PROJECT CONCEPT

TOWN OF DAYTON

DOWNTOWN STORMWATER SYSTEM — THOMPSON STREET, CHERRY LANE, TUNNEL ALLEY, AND STATE ROUTE 42 OUTFALL

Location Description

38.41466, -78.93982

Downtown Dayton along Main Street and Tunnel Alley area

Project Purpose

Increase downtown stormwater system capacity to reduce recurring flooding of the low-lying alley and collection area behind Main Street businesses during moderate-to-heavy rain events.

Additional Information Needed

- Presence and locations of utilities
- Sizing information for pump vault and equipment
- Survey of existing stormwater infrastructure
- Presence of easements for Town operations

Background

Downtown stormwater drainage system serving a natural topographic bowl in central Dayton. The system collects runoff from Cherry Lane and Thompson Street drop inlets and funnels to a pump vault on private property behind Main Street businesses (**Figure 1**). Collected runoff of approximately 28.5 acres is pumped through Tunnel Alley up to the VDOT drainage system, where it is conveyed along a ditch and then under Route 42 to discharge on the east side of State Route 42 near the Pitman (previously Cargill) facility. (The area between Main Street and State Route 42 is largely captured by a separate stormwater system and conveyed in the same ditch system across State Route 42.) Town staff noted that the pumps were installed in the pump vault sometime in the 1980's. The aging, undersized downtown collection and conveyance system is at or beyond capacity during moderate-to-heavy rain events, flooding the alley and surrounding low area. The downtown area floods a couple of times per year under normal conditions and was overwhelmed entirely during flash flooding in 2025.

Noted during WSSI's site visit (6/15/2026), the receiving ditch on the south side of State Route 42, along the Pitman property, does not have positive drainage northeast to Cooks Creek. This causes debris to build up in the ditch and the outlet of the stormwater system regularly needs to be cleaned out manually by Town staff to maintain flow through the system.



Figure 1. Approximate drainage area (est. 28.5 acres) to pump vault used to address flooding in downtown Dayton.

Conceptual Design and Planning-Level Cost Estimate

A full survey of the existing infrastructure and analysis of the capacity of the existing pump system is necessary to establish the magnitude of the issue and design options to address the recurring flooding. Buildup of debris within the system has not been addressed or evaluated recently and clearing debris should be a first step where present.

Increasing the pump vault capacity, upgrading the pumps themselves, and upgrading the estimated 500 feet of force main pipe will help to address flooding in the area. The degree of flood mitigation would be calculated during the study and design stages. Along with installing the replacement system, a plan of action during a flood event should be developed and documented to ensure Town staff have all the information they need in an emergency.

Correcting the slope of the ditch along the Pitman property is necessary to ensure positive drainage out of the system to prevent ponded backwater conditions. This work should be part of the overall project but will require coordination with VDOT which is the presumed responsible party as this ditch services State Route 42.



Figure 2. Approximate layout of pump system and nearby field-identified stormwater infrastructure.

ITEM/DESCRIPTION	QTY	UNIT	UNIT COST	ITEM SUB-TOTAL	EXTENDED SUB-TOTAL
Survey and Design					**$180,000**
Survey	1	LS	$20,000	$20,000	
H&H Study	1	LS	$60,000	$60,000	
Design	1	LS	$90,000	$90,000	
Permitting	1	LS	$10,000	$10,000	
Construction Administration and Oversight					**$35,000**
Construction Oversight	1	LS	$35,000	$35,000	
Pump Upgrade Access and ESC					**$51,580**
Traffic Control	90	DAY	$500	$45,000	
Inlet Protection	5	EA	$300	$1,500	
Super Silt Fence	200	LF	$9	$1,800	
Orange Safety Mesh	820	LF	$4	$3,280	
Pump Upgrade Construction					**$748,800**
Stakeout	1	LS	$18,000	$18,000	
As-Built Survey	1	LS	$18,000	$18,000	
Mobilization	1	LS	$30,000	$30,000	
Excavation and Hauling	700	CY	$70	$49,000	
Grading	0.1	AC	$9,000	$900	
Pump System	1	EA	$200,000	$200,000	
Pump Vault	1	EA	$50,000	$50,000	
Force Main Pipe	500	LF	$300	$150,000	
Utility Relocation	1	EA	$150,000	$150,000	
Inlet Replacements	3	EA	$10,000	$30,000	
Curb & Gutter Replacement	60	LF	$50	$3,000	
Concrete Sidewalk Replacement	60	SQ YD	$80	$4,800	
Pavement Replacement	500	SQ YD	$80	$40,000	
Mill and Overlay	200	SQ YD	$25	$5,000	
Striping	50	LF	$2	$100	
Pitman Ditch Access and ESC					**$4,280**
Rock Filter Outlet	15	TON	$100	$1,500	
Inlet Protection	5	EA	$300	$1,500	
Orange Safety Mesh	320	LF	$4	$1,280	
Pitman Ditch Construction					**$11,300**
Ditch Excavation	320	LF	$30	$9,600	
Permanent Seeding	10	LB	$10	$100	
Erosion Control Matting	800	SY	$2	$1,600	
Contingency (30%)					**$309,288**
TOTAL ESTIMATED BUDGET					**$1,340,248**

Assumptions

- Drainage area to the pump vault is estimated at 28.5 acres.
- Approximately 500 linear feet of force main storm sewer pipe to be replaced in the pump system upgrade and 320 linear feet of open ditch to be re-graded between State Route 42 and the Pitman facility to re-establish positive drainage to Cooks Creek.

Recommended Next Steps

Begin outreach to VDOT and Pitman regarding work on the downstream ditch. Evaluate funding options.