

ARPA Water Infrastructure Impact Assessment

Stormwater, flooding, wastewater, and sewer complaint trends
2021 through June 18, 2026

10 ARPA projects reviewed	1,505 distinct relevant complaint incidents	30 significant weather events cross-referenced
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Prepared as a screening evaluation using interviews, de-identified Q-Alert data, GIS maps, public weather records, and public health sources.

July 2026

About this report

Purpose and scope

This report examines whether selected American Rescue Plan Act (ARPA) wastewater and stormwater projects are associated with changes in resident complaints, public-health risk, resilience, and quality of life. It combines project records with de-identified complaint locations, construction timelines, rainfall and storm-event records, sewer-network maps, and public demographic and environmental-health information.

How to read the findings

This is a screening-level evaluation, not a hydraulic model, engineering certification, epidemiologic study, or audit. A complaint near a project does not prove the project caused or failed to prevent the reported problem. Likewise, a lack of complaints does not prove that no problem occurred. The strongest conclusions come from several lines of evidence that point in the same direction: project design, operational records, complaint type and timing, comparable rainfall, and direct resident experience.

Privacy and data handling

The source complaint file contains locations and narrative details. This report uses de-identified counts, generalized themes, and project-level summaries. It does not publish complainant names, email addresses, telephone numbers, or a public list of individual addresses.

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1 Executive Summary

What the County built

Chatham County used ARPA money to fix sewer pumps, sewer pipes, canals, culverts, and drains. These systems move sewage to a treatment plant and move rainwater away from homes, yards, and roads.

What the study found

The clearest results are in the sewer projects. The Sallie Mood project replaced about 792 feet of old pipe. County notes say there have been no sewage spills in the fixed sections. Nancy Place and Gale Break got backup pumps that can turn on when the power goes out. This lowers the chance that sewage will back up into homes or spill outside.

The rainwater projects are harder to judge. Some projects gave water more room to move and made pipes and canals easier to clean. But complaints did not fall in every area. Rainwater complaints were more than three times as common on heavy-rain days as on dry days. Many people filed reports after a storm was over.

Some places need more checks. People near Betz Creek said high tide kept water in their yards after the work was done. This does not prove the project caused the problem. It does mean County engineers should test the tide gate and water levels. The Isle of Hope project is not done yet, so it is too soon to judge it.

Why this matters to daily life

Flooding and sewage can make a home hard to use. Toilets may not flush. Showers and sinks may not drain. Dirty water can reach a yard, road, creek, or house. Families may need a pump truck, repairs, cleaning, or a place to stay. Roads may close. Children and pets may have to stay inside.

The review found 16 reports that clearly or likely described a private septic system that failed. Half came after very heavy local rain. This is not a complete count because some septic problems may be handled by other offices or private companies.

Bottom line

The projects appear to make the County safer and stronger. The best proof is the lower risk of a large sewer spill or pump failure during a storm. The complaint data do not yet prove that every drainage project cut flooding. The County should keep checking rain, tides, pump alarms, sewer spills, water depth, repair work, and repeat complaints after storms of a similar size.

At a glance

1,505 distinct relevant complaint incidents, 2021-June 18, 2026	3.23x higher rainwater complaint rate on heavy-rain days than dry days	2.62x higher sewer complaint rate on heavy- rain days than dry days
192 complaints where local gauges showed heavy rain but the airport did not	16 explicit or probable septic-failure complaint incidents	0 reported spills in the improved Sallie Mood sections

Source/Note: Counts are derived from the de-identified Q-Alert complaints and weather event records. Stormwater and sewer categories overlap when a complaint mentions both systems. The no-spill statement comes from interviews with Chatham County Public Works Department employees.

2 Study Questions and Evaluation Framework

Questions addressed

- Which complaints are about stormwater/flooding or wastewater/sewer conditions?
- Which complaints fall within a realistic project influence area or service network?
- Did complaint frequency or complaint type change during or after construction?
- Did rainfall, storms, tides, and reporting delays explain part of the complaint timeline?
- What evidence supports an effect on public health, resilience, and quality of life?
- Which findings are strong enough to report now, and which require more monitoring?

Theory of change

Problem	ARPA intervention	Near-term result	Resident/community outcome
Aging force main, power-sensitive lift station, undersized or clogged drainage	Replace pipe; add automatic bypass; widen or pipe drainage; add storage and maintenance access	Fewer equipment failures; more conveyance/storage; faster response; easier maintenance	Lower chance of sewage exposure, flooded homes, blocked roads, lost water use, cleanup cost, and storm stress

Three outcome pillars

PUBLIC HEALTH	RESILIENCE	QUALITY OF LIFE
Reduced contact with sewage and polluted floodwater; safer water and outdoor spaces; fewer sanitation interruptions.	Critical services continue during storms and outages; systems are easier to maintain and recover faster.	Homes, roads, yards, schools, and businesses remain usable; less stress, disruption, cleanup, and household expense.

Evidence signal used in this report

Signal	Meaning
Documented benefit	Direct operational record or project-specific outcome supports improvement.
Directionally favorable	Several indicators point toward improvement, but sample size or follow-up time is limited.
Mixed / inconclusive	Engineering purpose is clear, but complaint data do not show a consistent change.
Too early to assess	Construction is incomplete or there is not yet a meaningful post-construction storm season.
Follow-up priority	Post-project complaints identify a recurring condition that merits targeted inspection or measurement.
Unmet need	The project is not built; complaints describe the continuing baseline problem.

3 Data and Methods

Data sources

Source	Use in analysis
Interview notes and construction documents	Project status, dates, project quantities, problems, solutions, service counts
Q-Alert complaint file	1,952 Public Works and Engineering records from 2021 through June 18, 2026
ARPA GIS points/line and County maps	Project locations, Sallie Mood pressurized main, lift stations, gravity collection network
NOAA daily station data	Daily precipitation at Savannah/Hilton Head International Airport and 11 additional local stations
NWS Charleston event archive	30 significant storms, heavy-rain, coastal-flooding, and severe-weather events
Recovery Plan reports, 2021-2025	Funding and implementation context; 2025 budget/expenditure snapshot
Census/ACS public data	County demographics and illustrative service-area tract profiles
EPA, CDC, Coastal Health, Georgia EPD	Septic operation, flood cleanup, exposure, water-quality, and historical context

Complaint screening and deduplication

The Q-Alert complaint file contained 1,952 records. Screening for request-type filtered the complaints down to 1,551 records related to flooding, drainage, storm drains, sewer backup, or sanitary odor. Same-day records at the same or nearly the same location were consolidated into approximately 1,505 distinct incidents. The incident count is used for most trend comparisons; raw requests remain available in the companion workbook.

Screened request group	Raw records
Flooding concerns / drainage problems	768
Storm-drain issues	622
Flood-mitigation or drainage-improvement requests	62
Sewer backed up	77
Sanitary odor or sewer smell	22
Total retained raw requests	1551

Influence areas

Project influence areas are buffers set around the project locations that serve as geographic tool for filtering complaints, not official hydraulic catchments. Larger sensitivity range buffers include nearby connected streets or channels to consider complaints in the surrounding areas that may be closely connected to the hydrologic system influenced by the projects. For Sallie Mood, the evaluation uses the Sallie Mood Drive corridor plus the existing network or unincorporated County sewer infrastructure, because the force main supports the entire system.

Project	Primary buffer	Sensitivity buffer	Reason
Gale Break Lift Station	0.25 mi	0.35 mi	Compact lift-station catchment
Nancy Place Lift Station	0.35 mi	0.50 mi	Residential collection area and connected lines
Ferguson Avenue	0.50 mi	0.75 mi	Septic-to-sewer planning corridor; polygon preferable

Project	Primary buffer	Sensitivity buffer	Reason
Isle of Hope / Barnett Drive	0.40 mi	0.60 mi	Canal, laterals, streets, tidal receiving area
Betz Creek Culvert	0.50 mi	0.75 mi	Upstream drainage, tidal backwater, school access
Burnside Island	0.45 mi	0.65 mi	Eastridge drainage route and connected system
Willow Lakes	0.75 mi	1.00 mi	Subdivision, pond, outfall route, adjacent hydraulic area
Marshall Branch Canal	0.60 mi	0.85 mi	Canal corridor and nearby drainage network
Sallie Mood local segment	0.35-mi corridor	0.50-mi corridor	Direct construction and segment exposure; network screen added

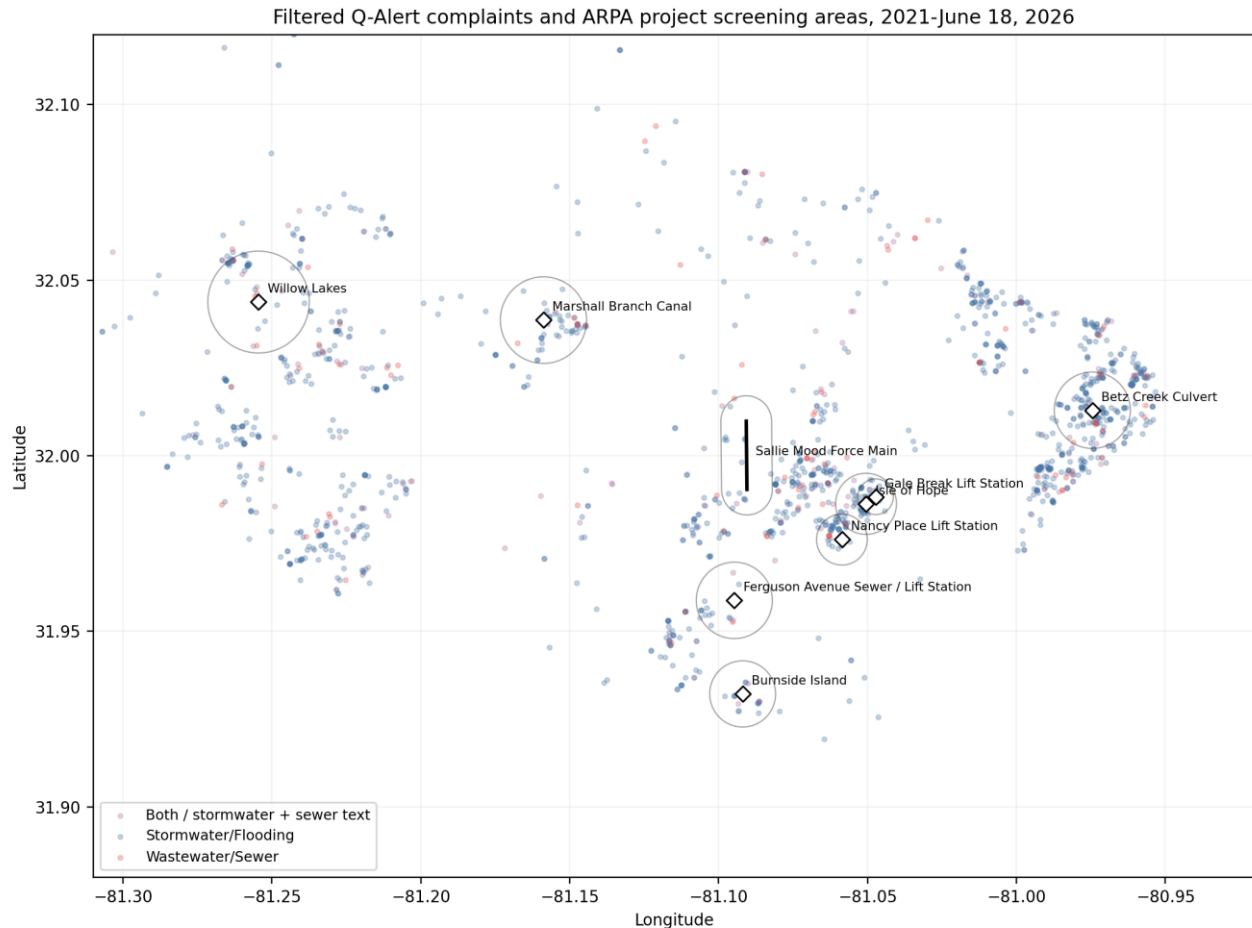


Figure 1. Filtered complaints and project screening areas

Source/Note: De-identified Q-Alert file, ARPA GIS points/line, and project screening ranges. The map is a screening visualization and does not represent official drainage-basin boundaries.

Timeline and weather matching

Complaint incidents were sorted into before, during, and after periods using the known project construction dates. Where an exact in-service date was not available for Nancy Place, Gale Break, or Sallie Mood, the analysis uses a clearly labeled post-completion proxy. Rain exposure is the total precipitation on the complaint date and prior two days. Significant NWS events use the event dates plus a three-day reporting lag because many residents report after water remains standing or damage becomes visible.

Rain classes are mutually exclusive: dry/trace is less than 0.10 inch over three days; wet/light is 0.10-0.99 inch; heavy is 1.00-1.99 inches; major is 2.00-3.99 inches; and extreme is 4.00 inches or more. The nearest station with a complete three-day record was used as a local check against the airport gauge.

What the analysis can and cannot show

- It can identify changes in complaint frequency, complaint type, and weather association within a reasonable screening area.
- It can test whether later complaints are more localized, maintenance-related, tidal, or structurally different from the pre-project problem.
- It cannot prove causation, measure every unreported flood or septic failure, or substitute for pump logs, overflow records, water-level sensors, tide data, or hydraulic modeling.
- It does not measure illness directly. Public-health conclusions are framed as reduced or continuing exposure risk.

4

Countywide Complaint, Rain, and Storm Findings

Complaint volume increased over the study period

Relevant complaint incidents increased from 187 in 2021 to 487 in 2025. The rise may reflect wetter or more disruptive events, repeated infrastructure problems, increased Q-Alert use, greater public awareness, or changes in reporting practices. For this reason, a simple after-project increase does not by itself mean that construction failed.

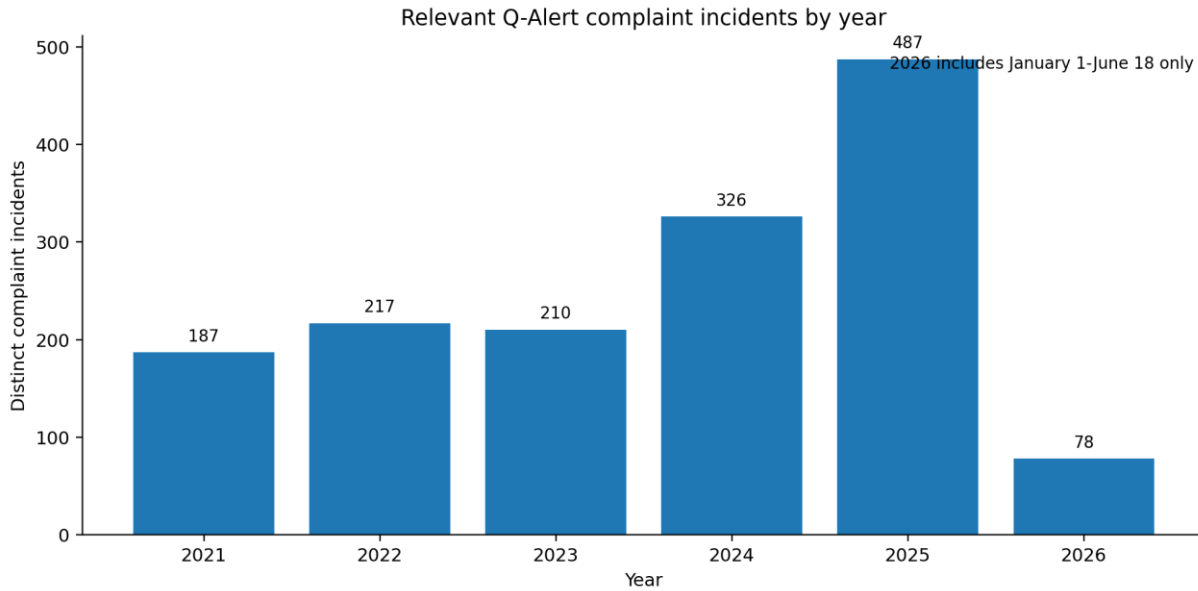


Figure 2. Annual relevant complaint incidents

Source/Note: Q-Alert screening and same-day/near-location deduplication. 2026 is partial through June 18.

Rain is a major driver of complaints

Only 11.7% of study days met the airport heavy-rain-window threshold of at least one inch over three days. Yet complaint rates were much higher on those days. Combining heavy, major, and extreme classes, stormwater complaints occurred at roughly 162.7 incidents per 100 days, compared with 50.4 on dry/trace days. Sewer-related incidents occurred at 27.0 per 100 heavy-rain-window days, compared with 10.3 on dry/trace days. The heavy-to-dry ratios were 3.23 for stormwater and 2.62 for sewer-related complaints.

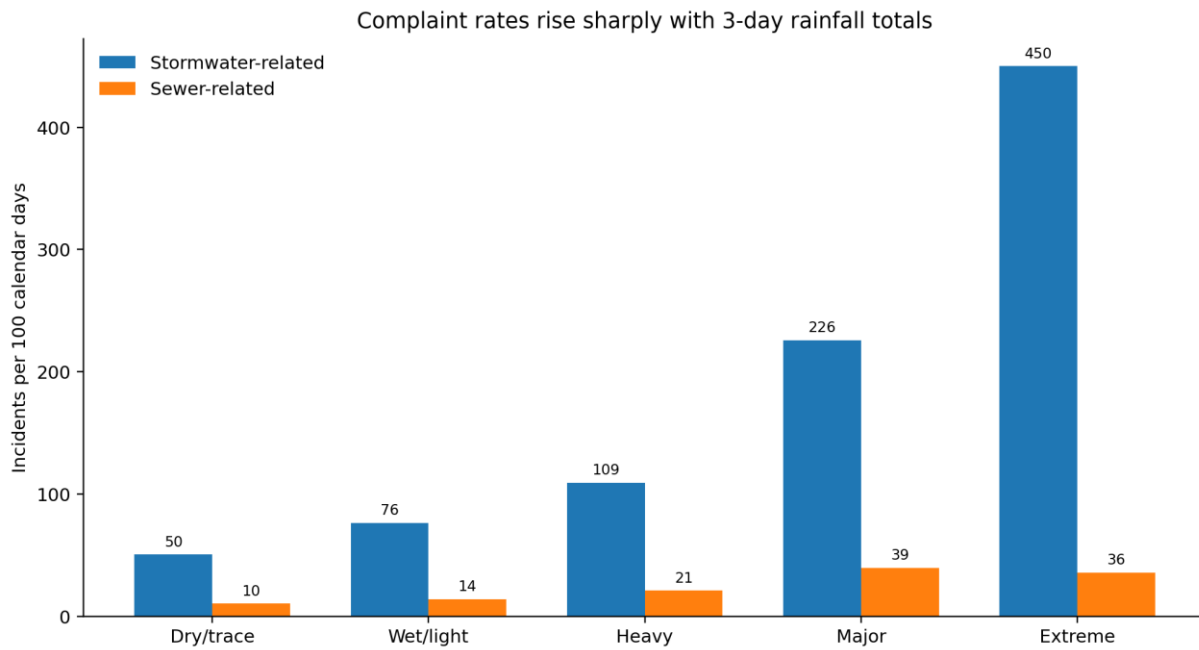


Figure 3. Complaint rates by three-day rainfall class

Source/Note: NOAA daily precipitation at Savannah/Hilton Head International Airport and de-identified Q-Alert incident dates. Categories are mutually exclusive.

Reporting continues after the rain ends

Among complaints linked to named NWS events, 46% of stormwater incidents and 56% of sewer-related incidents were filed one to three days after the event ended. A same-day-only analysis would therefore miss a large share of the resident response.

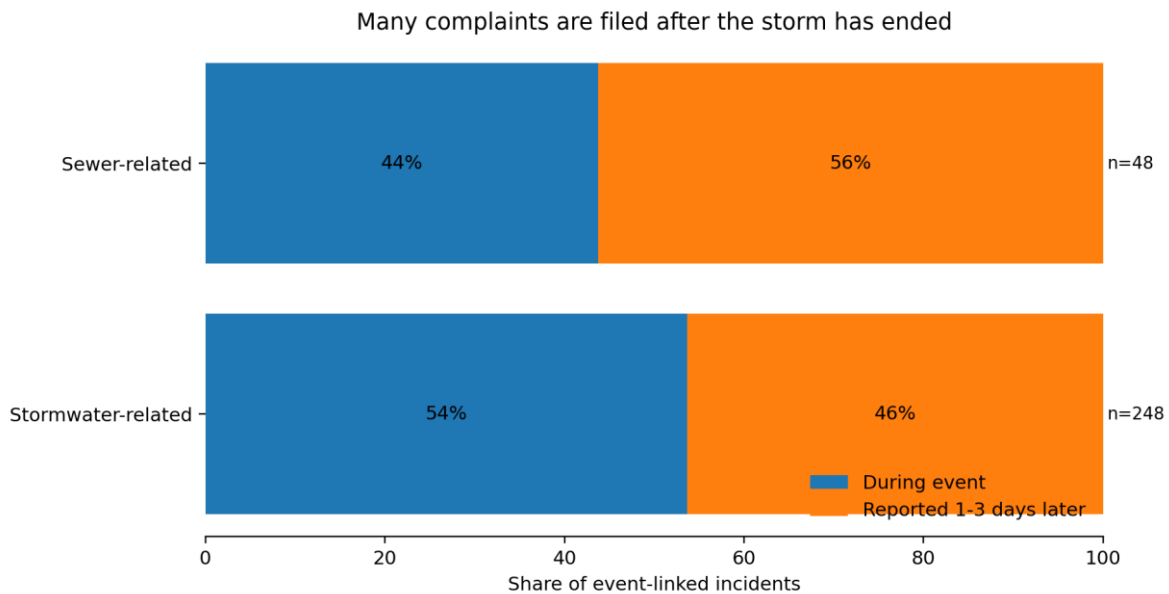


Figure 4. Timing of event-linked complaint reports

Source/Note: NWS Charleston significant-event archive and complaint dates. Percentages use 248 stormwater and 48 sewer-related event-linked incidents; categories overlap when a record mentions both.

One airport gauge misses localized rain

The nearest-station check found 192 complaints - 12.8% of all relevant incidents - where a local station measured at least one inch over three days while the airport remained below one inch. This pattern is especially important

for eastern and coastal communities such as Wilmington Island, Isle of Hope, Skidaway Island, Tybee Island, and Coffee Bluff. Project evaluation should use local gauges or radar-based rainfall instead of assigning one airport total to the entire county.

High-impact event benchmarks

Event	Dates	Airport rain, event + 3d	Stormwater incidents	Sewer incidents
Tropical Storm Elsa	2021-07-07 to 2021-07-08	3.52 in	9	2
Heavy Rainfall Event	2023-07-23 to 2023-07-23	0.14 in	17	4
Tropical Storm Debby	2024-08-04 to 2024-08-09	11.15 in	63	5
Heavy Rainfall Event	2024-11-06 to 2024-11-08	4.68 in	11	2
Heavy Rainfall and Coastal Flooding	2025-08-22 to 2025-08-23	2.70 in	47	15

Tropical Storm Debby is the clearest stress test. The event and three-day reporting window contained 63 stormwater incidents and 5 sewer-related incidents. NWS observations reported approximately 7.84 to 11.03 inches across Chatham County through August 8, 2024, including 10.53 inches at Savannah International Airport. The August 22-23, 2025 event produced 47 stormwater and 15 sewer-related incidents in the event-plus-three-day window; NWS described saturated soils and high tides as compounding factors.

Interpretation rule for project findings

A project should be judged against storms of similar severity, not only against calendar time. A short post-project period with one extreme event may produce more complaints than several mild pre-project years even when the improvement reduced flood depth, duration, or number of affected homes.

5 Wastewater, Septic, and Environmental Contamination Context

Private septic failures: a conservative local count

A targeted review found 16 Q-Alert incidents from 2021 through February 9, 2026 that explicitly or very strongly described a private septic or drain-field failure, saturation, overflow, or discharge. Five additional raw-sewage complaints were left source-uncertain and were not counted as septic. The 16 incidents are a lower bound because Q-Alert does not capture every contractor call or unreported failure.

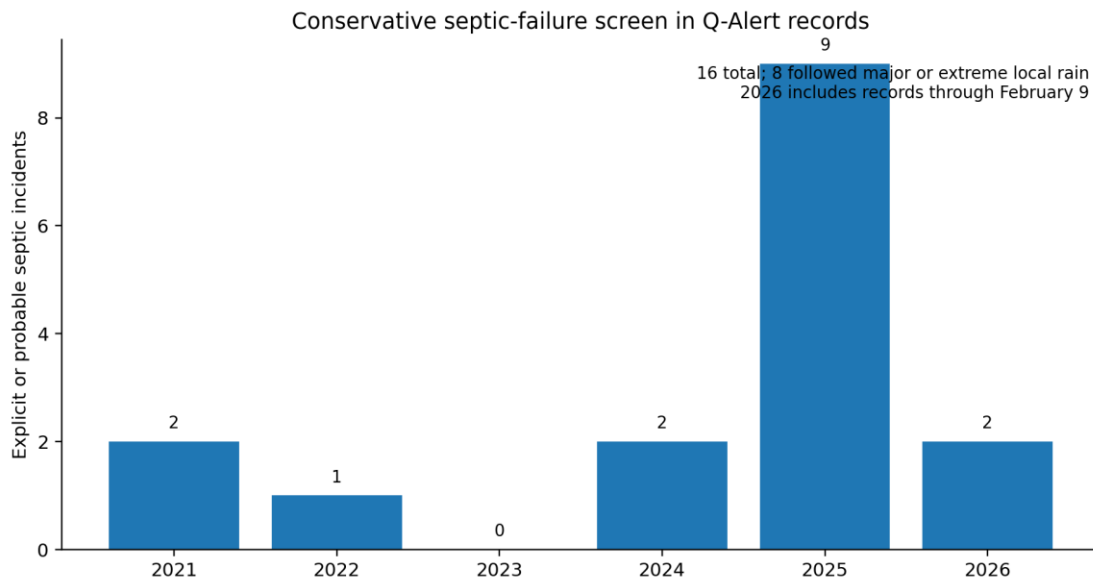


Figure 5. Explicit or probable septic-failure incidents found in Q-Alert

Source/Note: Conservative narrative review. Eight of 16 incidents followed major or extreme nearest-station rainfall of at least two inches over three days.

What residents experience

- Toilets may not flush, and showers, sinks, washers, and dishwashers may need to be used very little or not at all.
- Sewage may rise into a yard, ditch, street, or home; children and pets may need to stay away from affected areas.
- Residents may pay for pumping, plumbing, drain-field work, advanced treatment, cleanup, hotel stays, or a sewer connection.
- Older adults, people with disabilities, renters, lower-income households, and families without flexible work or transportation may have fewer options during a failure.
- Businesses can lose operating time, and roads or recreation areas may close while a public spill is repaired and cleaned.

Cleanup and recovery work

Step	Work involved	Why it affects daily life
Reduce water use	Households may need to stop flushing, bathing, laundry, and dishwashing until the absorption field can accept water.	Normal plumbing may be unavailable.
Inspect and stabilize	A licensed contractor may inspect the tank, baffles, pump, distribution box, piping, and drain field. Pumping during saturated conditions can provide only short relief and may damage or float a tank.	Residents coordinate multiple contractors and wait for soils to drain.
Remove contamination	Indoor sewage can require wastewater removal, disposal of contaminated drywall or insulation, detergent cleaning, disinfection, drying, and mold control. Workers need boots, gloves, and eye protection.	Rooms or belongings may be unusable; temporary relocation may be needed.
Repair or replace	Work may range from clearing a component to replacing the drain field, installing an advanced treatment system, elevating components, or connecting to public sewer.	Costs can reach thousands of dollars and may not be fully insured.
Test and monitor	Flooded private wells may need inspection, disinfection, and testing. Public spills can require signs, lime, vacuum trucks, bypass pumps, road control, sampling, and agency reporting.	Yards, wells, roads, creeks, or public spaces may remain restricted.

Source/Note: EPA and CDC flood/septic guidance; Coastal Health District permitting and repair responsibilities.

Cost and environmental context

A March 2026 Chatham County/Georgia public-health presentation estimated conventional septic installation or major replacement at \$10,000-\$15,000 or more, advanced treatment at \$15,000-\$20,000, engineering at \$1,200 or more, and a proposed public-sewer connection plus plumbing at up to \$15,000 before monthly service costs. These are planning estimates, not invoices for the complaint cases.

An older Georgia EPD study reported 15,112 septic systems in Chatham County in 2007 and 386 repairs from 2002 through 2007. That historical figure is not a current failure rate, but it shows a long-standing repair burden. Failing systems, sewer leaks, overflows, illicit discharges, animal waste, and stormwater can all contribute bacteria and nutrients to local waters; one source should not be assumed without field evidence.

Illustrative public sewer spill burden

Date	Illustrative event	Response and disruption
January 2018	Sallie Mood main leak	Roadside ditch draining toward the Mayfair canal/Vernon River; repair, notification, avoidance advisory, testing
March 2018	Main blockage; up to 580,000 gallons reported	Clearing/repair and environmental-health coordination toward Herb Creek
March 2022	Force-main damage; 7,069 gallons	Pipe repair and lime at Herb Creek entrance
October 2022	Two manhole spills; about 9,500 gallons combined	Signs, lime, repair, and possible Herb Creek impact
August 2024	Central Avenue lift station; about 1,000 gallons	Storm-related power interruption; controls reset, signs posted, lime applied
July 2024	Penn Waller force-main break	Road washout and multi-day closure while pipe and roadway were repaired

Source/Note: Examples found in public County notices and press releases; not a complete historical spill inventory.

Public-health conclusion

The evidence supports describing these projects as preventive public-health infrastructure. The measurable benefit is reduced probability and consequence of sewage exposure, sanitation interruption, emergency cleanup, and environmental release.

6 Wastewater Project Findings

Wastewater system map and Sallie Mood service context

The County GIS wastewater pipe network map shows the force-main backbone, seven lift-station structures, and the gravity collection branches that feed the lift stations and other pressurized pipes. Together they confirm that Sallie Mood is a network-scale asset.

Service-context indicator	Authoritative Project Notes / map interpretation
Network role	Collects flow from all 7 unincorporated County lift stations
Typical daily flow	About 820,000 gallons per day
Reported service reach	About 5,000-6,000 homes; the same notes also cite about 2,070 customers, which should be reconciled before final public release
ARPA Phase 2 output	About 792 linear feet of 16-inch fused PVC
Evaluation geography	Direct corridor for segment effects plus full mapped collection network for continuity-of-service outcomes

Project evidence scorecard

Project	Current status	Evidence signal	What the evidence supports
Sallie Mood Force Main	Complete	Documented benefit	792 feet of old main replaced with fused 16-inch PVC; County reports no spills in improved sections. Complaint trend is not segment-specific.
Nancy Place Lift Station	Complete	Directionally favorable	Automatic diesel bypass and flood-hardening address the known outage pathway; no outages or breakdowns recorded since completion. One post-proxy domain incident.
Gale Break Lift Station	Complete	Directionally favorable	Automatic bypass and extended vault reduce response time; complaint sample is too small for a statistical trend.
Ferguson Avenue	Not started / on hold	Unmet need	Low-lying septic-dependent properties remain exposed; no completed-project outcome can be tested.

6.1 Sallie Mood Force Main - documented segment improvement

The force main is more than 50 years old, made of asbestos-cement pipe, carrying about 820,000 gallons per day from all seven unincorporated lift stations and serving roughly 5,000-6,000 homes. Before improvement, spills occurred annually. ARPA funded Phase 2 of the replacement of the force main, replacing about 792 linear feet with fused 16-inch PVC. Phase 3 has not begun. No new spills have occurred in the improved sections since project completion.

6.2 Nancy Place Lift Station - a known failure pathway was removed

The station serves about 520 residents and lies in the AE-10 flood zone near protected coastal marsh. The project installed an automatic bypass pump and raised or replaced electrical, valve, and pump components. Sensors can start the bypass when wet-well levels rise. Standardized components also simplify replacement and maintenance. No power outages or breakdowns have occurred since construction.

The primary screening area contained eight distinct primary-purpose complaint incidents over the study period: seven before the post-completion proxy and one after. The rate moved from about 1.6 to 1.0 incidents per year. This is directionally favorable, but the after window is under one year and most nearby reports concern drainage or private-line issues rather than a documented station failure.

Keeping the station operating during a power outage protects toilet and drain function, reduces the chance of sewage backup or outdoor release, and avoids sending crews with a portable generator during a countywide emergency. This is a strong resilience mechanism even when complaint counts are small.

6.3 Gale Break Lift Station - resilience benefit with limited complaint evidence

Gale Break was built in 1976 and serves about 63 residents. The improvement added an automatic bypass pump and an extended vault while standardizing parts across stations. The station is in the AE-10 flood zone and close to marsh and waterways.

The primary screen contained five distinct primary-purpose incidents: four before the post-completion proxy and one after. The rates were approximately 0.9 and 1.0 incidents per year. The later incident was classified as a septic or service-connection issue rather than a station outage. The complaint sample is too small for a frequency conclusion, but the engineering mechanism supports faster, safer storm response.

6.4 Ferguson Avenue - unresolved public-health and equity need

The planned project would move a low-lying, septic-dependent area to public sewer through a new lift station. The interview notes state that the project is on hold because the City of Savannah would not accept the increased flow. The screening area contained two primary-purpose baseline incidents, including a sewer backup/overflow report.

Because construction has not started, no benefit can be claimed. Ferguson remains an unmet public-health need.

7 Stormwater Project Findings

Project evidence scorecard

Project	Current status	Evidence signal	What the evidence supports
Willow Lakes	Complete Jul. 28, 2023	Mixed / inconclusive	Added pond and pipe capacity; later complaints shifted toward local culverts, sinkholes, and entrance flooding. No clear frequency decline.
Isle of Hope / Barnett	In progress	Too early to assess	Construction began July 28, 2025; six domain incidents occurred during the available window; no post-construction season.
Marshall Branch Canal	Complete Aug. 8, 2025	Mixed / inconclusive	Canal and access improvements are clear, but post period is short and nearby ditch maintenance still generates reports.
Betz Creek Culvert	Complete Aug. 15, 2025	Follow-up priority	Post-project residents explicitly described high-tide water entering or remaining in yards; requires hydraulic/tide-gate verification. Last known direct complaint: Jan. 5, 2026
Burnside Island	Complete Mar. 26, 2025	Follow-up priority	Later complaints suggest connected network or maintenance constraints along Eastridge/Hunt/Fox Squirrel/Vista Point.
One Chatham	In progress	Too early to assess	Success is watershed models, priorities, conceptual plans, and funded projects rather than point-buffer complaint counts.

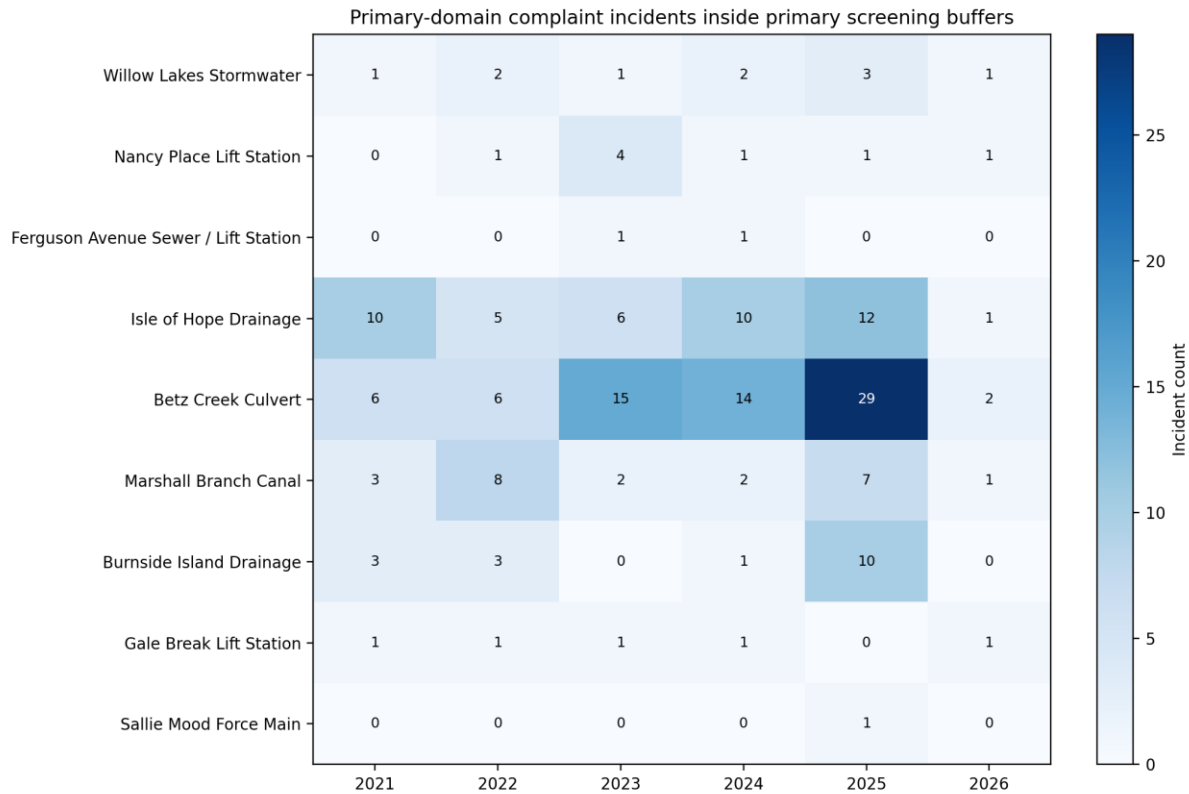


Figure 9. Annual complaint incidents in project screening areas

Source/Note: Distinct primary-purpose incidents within primary screening ranges. 2026 is partial through June 18. Counts alone do not adjust for rainfall or project duration.

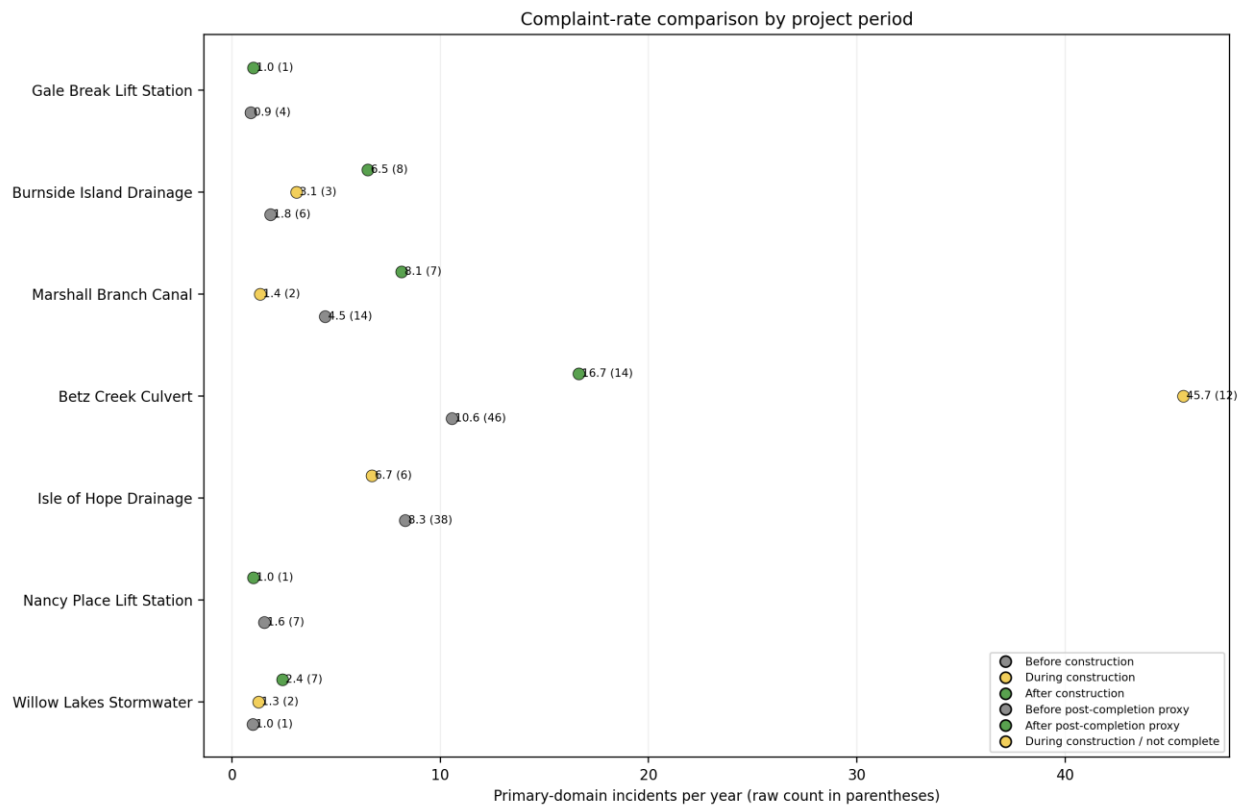


Figure 10. Complaint-rate comparison by project period

Source/Note: Primary-purpose incidents per year; raw incident count in parentheses. Construction-period spikes can include work-zone effects and very short durations.

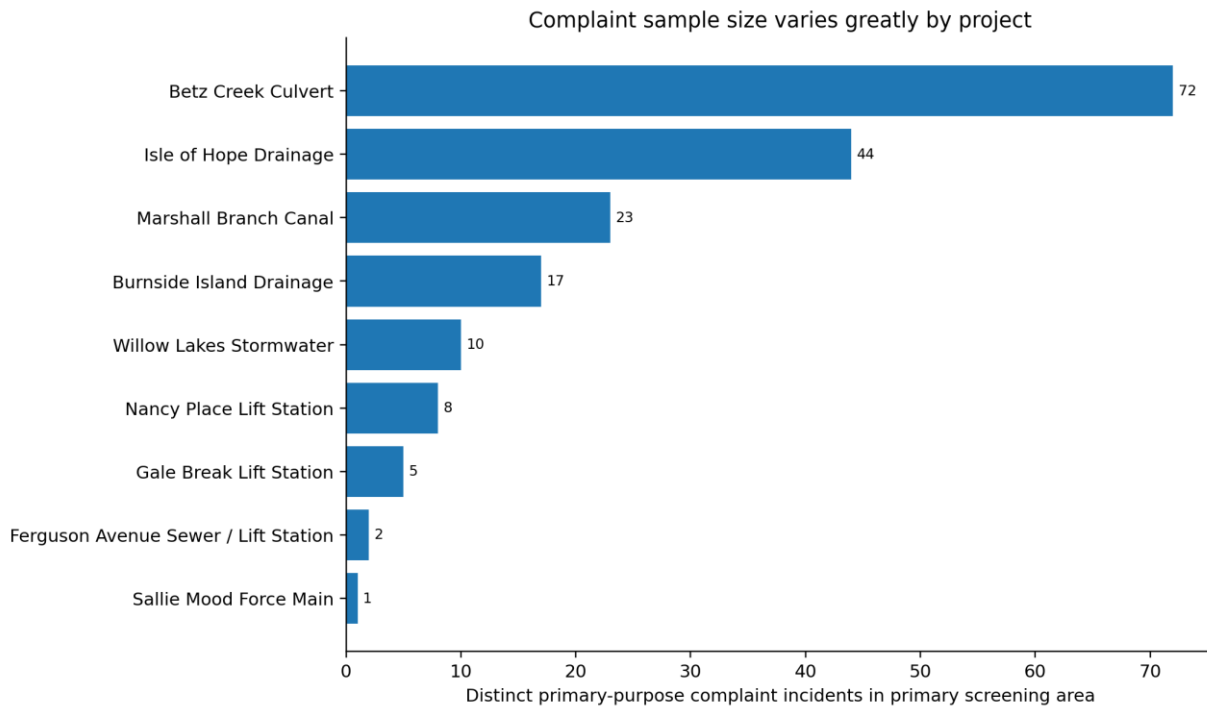


Figure 11. Complaint sample size by project

Source/Note: Distinct primary-purpose complaint incidents within primary screening ranges. Small wastewater samples limit statistical interpretation.

7.1 Willow Lakes - clear construction output, mixed complaint outcome

The project addressed a subdivision pond that could not drain because the ditch was shallow and clogged. Construction from January 5, 2022 through July 28, 2023 installed about 2,876 feet of pipe, connected the pond to existing infrastructure, lowered the pond level, and added about 236,400 gallons of storage. Approximately 192 lots are within the subdivision.

The primary screen contained 10 project-purpose incidents: one before, two during, and seven after construction. The annualized rate increased from about 1.0 to 2.4. Several later reports concern local culverts, sinkholes, inlet performance, or entrance flooding rather than a subdivision-wide pond overflow. Four of the seven post-project incidents occurred in airport rain-episode windows and three matched named events.

The engineering benefit is credible, but the complaint record does not show a broad frequency reduction. The project may have removed one bottleneck while connected culverts, beaver activity, subdivision entrances, or downstream conditions remain. Inspect the full outfall route and compare pond stage and street depth during a design storm.

7.2 Isle of Hope / Barnett Drive - too early for a post-construction conclusion

The project responds to a debris-prone canal affecting about 15 lots. Construction began July 28, 2025 and remains incomplete. The current design clears the channel and adds or replaces about 476 feet of Barnett Drive pipe and 384 feet in the first third of the canal, adding roughly 48,000 gallons of capacity. The initial tide-gate concept was changed because of sensitive marsh conditions.

There were 38 project-purpose incidents before construction and six during the available construction window. Three of the six occurred after at least one inch of nearest-station rainfall over three days. There is no completed-project storm season, so the evidence cannot yet answer whether flood frequency or duration improved.

Track canal water level, debris blockage, high tide, rainfall, and parcel access through at least two wet seasons after completion. Because the outlet is tidal, rainfall alone is not a sufficient performance measure.

7.3 Marshall Branch Canal - promising design, short post period

Construction widened and deepened the canal, replaced culverts from Marshall Avenue to Veterans Parkway, and added a maintenance path. Work ran from February 19, 2024 to August 8, 2025 and affects about 25 lots, including apartments and condominiums.

The primary screen contained 14 incidents before, two during, and seven after construction. Annualized rates were 4.5, 1.4, and 8.1, but the post period was under one year and the sample was small. Later complaints often involve Garrard Avenue or Louis Mills-area ditch maintenance and may not represent the improved canal itself.

The access path is an important long-term resilience output because it makes maintenance possible. Performance should be measured using water-depth and drawdown time in the canal plus maintenance response, not solely a circular complaint count.

7.4 Betz Creek Culvert - highest-priority engineering follow-up

The old brick culvert was deteriorated, undersized for large storms, and too narrow for a continuous sidewalk. Construction from May 12 to August 15, 2025 installed a larger culvert and tide gate, widened the shoulders, and added a sidewalk beside St. Andrew's School and nearby residential areas.

The screening area had the largest complaint sample: 46 project-purpose incidents before, 12 during, and 14 after construction. The annualized rates were about 10.6, 45.7, and 16.7. The construction spike reflects a very short work period. The post rate remains above the pre rate, and several later complaints specifically state that high-

tide water entered or remained in backyards after the culvert/tide-gate project. The most recent direct complaint that is still open according to the Q-Alert logs occurred on Jan. 5, 2026.

These narratives do not prove causation, but their specificity and recurrence make Betz Creek a follow-up priority. Verify tide-gate orientation and operation, culvert and creek invert elevations, downstream tidal stage, upstream water levels, debris, and whether the gate drains between tides. Compare observed water levels with the design model and survey affected yards.

7.5 Burnside Island - residual network or maintenance constraint

The project installed about 1,006 feet of pipe along the Eastridge route, diverting runoff to the storm system and Moon River. It added approximately 63,000 gallons of capacity for about 20 lots. Construction ran from April 8, 2024 to March 26, 2025.

The primary screen contained six incidents before, three during, and eight after construction; annualized rates were 1.8, 3.1, and 6.5. The post sample is small, but later reports around Hunt Drive, Fox Squirrel Drive, Vista Point, and connected routes suggest that another ditch, private connection, downstream outlet, or maintenance issue may still control neighborhood performance.

Inspect the full connected path, confirm public/private ownership of each segment, and measure whether the new pipe drains as designed at high tide.

7.6 One Chatham Stormwater Program - a planning system

The program is developing watershed models, problem-area inventories, improvement plans, and conceptual designs for the approximately 22,700-acre St. Augustine Creek basin, 12,500-acre Black Creek basin, and 4,000-acre Dundee Canal basin. The watersheds cross unincorporated Chatham County and several municipalities or neighboring jurisdictions.

Near-term performance should be measured by model completion and validation, shared data standards, identified priority areas, adopted multi-jurisdictional actions, grant or capital funding secured, and the number of conceptual projects advanced to design and construction. Its long-term value is reducing fragmented decision-making across connected watersheds.

8

Demographic and Equity Lens

Countywide context

Indicator	Chatham County
Population estimate, July 1, 2025	311,855
Age 65 or older	17.8%
Black alone	37.7%
Hispanic or Latino	9.5%
Owner-occupied housing rate	56.8%
Disability, under age 65	12.0%
Uninsured, under age 65	13.4%
Median household income, 2020-2024	\$71,097
Persons in poverty	13.9%

Source/Note: U.S. Census Bureau QuickFacts, population estimate vintage 2025 and ACS 2020-2024.

The Sallie Mood service geography is not economically uniform

Geography	Population	Median age	Median household income	Poverty
Census Tract 102	4,186	40.0	\$87,227	7.4%
Census Tract 40.02	4,069	33.9	\$47,806	22.7%
Chatham County	311,855	37.2	\$71,097	about 14%

Source/Note: Illustrative ACS 2024 five-year profiles for two tracts identified in the authoritative Project Notes as part of the Sallie Mood service geography. Tract estimates have wide margins of error and should not be treated as precise parcel-level demographics.

A network-scale improvement can protect households with very different income, age, housing, and recovery capacity. The same sewage backup or septic replacement can be an inconvenience for one household and a financial crisis for another. Equity evaluation therefore should consider both exposure and the ability to recover.

Equity pathways

Population/condition	Why infrastructure reliability matters
Lower-income households	Less savings for pumping, hotel stays, cleanup, drain-field replacement, or a sewer connection
Older adults and people with disabilities	Greater difficulty moving belongings, cleaning contaminated areas, or using temporary facilities
Renters and multifamily residents	Limited control over drainage, septic, or building repairs; dependence on owner response
Households without flexible work or transportation	Greater hardship from road closures, contractor appointments, or temporary relocation
Coastal and flood-zone residents	Compound risk from heavy rain, high groundwater, high tide, power outages, and limited drainage windows

9

Overall Conclusions

Answer to the central question

The available evidence supports the conclusion that Chatham County's ARPA water-infrastructure investments reduced important risks and improved system resilience, especially for wastewater continuity. The strongest documented result is no reported spill in the improved Sallie Mood sections. Nancy Place and Gale Break removed a known power-outage failure pathway through automatic bypass pumping and more maintainable equipment. These are meaningful public-health and quality-of-life benefits even when complaint samples are small.

For stormwater projects, the construction outputs are substantial, but the complaint record does not show a uniform post-project decrease. Rainfall intensity, localized storms, tides, downstream outlets, maintenance, construction windows, and increased use of Q-Alert all affect the trend. Several later complaints appear to involve connected features rather than the improved feature itself. Betz Creek, Burnside Island, and Willow Lakes merit targeted holistic follow-up; Isle of Hope is too early to assess; Marshall Branch needs a longer post period.

What changed by outcome area

Outcome	Evidence-based conclusion
Public health	Reduced probability of untreated sewage exposure, indoor backup, polluted yards/ditches, and sanitation interruption. No direct illness outcome was measured.
Resilience	Automatic bypass pumping, stronger pipe, more storage/conveyance, and maintenance access improve continuity and response capacity during storms and outages.
Quality of life	Potentially fewer unusable bathrooms, flooded yards, blocked roads, cleanup events, and emergency disruptions; continuing complaints show that benefits are not complete everywhere.
Environmental quality	Lower spill risk and improved drainage can reduce bacteria/nutrient transport and prolonged standing water, but receiving-water and tide conditions still matter.
Government capacity	Standardized equipment and easier access can reduce emergency mobilization and maintenance time; One Chatham creates a cross-jurisdiction planning platform.

What the complaint data say by project

Project	Bottom-line finding
Sallie Mood	Documented segment benefit; complaint trend inconclusive
Nancy Place	Directionally favorable; monitor operational records
Gale Break	Resilience mechanism favorable; complaint sample sparse
Ferguson Avenue	Unmet need; no impact test
Willow Lakes	Mixed; inspect connected outfall and local defects
Isle of Hope	Too early; finish construction and monitor tides/rain
Marshall Branch	Mixed; post period too short
Betz Creek	Follow-up priority for tide-gate/hydraulic behavior
Burnside Island	Follow-up priority for connected network/maintenance
One Chatham	Process and planning benefits; no point-buffer outcome yet

10**Recommendations and Monitoring Plan****Immediate priorities**

1. Complete a focused Betz Creek inspection and short-term upstream/downstream water-level monitoring across rain and tide cycles.
2. Inspect the connected drainage routes at Willow Lakes and Burnside Island, including public/private ownership, debris, elevations, and downstream outlets.
3. Create a recurring review of repeat complainants and repeat locations after each major rain event.

Longer-term actions

4. Add permanent or temporary rain/tide/water-level sensors at the most complaint-prone coastal projects.
5. Create a public annual “water infrastructure outcomes” report that combines construction progress, operations, weather-normalized complaints, and environmental indicators.
6. For future stormwater projects, complete a holistic analysis of the stormwater system influencing outcomes to ensure the project addresses the underlying cause of the issue.
7. Create avenues of interdepartmental communication for projects that fall under the jurisdiction of multiple departments.
8. Identify other metrics and indicators with which to evaluate project impacts.

Suggested reporting cadence

Timing	Action
After every major storm	72-hour complaint pull; pump/alarm/spill summary; blocked-road and high-water locations
Quarterly	Project dashboard, repeat-location review, maintenance backlog, field verification status
Annually	Comparable-storm analysis, demographic/equity review, public narrative, capital priorities
After two wet seasons	Formal post-construction evaluation for each completed drainage project

11 Limitations

Important cautions for decision-makers and public communication

- Q-Alert is a service-request system, not a complete census of flooding, septic failures, sanitary sewer overflows, or health outcomes.
- Reporting behavior changed over time and may differ by age, income, internet access, awareness, and confidence in government response.
- Same-day/near-location deduplication reduces repeated submissions but may combine separate problems or leave some duplicate events.
- Primary and sensitivity buffers are screening approximations. Stormwater follows topography and pipes; wastewater follows collection networks and service boundaries.
- Construction dates for some wastewater projects were represented by a proxy because an exact in-service date was not provided.
- Rainfall varies sharply across Chatham County. The local-station method improves on the airport-only approach but is still not radar-based basin rainfall.
- Tidal backwater, groundwater, storm surge, antecedent soil saturation, debris, and power outages are incompletely measured in the complaint file.
- Small post-project samples and short post periods make annualized rates unstable. Betz construction, for example, lasted only about three months.
- Complaint text can misclassify public sewer, private lateral, septic, storm drain, and water-main conditions. Source-uncertain cases were treated cautiously.
- Demographic data are ACS estimates with margins of error and do not identify the characteristics of individual complainants.
- The report evaluates risk and service continuity; it does not establish that a project caused or prevented a specific disease, property loss, or economic outcome.
- Public spill examples are illustrative, not a complete historical inventory. A complete count would require County and Georgia EPD records requests.

A Appendix A - Project Buffer and Service-Area Rationale

Screening ranges used for complaint matching

Project	Primary screen	Sensitivity screen	Reason
Gale Break Lift Station	0.25 mi	0.35 mi	Compact lift-station catchment
Nancy Place Lift Station	0.35 mi	0.50 mi	Residential collection area and connected lines
Ferguson Avenue	0.50 mi	0.75 mi	Septic-to-sewer planning corridor; polygon preferable
Isle of Hope / Barnett Drive	0.40 mi	0.60 mi	Canal, laterals, streets, tidal receiving area
Betz Creek Culvert	0.50 mi	0.75 mi	Upstream drainage, tidal backwater, school access
Burnside Island	0.45 mi	0.65 mi	Eastridge drainage route and connected system
Willow Lakes	0.75 mi	1.00 mi	Subdivision, pond, outfall route, adjacent hydraulic area
Marshall Branch Canal	0.60 mi	0.85 mi	Canal corridor and nearby drainage network
Sallie Mood local segment	0.35-mi corridor	0.50-mi corridor	Direct construction and segment exposure; network screen added

Sallie Mood exception. A local 0.35-mile corridor captures direct construction and segment-failure effects. A 0.50-mile corridor is a sensitivity test. Reliability should also be evaluated across the mapped gravity and pressurized collection network because all seven unincorporated lift stations feed the backbone. Countywide sewer complaints are an upper-bound context only and cannot be attributed to the force main.

B Appendix B - Project Period Complaint and Rain Summary

Primary-purpose incidents in primary screening areas

Project	Period	Years	Incidents	Incidents/year	Local ≥ 1 in/3d	Named-event window	Small sample
Willow Lakes Stormwater	Before construction	1.01	1	1.0	0	0	Yes
Willow Lakes Stormwater	During construction	1.56	2	1.3	0	0	Yes
Willow Lakes Stormwater	After construction	2.89	7	2.4	3	3	Yes
Nancy Place Lift Station	Before post-completion proxy	4.50	7	1.6	0	1	Yes
Nancy Place Lift Station	After post-completion proxy	0.97	1	1.0	1	0	Yes
Ferguson Avenue Sewer / Lift Station	Baseline / unmet need	-	2	-	0	0	Yes
Isle of Hope Drainage	Before construction	4.57	38	8.3	20	16	No
Isle of Hope Drainage	During construction / not complete	0.89	6	6.7	3	0	Yes
Betz Creek Culvert	Before construction	4.36	46	10.6	9	7	No
Betz Creek Culvert	During construction	0.26	12	45.7	5	2	No
Betz Creek Culvert	After construction	0.84	14	16.7	3	2	No
Marshall Branch Canal	Before construction	3.13	14	4.5	5	4	No
Marshall Branch Canal	During construction	1.47	2	1.4	0	0	Yes
Marshall Branch Canal	After construction	0.86	7	8.1	2	0	Yes
Burnside Island Drainage	Before construction	3.27	6	1.8	2	1	Yes
Burnside Island Drainage	During construction	0.97	3	3.1	0	0	Yes
Burnside Island Drainage	After construction	1.23	8	6.5	3	2	Yes
Gale Break Lift Station	Before post-completion proxy	4.50	4	0.9	2	1	Yes
Gale Break Lift Station	After post-completion proxy	0.97	1	1.0	0	0	Yes
Sallie Mood Force Main	Baseline 2021	1.00	0	0.0	0	0	Yes
Sallie Mood Force Main	Implementation 2022-2024	3.00	0	0.0	0	0	Yes
Sallie Mood Force Main	Recent 2025-2026 (completion date unverified)	1.46	1	0.7	0	0	Yes

Source/Note: A small-sample flag indicates fewer than 10 primary-purpose incidents. Annualized rates should be interpreted cautiously for short periods.

C

Appendix C - Significant Weather Event Timeline

NWS events cross-referenced to complaints, 2021-March 2026

Event	Dates	Type	Hydrologic relevance	Airport rain +3d (in)	SW	Sewer
Downtown Charleston Flash Flooding	2021-06-12 - 2021-06-12	Flash flooding	Indirect: primarily Charleston-area	2.57	1	1
Tropical Storm Elsa	2021-07-07 - 2021-07-08	Tropical cyclone	Direct	3.52	9	2
Coastal Flooding	2021-11-03 - 2021-11-11	Coastal flooding	Direct	2.93	9	1
High Winds	2022-01-03 - 2022-01-03	High wind	Indirect: outage and debris context	0.32	2	0
Winter Storm	2022-01-21 - 2022-01-22	Winter storm	Indirect	0.26	5	2
Southeast SC/GA Tornado Outbreak	2022-04-05 - 2022-04-06	Severe weather / tornado	Indirect: rainfall, debris, and outage context	0.58	5	0
Heavy Rainfall Event	2022-06-28 - 2022-07-02	Heavy rainfall	Direct	1.24	11	1
Hurricane Ian	2022-09-30 - 2022-09-30	Tropical cyclone	Direct	0.01	1	0
Tropical Cyclone Nicole	2022-11-10 - 2022-11-11	Tropical cyclone	Direct	1.22	0	0
Memorial Day Weekend Coastal Storm	2023-05-26 - 2023-05-27	Coastal storm	Direct	1.38	3	1
Brooklet and Guyton Georgia Tornadoes	2023-06-14 - 2023-06-14	Severe weather / tornado	Indirect: regional rainfall and debris context	1.27	9	0
Heavy Rainfall Event	2023-07-23 - 2023-07-23	Heavy rainfall	Direct	0.14	17	4
Tropical Cyclone Idalia	2023-08-30 - 2023-08-30	Tropical cyclone	Direct	1.53	3	2
Nor'easter	2023-12-17 - 2023-12-17	Coastal storm	Direct	3.16	3	1
Heavy Rainfall Event	2023-12-24 - 2023-12-27	Heavy rainfall	Direct	0.80	0	1
Severe Weather Event	2024-01-09 - 2024-01-10	Severe weather	Indirect: rainfall, debris, and outage context	1.89	2	0
Heavy Rainfall Event	2024-03-09 - 2024-03-09	Heavy rainfall	Direct	0.65	5	1
Heavy Rainfall Event	2024-04-11 - 2024-04-11	Heavy rainfall	Direct	3.40	7	0
Severe Weather Event	2024-06-10 - 2024-06-10	Severe weather	Indirect: local rainfall and debris context	0.48	3	2
Heavy Rainfall Event	2024-07-01 - 2024-07-02	Heavy rainfall	Direct	2.04	3	1
Tropical Storm Debby	2024-08-04 - 2024-08-09	Tropical cyclone	Direct	11.15	63	5
Hurricane Helene	2024-09-26 - 2024-09-27	Tropical cyclone	Direct	3.62	6	0
Heavy Rainfall Event	2024-11-06 - 2024-11-08	Heavy rainfall	Direct	4.68	11	2
Winter Storm	2025-01-21 - 2025-01-22	Winter storm	Indirect	0.71	0	1
Severe Weather Event	2025-06-25 - 2025-06-26	Severe weather	Indirect: local rainfall and outage context	0.00	2	1
Tropical Storm Chantal	2025-07-04 - 2025-07-06	Tropical cyclone	Direct	0.29	5	2
Savannah NWR Tornado	2025-07-10 - 2025-07-10	Severe weather / tornado	Indirect: local rainfall and debris context	2.77	14	1
Heavy Rainfall and Coastal Flooding	2025-08-22 - 2025-08-23	Heavy rainfall / coastal flooding	Direct	2.70	47	15
Winter Storm	2026-01-31 - 2026-02-01	Winter storm	Indirect	0.21	2	0
Tornado	2026-03-12 - 2026-03-12	Severe weather / tornado	Indirect: local rainfall and debris context	0.14	0	1

Source/Note: National Weather Service Charleston significant-event archive; complaint incidents include the event period plus three days. Event archive is a benchmark list, not every local thunderstorm.

D

Appendix D - Funding and Current Status

2025 reported financial snapshot with July 2026 authoritative status

Project ID	Project	2025 budget	Expenditures through 6/30/25	Current status
2205022	Sallie Mood Force Main	\$1,007,247	\$959,280	Complete
2205025	Nancy Place Lift Station	\$836,987	\$836,987	Complete
2205021	Gale Break Lift Station	\$729,295	\$729,295	Complete
2205060	Ferguson Avenue Lift Station	\$474,255	\$196,668	Not started / on hold
2205061	Willow Lakes Stormwater	\$694,030	\$694,030	Complete
2205064	Isle of Hope Drainage	\$318,753	\$7,969	In progress
2205071	Marshall Branch Canal	\$1,181,784	\$905,849	Complete
2205072	Betz Creek Culvert	\$1,302,144	\$277,566	Complete
2205074	Burnside Island Drainage	\$859,453	\$859,453	Complete
2205062	One Chatham Stormwater Program	\$2,116,575	\$584,698	In progress

Source/Note: Budget and expenditures are from the 2025 Recovery Plan reporting period. Current status is updated from the July 2026 interview and follow-up notes; later expenditures may not be reflected.

E Appendix E - Source Notes and References

Core documents and public sources

1. **Chatham County, Georgia 2025 Recovery Plan Report** Infrastructure project inventory and financial snapshot for July 1, 2024-June 30, 2025.
2. [NOAA Global Historical Climatology Network Daily](#) Daily station precipitation documentation.
3. [National Weather Service Charleston Significant Events Archive](#) Event dates and event pages.
4. [National Weather Service: Tropical Storm Debby Rainfall](#) Chatham County rainfall observations, August 2024.
5. [National Weather Service: August 22-23, 2025 Flash and Coastal Flooding](#) Regional event summary.
6. [U.S. Census Bureau QuickFacts: Chatham County, Georgia](#) Population vintage 2025 and ACS 2020-2024 indicators.
7. [Census Reporter: Census Tract 102, Chatham County](#) ACS 2024 five-year profile.
8. [Census Reporter: Census Tract 40.02, Chatham County](#) ACS 2024 five-year profile.
9. [U.S. EPA: Septic Systems - What to Do after the Flood](#) Post-flood septic inspection and service guidance.
10. [CDC: Safety Guidelines for Floodwater](#) Exposure and protective-equipment guidance.
11. [CDC: Guidelines for Septic and Onsite Wastewater Systems](#) Heavy-rain and flood stresses on septic systems.
12. [Coastal Health District: On-Site Sewage/Septic Systems](#) Permitting, complaint investigation, and repair inspection.
13. [Georgia EPD: Fecal Coliform TMDL Report \(2010\)](#) Historical Chatham County septic-system and repair context.
14. [Chatham County: Whitemarsh Island Septic Survey Meeting](#) March 2026 service-area, cost, health, and environmental planning information.
15. [Chatham County press releases and public notices](#) Illustrative municipal spill and repair events.
16. **Chatham County 2021-2024 Recovery Plan Reports** Historical project descriptions, priorities, and status context.

END OF REPORT

Prepared July 2026