Drainage Intelligence Report™

Powered by Low Point Convergence Analysis™ (LPCA™)

1234 Sample Street

Report Date: May 17, 2026

Site Information

Address: 1234 Sample Street, Anytown, US
County: Sample County
Parcel Area: 1.14 acres

Prepared By

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Satellite Image: © Mapbox © OpenStreetMap

About This Screening Report

This Drainage Intelligence Report was produced using Low Point Convergence Analysis™ (LPCA™), a terrain-based hydrologic screening methodology developed by Low Point Labs. LPCA uses a multi-phase analytic workflow to predict how stormwater runoff may interact with localized topography and parcel features.

The purpose of this analysis is not to diagnose drainage problems. It is a preliminary screening tool used to compile intelligence that improves the efficiency and focus of on-site inspections. Modeled drainage features represent estimated runoff behavior, highlighting where water is likely to travel and how it interacts with localized topography. Runoff is a natural part of every landscape, but it must be managed effectively to protect property and maintain the utility and enjoyment of yard spaces.

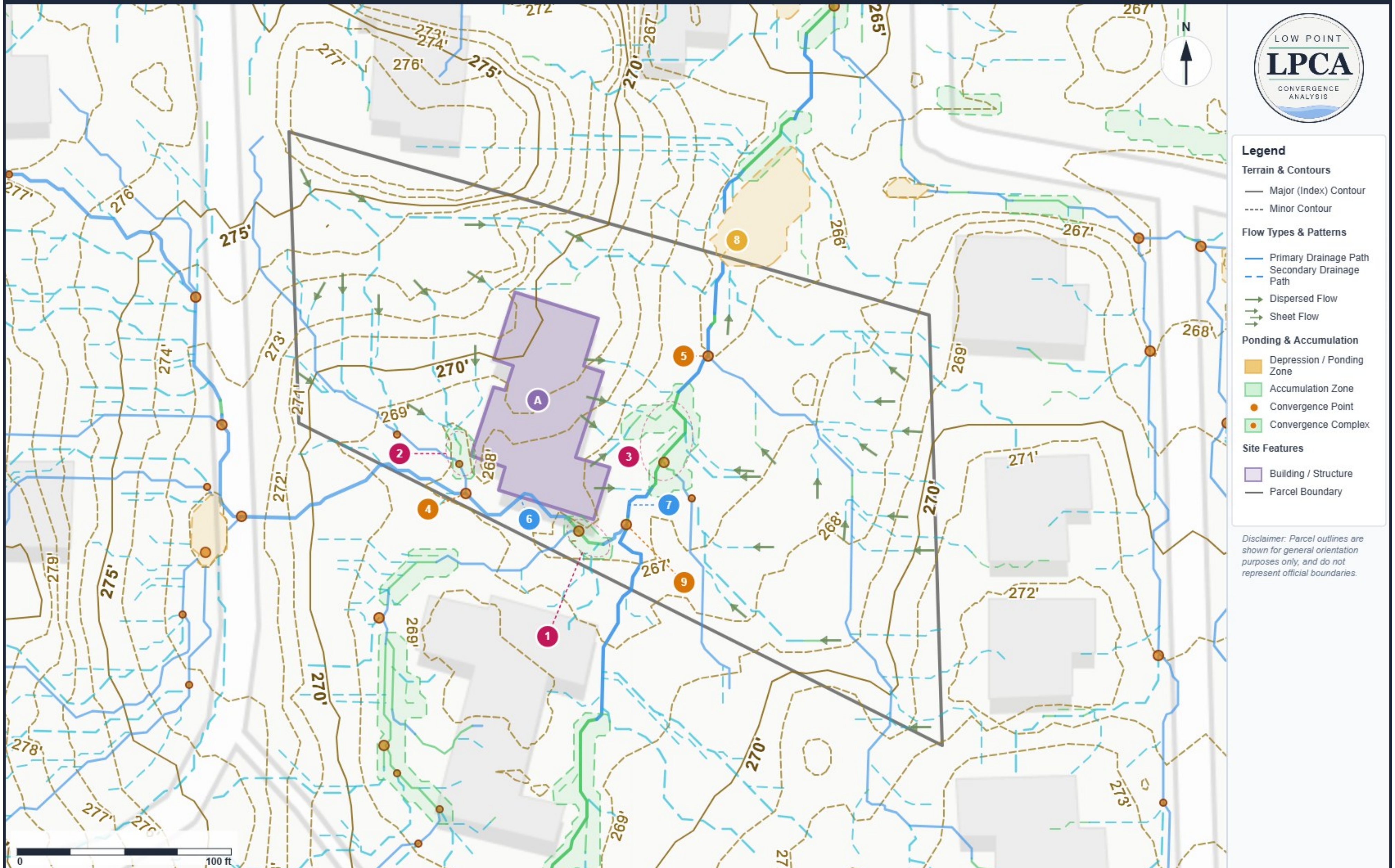
This report identifies areas of hydrologic interest at the residential scale. Based on the nature and location of predicted drainage behavior, LPCA highlights on-site inspection points that help reviewers prioritize where to focus during a field assessment to determine whether water-related issues are present and, if so, whether they are effectively managed.

In many cases, drainage infrastructure-such as catch basins, culverts, French drains, grading elements, swales, sump pump systems, and other water-management features-may already exist near the locations highlighted in this report. Where potential issues are flagged, readers should first evaluate the condition and performance of any existing drainage features before assuming new concerns are present.

All findings are conceptual and based on bare-earth topography. Actual site conditions-including grading changes, impervious surfaces, subsurface drainage, and stormwater infrastructure-may significantly alter real-world runoff behavior. This report is intended to inform, educate, and identify areas of potential drainage interest. It is not an engineered drainage design, construction plan, or flood certification.

Low Point Convergence Analysis (LPCA) — Drainage Intelligence Map

1234 Sample Street - (1.14 ACRES)



Conceptual visualization only. Not for engineering design or regulatory compliance.

1234 Sample Street | 5/17/2026 | Low Point Labs | Elevation: USGS 3DEP 1m LiDAR DEM | Base Map & Building Footprints: © Mapbox © OpenStreetMap

LPCA Screening Results - Drainage Intelligence

● Drainage Path ● Convergence ● Depression ● Accumulation ● Complex ● Drainage Cluster ● Structure

#	Feature Type	Inspection Priority	Description of Modeled Drainage Features
● A	Structure	N/A	Primary Structure
● 1	Complex	High	Convergence-accumulation complex to the SE of the home with 2 contributing flow paths, Major accumulation and a significant estimated contributing drainage area of approximately 3.3 acres.
● 2	Complex	High	Convergence-accumulation complex to the SW of the home with 2 contributing flow paths, Moderate accumulation and a significant estimated contributing drainage area of approximately 0.3 acres.
● 3	Complex	High	Convergence-accumulation complex approximately 15 feet predominantly to the SE of the home with 2 contributing flow paths, Major accumulation and a significant estimated contributing drainage area of approximately 6.9 acres.
● 4	Convergence	High	Major convergence point approximately 15 feet to the SW of the home where 2 modeled flow paths converge with a significant estimated contributing drainage area of approximately 2.5 acres.
● 5	Convergence	High	Major convergence point approximately 50 feet to the E of the home where 2 modeled flow paths converge with a significant estimated contributing drainage area of approximately 7.7 acres.
● 6	Drainage Path	High	Primary flow path adjacent to the SW corner of the home, with a significant estimated contributing drainage area of approximately 2.5 acres.
● 7	Drainage Path	High	Primary flow path approximately 15 feet from the E side of the home, with a significant estimated contributing drainage area of approximately 6.8 acres.
● 8	Depression	Moderate	Topographic depression approximately 60 feet to the NE of the home. Covering roughly 1,539 square feet, max depth approximately 0.7 feet, estimated retention volume of about 693 cubic feet.
● 9	Convergence	Moderate	Major convergence point approximately 15 feet to the SE of the home where 2 modeled flow paths converge with a significant estimated contributing drainage area of approximately 6.8 acres.

Topography, Soils & Climate Context

The property occupies just over an acre on a gentle, broadly uniform slope that drops from the higher northwest corner toward the south and southeast. The steepest terrain lies along the upper northwest portion of the lot, where the grade falls southward through roughly seven feet of relief before flattening into the lower half of the site. Across the eastern side, the land eases toward the southeast at a slightly shallower pitch, while the southwest portion is the flattest area on the property with only a few feet of elevation change. Minor surface runoff across the site follows a mixed pattern - some headwater flow trends westward and northwestward along the upper slopes, while other minor paths shed southeastward through the lower ground, reflecting the gentle grade transitions across the lot. Modeled drainage concentrates into two primary corridors: one originating from the southwest and west that trends eastward across the southern portion of the property, and a longer path that begins near the far southwest corner and follows a winding northeast trajectory through the center of the lot. These corridors converge in the lower southeastern area before surface water continues off the property toward the south and east.

Soils mapped for the surrounding area consist of coarse sandy loams classified as hydrologic group D, which typically indicates low infiltration capacity and elevated runoff potential despite the somewhat excessively drained character noted in the survey. This combination suggests that while the soil profile itself drains quickly at depth, surface layers or subsurface restrictive horizons may limit how rapidly rainfall enters the ground, increasing the likelihood that modeled flow paths carry meaningful surface runoff during storms. The region receives approximately 30 inches of precipitation annually, concentrated heavily in the winter months, with an average of roughly 22 days per year exceeding half an inch of rainfall and single-day events recorded as high as nearly five inches. The property falls within an area of minimal flood hazard. This screening is a desktop analysis based on remotely sensed LiDAR elevation data and does not constitute a field investigation, geotechnical assessment, or engineering evaluation. Actual site conditions - including grading, vegetation, hardscape, and subsurface drainage improvements - may substantially alter how water behaves relative to the modeled patterns shown here. A qualified professional should evaluate any areas of concern identified in this report.

More About the LPCA™ Methodology

LPCA begins by constructing a detailed topographic surface around the parcel using high-resolution, 1-meter LiDAR elevation data. This surface is analyzed with a standard hydrologic modeling technique known as D8 (eight-direction) flow accumulation, which estimates dendritic flow-path routing across the terrain. The LPCA model interprets these results to identify hydrologic points of interest - including areas of dispersed and concentrated flow, depressions, accumulation potential, flow-path convergence, and complex interactions that arise when these features occur in close proximity to one another. Once parcel-scale hydrology is characterized, LPCA's structure-aware logic evaluates these phenomena relative to existing buildings and improvements. The model then contextualizes the predicted hydrologic response by incorporating regional soil characteristics and local weather patterns, offering deeper insight into how surface runoff may interact with the ground surface under real-world conditions.

Useful Terminology and Definitions

Accumulation Zone	An area where a flow path, or multiple flow paths carrying significant accumulated flow transition from a higher gradient slope to a lower gradient slope, usually less than 1.0%. During this transition, flow loses velocity and tends to spread out over the low gradient area, often requiring drainage infrastructure to effectively evacuate water.
Contributing Area	The total upstream land area that drains to a specific point; larger contributing areas indicate greater potential flow volume at that location.
D8 Flow Accumulation	A hydrologic modeling method that assigns surface water flow from each grid cell to one of its eight neighboring cells based on the steepest downhill slope, used to identify drainage paths and estimate contributing areas.
Convergence Point	A location where two or more drainage paths merge, concentrating flow into a single corridor.
Convergence–Accumulation Complex	A combined feature where flow convergence and accumulation occur together, typically representing the most significant drainage concentration areas on a parcel.
Depression Zone	A topographic low point where water may collect and pond if no outlet or drainage feature is present.
Dispersed Flow	Broad, unconcentrated surface runoff that moves across the landscape following the natural grade before gathering into defined drainage paths. Dispersed flow represents the earliest stage of the runoff process, where precipitation sheds across open ground in response to local slope and terrain shape.
Drainage Cluster	A spatially grouped set of drainage paths, convergence points, or accumulation features near a structure, representing a localized drainage network where multiple flow components interact in close proximity.
Drainage Path (Flow Path)	A modeled route along which surface water flows downhill, classified by contributing area into four tiers from minor sheet flow to major concentrated corridors.
Infiltration Capacity	The rate at which soil can absorb water. Lower capacity (e.g., clay soils, HSG C/D) increases surface runoff and ponding potential.
LiDAR Terrain Data	High-resolution elevation data collected via airborne laser scanning (Light Detection and Ranging), used to model bare-earth topography for drainage analysis.
Runoff	Precipitation that flows over the ground surface rather than infiltrating into the soil, influenced by slope, soil type, and impervious coverage.
Sheet Flow	Shallow, unchannelized water movement across a surface, common on relatively flat or gently sloped terrain before flow concentrates into defined paths.

Regional Characterization Information

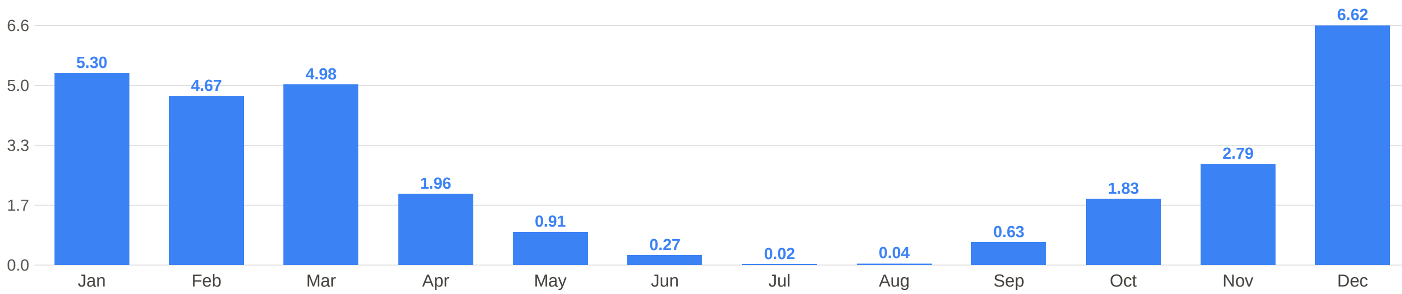
Weather & Climate

Annual Precipitation: 30.0 inches

Avg Temperature Range: 52F - 74F

Month	Avg Hi (F)	Avg Lo (F)	Rec Hi (F)	Rec Lo (F)	Days >=100F	Days <=32F
Jan	57	40	73	28	0	1.2
Feb	60	41	73	27	0	1.4
Mar	63	44	81	31	0	0.2
Apr	71	49	89	32	0	0
May	79	54	105	40	0.1	0
Jun	90	61	110	50	3.7	0
Jul	95	65	112	54	5.4	0
Aug	94	65	109	56	5.2	0
Sep	88	61	116	48	2.5	0
Oct	78	54	100	37	0	0
Nov	63	44	83	28	0	0.5
Dec	55	40	70	27	0	2.3

Average Monthly Precipitation (in.)



Precipitation Intensity

Days >0.5 in/yr: 22.2

Days >1.0 in/yr: 7.0

Days >2.0 in/yr: 1.1

Max Single-Day: 4.77 in

Storm Patterns

Avg Events/Year: 31.2

Avg Event Duration: 2.4 days

Avg Wet Spell: 2.4 days

Max Wet Spell: 11 days

Precipitation Seasonality

Season	Total (in.)	% of Annual
Winter (Jan-Mar)	15.0	50%
Spring (Apr-Jun)	3.1	10%
Summer (Jul-Sep)	0.7	2%
Fall (Oct-Dec)	11.2	37%

Precipitation Seasonality (CV): 89% — The Coefficient of Variation measures the relative spread of monthly precipitation. A value of 89% indicates high seasonality, meaning precipitation is heavily concentrated in certain months, creating significant seasonal drainage demands and potential for overwhelmed systems during wet periods.

Source: Open-Meteo ERA5 Reanalysis (2014-2023)

Soils

Map Unit Table

Symbol	Map Unit Name	HSG	Drainage Class	% Area
130	Caperton-Andregg coarse sandy	D	Somewhat excessively drained	100%

Soils Properties Detail

130 — Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes

Texture:	Coarse sandy loam
Ksat:	14.0 – 42.0 µm/sec
AWC:	0.10 – 0.12 cm/cm
Particle Size:	Sand 67.8%, Silt 22.2%, Clay 10%
Depth to Restriction:	46 cm (Paralithic bedrock)
Slope Range:	2 – 15%
Flooding:	None
Ponding:	None

Hydrologic Soil Group Definitions

A Low runoff potential; high infiltration rate (sand, gravel)
B Moderate infiltration rate; moderately well-drained (silt loam)
C Low infiltration rate; moderately fine to fine texture (clay loam)
D High runoff potential; very low infiltration rate (clay, shallow bedrock)

Source: USDA SSURGO / Soil Data Access

Flood Zone

Zone: Zone X
Description: Area of Minimal Flood Hazard
FIRM Panel: 123XYZ
FEMA Map Lookup: https://msc.fema.gov/portal/home

Source: FEMA National Flood Hazard Layer (NFHL)