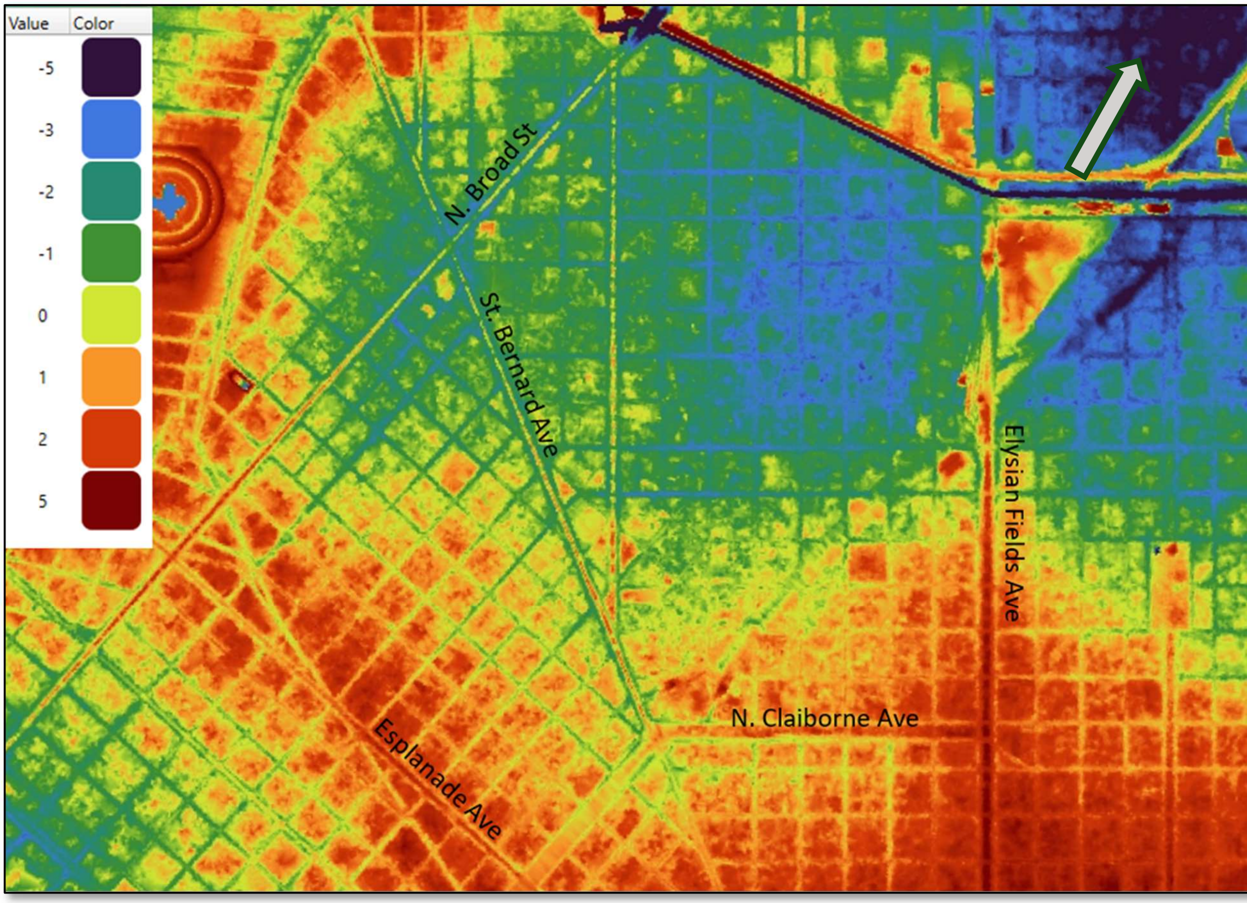

Figure 28: Topographic Elevation Map of the Seventh Ward

The LiDAR surface also shows that elevations are higher toward the French Quarter at the southern edge of the neighborhood, while areas northeast past the Seventh Ward sit lower than the surrounding areas. Interestingly, the lowest elevations do not closely align with areas most frequently reported by residents as flood-prone, indicating that the drainage issues extend beyond topography alone. In many cases, blocked catch basins, heavy oak tree debris, and poor subsurface connectivity appear to be primary contributors to standing water. The low points identified by the LiDAR map remain important indicators of where maintenance should be prioritized to ensure runoff from higher surrounding blocks can be effectively conveyed, and help evaluate where future catch basins implementation might be optimally placed to collect runoff.

While the LiDAR data provides a valuable visual understanding of surface conditions, its five-meter resolution limits its usefulness for detailed hydrologic or hydraulic modeling in dense urban settings. The dataset is best suited for identifying broad elevation trends rather than individual drainage structures or small localized depressions. Nonetheless, the LiDAR dataset offers a cost-effective and sufficiently accurate representation of the neighborhood's topography for this phase of investigation, and its findings support the conclusion that the neighborhood's flooding challenges are primarily related to maintenance and obstruction issues, rather than elevation alone.

4.9 Overall Conclusions

Overall, flooding in the Seventh Ward follows the path of the I-10 overpass, extending from the Tremé neighborhood to Elysian Fields. The clearest takeaway is the neighborhood's limited drainage and the significant impact that the introduction of the overpass has had on the neighborhood, by introducing large volumes of runoff without parallel upgrades.

Most resident reports and complaints were concentrated in Neighborhood Area 1, while Areas 2 and 3 had fewer resident and complaint reports overall. This concentration of data made it easier to identify distinct hotspot zones in Area 1, rather than a scattered set of isolated problem streets, providing a clearer picture of the key issues driving flooding across the neighborhood.

Much of the flooding across the Seventh Ward is driven by three connected factors:

- intense, unmanaged runoff from the elevated I-10
- gaps in basic drainage coverage (entire blocks with few or no inlets)
- conveyance issues: compromised infrastructure (clogged basins and lines, root intrusion, poor grading). Either water never reaches a catch basin because of debris and street geometry, or it enters the system but cannot move downstream due to blockages or constraints at outfalls

Hotspot patterns are apparent and consistent. In Area 1, under and adjacent to the I-10 overpass, uncontrolled sheeting and sparse inlet coverage (especially at ramps and beneath spans) produce repeated, high-severity flooding from Hunter's Field and St. Bernard/Claiborne to Elysian Fields/Miro. Elysian Fields itself adds heavy tree litter, with backups that effect upstream streets (N. Derbigny, N. Roman, N. Prieur). Historical street configurations (Old Prieur/Old Roman/New Orleans) lack modern drainage altogether, so low spots pond for days.

In Areas 2 and 3, flooding is often the result of cascading failures, where downstream constraints near the St. Bernard or N. Rocheblave canals create backups on upstream streets such as N. Derbigny, N. Roman, and N. Dorgenois. N. Dorgenois and N. Broad are both heavily lined with mature trees, where root intrusion and recurring leaf litter are likely compromising line integrity, catch basins, and laterals, leaving both corridors highly susceptible to flooding and in need of CCTV review and maintenance. Along N. Claiborne, the underpass lacks inlets and is potentially impacted by clogged lines, but could be potential for small-scale green infrastructure.

Before evaluating capacity upgrades, the system needs a maintenance protocol. Many lines and inlets are visibly clogged with sediment, leaves, and debris, and have likely not been maintained in years. Comprehensive cleaning and CCTV are required to restore baseline function and separate simple maintenance deficits from structural or hydraulic limitations. Green infrastructure identified with ASLA along the I-10 can add distributed storage and pre-treatment, but should be used to complement grey infrastructure improvements and routine maintenance for heavily treed corridors.

There is potential that DPS 3 or DPS 19 are not operating at full capacity or lack the ability to handle increasingly intense rainfall events, as well as undersized pipes creating bottle necks. However, the patterns observed by flooding reports in the neighborhood indicated that flooding is likely caused by conveyance rather than capacity issues. Ultimately, confirming that would require a much broader hydraulic investigation that accounts for system-wide interactions, rainfall intensity, and outfall system performance. If drainage problems persist after cleaning, then further analysis of pump capacity and system hydraulics may be warranted.

5 Overall Recommendation of Next Steps

Based on the full neighborhood assessment, GreenPoint has prepared next-step recommendations in the Project Summary spreadsheet for each block, compiled from field observations, resident feedback, and historical and existing drainage data. The recommendations fall into several key categories described below. These should be implemented in coordination with the Sewerage and Water Board of New Orleans (SWBNO) and the City of New Orleans, and guided by available funding, access, and system priority.

5.1 Catch Basin and Manhole Cleaning and Investigation

Manhole and surface inlet inspections should be the first step for locations with suspected clogging. Inexpensive and non-invasive, this method can quickly determine whether debris buildup is visible at key junctions. SWBNO maintenance teams may be able to perform these checks with minimal effort and help prioritize immediate cleanouts- referred to as “zooming.”

A targeted CCTV and cleaning protocol is strongly recommended for blocks identified as clogged or severely impacted by flooding. Much of the system appears to be backed up with years of organic debris and trash. Cleaning will help determine whether the cause of the flooding is due to clogged pipes or a more serious downstream hydraulic or structural issue. If clogs are removed but flooding persists, it may indicate undersized infrastructure or capacity limits further downstream. This is especially important around blocks that are heavily lined with oak trees and like N. Broad St, N. Dorgenois, and Esplanade Ave where flooding is reported along the entire street length. CCTV and cleaning recommendations can be found in the Project Summary detailed in **Appendix B.**

Implementing this basic and essential maintenance protocol will potentially improve the current flooding in the neighborhood dramatically. However, by freeing up pipe capacity and allowing more flow to reach the pump stations it will increase the runoff load on a potentially strained pump station. The effects of this cannot be confirmed without further study and evaluation outside of the current scope of this study. Tracking performance of cleaned lines through post-rain inspections is highly recommended. If significant flooding persists after this maintenance, then a focused hydraulic check of canal/pump interactions (DPS 3/DPS 19) will be needed to determine whether downstream capacity upgrades are warranted.

5.2 Green Infrastructure

Green infrastructure should continue to be implemented at both small and large scales to address immediate flooding concerns while building long-term resilience. Ongoing efforts by Water Wise and Healthy Community Services have demonstrated the value of localized projects, and these should be expanded where feasible. In coordination with ASLA, the recommended interventions in Area 1 should be pursued. It parallel, it may be beneficial to evaluate opportunities for rain gardens and other bioretention features in areas directly below the I-10 overhangs along N. Claiborne Ave. These locations offer strong opportunities to capture runoff before it spreads into neighborhood streets.

Partnerships with the City or Lousiana DOTD should be considered for maintenance of these projects. Exploring Joint Use Agreements or other cooperative endeavors can help establish clear responsibility for long-term upkeep, reducing the burden on community organizations while ensuring the functionality and longevity of installed green infrastructure.

5.3 Drainage and Road Infrastructure Improvements

5.3.1 **Repairing**

After performing CCTV investigations, and inspecting the drain lines, where evidence of concrete in lines or failed infrastructure exists, repair and possible line replacement will be necessary. Any confirmed lateral or trunk line damage should be used as an opportunity to evaluate upsizing, especially where recommendations from CDM or Ardurra already support increased capacity. This includes corridors like N. Claiborne and Elysian Fields.

5.3.2 **New Drainage Infrastructure**

New drainage infrastructure should be prioritized for blocks that currently lack catch basins or where poor surface grading prevents runoff from reaching existing inlets. Streets such as Touro, Annette, and St. Anthony were found to have little to no functional drainage. While new installations may require long-term city capital programming, these locations should be flagged as priority candidates for future upgrades. Detailed drainage infrastructure recommendations are provided in the Project Summary in **Appendix B.** Implementing these improvements would be one of the most effective steps toward alleviating flooding in Area 1 east of St. Bernard Avenue.

It is worth nothing that as new drainage infrastructure is constructed , downstream outfall lines and canals will need to be evaluated to confirm their capacity to handle the added flow without creating new bottlenecks elsewhere in the neighborhood. Expanding conveyance in this neighborhood may require upsizing certain outfall lines or canal segments downstream, as well as assessing potential impacts on nearby pump stations. Careful coordination will be needed to ensure that improvements upstream do not shift flooding problems downstream.

5.4 Pump Station and Canal System Review

Following the proposed maintenance and cleaning, as blockages are cleared and more flow is conveyed downstream, the impact on the pump stations and canals should be closely monitored. While an evaluation of the outfall system is outside the scope of this report, operational limits may become more apparent as conveyance improves. If backup persists after clearing known bottlenecks, further assessment at canal levels, system hydraulics, and outfall performance should be considered.

5.5 Best Management Practices

Community-driven stormwater management is key to long-term drainage improvements in The Seventh Ward. While larger fixes require city action, everyday flooding can be reduced through simple maintenance and behavior changes by both residents and public agencies and staff.

5.5.1 Continued Resident Education and Engagement

Resident education and feedback remain vital strategies for reducing localized flooding and preserving system function. GreenPoint recommends continued outreach focused on educating residents about:

- How and when to report drainage issues via 311
- What not to dispose of in drains (e.g., trash, leaves, oil)
- How small actions like keeping drains clear can prevent blockages
- Opportunities for household-scale green infrastructure (e.g., rain gardens)

Collecting community input after cleaning to verify whether conditions improve will be an important follow up procedure if cleaning and repairs are performed. Resident questionnaires, listening sessions, and informal reporting can provide valuable feedback on the effectiveness of maintenance and help identify blocks where flooding persists after intervention.

Empowering residents with practical knowledge and clear reporting protocols will help address minor issues before they escalate. Establishing residents' role in monitoring creates stronger coordination between the community and the City, ensuring that system performance is evaluated not just through technical inspections but also through infrastructure improvements.

5.5.2 SWBNO Routine Maintenance and Cleaning

Some of the most flood-prone corridors identified in this investigation, such as those discussed in Section 4.3, are heavily lined with mature trees and will likely continue experiencing clogging from recurring leaf drops. GreenPoint recommends developing a seasonal or prioritized cleaning list for these areas so they can be maintained more proactively. A flagging mechanism between SWBNO and community organizations could also be established, allowing residents to easily report recurring problem areas and have them incorporated into cleaning schedules.

Additionally, City cleaning and maintenance crews in public spaces should be trained or reminded not to blow leaves and debris into the street or toward catch basins, as this behavior contributes directly to clogged inlets downstream.

5.6 Technical Coordination

For any next phases of this drainage investigation, GreenPoint recommends establishing a clear technical coordination framework. This should outline the roles and responsibilities of all key stakeholders, primarily the Sewerage and Water Board of New Orleans (SWBNO) and the City of New Orleans (CNO), for both short-term data and utility access and long-term project implementation.

5.6.1 City Stakeholders

City stakeholders will be central to implementing the near-term recommendations of this investigation. The Sewerage and Water Board of New Orleans (SWBNO) will be responsible for inspections, cleaning, CCTV investigations, and broader system coordination. Establishing a Cooperative Endeavor Agreement (CEA) will be critical to place the Seventh Ward on routine cleaning schedules, enable data sharing on existing drainage records, and formalize collaboration on infrastructure maintenance. This agreement could also ensure that findings from resident reports and community workshops are incorporated into SWBNO's maintenance cycles.

The City's Department of Public Works (DPW) will also play a role in addressing road restoration, particularly in locations where ponding results from poorly paved gutter lines. Finally, the Office of Resilience and Sustainability can provide additional support in advancing green infrastructure projects and ensuring resident input is consistently integrated.

Together, these City entities must coordinate closely to implement the maintenance, repair, and green infrastructure recommendations outlined in Sections 5.1 and 5.2, while building a framework that keeps the community engaged and the system functioning in the long term.

5.6.2 **Government Stakeholders**

In conjunction with working with the City of New Orleans, state and Federal agencies may be critical partners in securing the funding necessary for large-scale drainage improvements. While SWBNO and City's DPW can address cleaning, inspections, and small-scale upgrades, long-term solutions such as new catch basin installations, line upsizing, and capital infrastructure projects will require broader intergovernmental support. Agencies such as FEMA and federal resilience or infrastructure grant programs are best positioned to provide these resources.

GreenPoint recommends prioritizing investment in the lower right quadrant of the Seventh Ward (Neighborhood Area 1), where decades of neglect and the absence of upgrades have created some of the most severe and persistent flooding conditions in the neighborhood. Focusing funding requests on this area will have the greatest immediate impact, while also addressing long-term equity concerns for a part of the community that has carried disproportionate flood risk. Coordinated advocacy with City leadership and community organizations will be beneficial in consideration of this neighborhood as a priority for state and federal funding streams.