DRAINAGE CONFORMANCE LETTER

FOR

WALDEN SANITATION DISTRICT WWTP

3155 WALKER ROAD, EL PASO COUNTY, COLORADO

PART OF WALDEN PRESERVE 2 – FILING NO. 5

NOVEMBER 2025

REVISED APRIL 2026

PREPARED FOR:

Walden Sanitation District
3155 Walker Road
Colorado Springs, El Paso County, CO 80908

PREPARED BY:

Katz LDE LLC
3045 Richard Allen Court
Denver, CO 80205
(847) 826-0522
dkatz@katzlde.com
www.katzlde.com

PCD FILE PPR2538

Katz LDE Project No. 250041

WALDEN SANITATION DISTRICT WWTP
DRAINAGE CONFORMANCE LETTER

ENGINEER'S STATEMENT:

The attached drainage conformance letter was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said drainage conformance letter has been prepared according to the criteria established by the city/county for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Daniel Katz, P.E.
State of Colorado No. 52465
For and on behalf of Katz LDE LLC

DEVELOPER'S STATEMENT:

I, Bill Dunstan the developer have read and will comply with all of the requirements specified in this drainage report and plan.

Walden Sanitation District
By: Bill Dunstan
Title: Vice President
Address: 1310 E Embassy Ct

2-11-26
Date

EL PASO COUNTY STATEMENT:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

County Engineer / ECM Administrator

Date

Conditions:

SCOPE

The purpose of this Drainage Conformance Letter is to present the drainage plan for the Walden Sanitation District Wastewater Treatment Plant (WWTP) project. The following includes analysis information for the proposed project in conformance with the El Paso County Drainage Criteria Manual.

I. GENERAL PROPERTY DESCRIPTION

The proposed Walden Sanitation District WWTP project is located at 3155 Walker Road in unincorporated El Paso County, Colorado. The site resides within Walden Preserve 2 – Filing No. 5 and is bordered to the north by Walker Road, to the east by existing residential lots, to the south by future residential lots, and to the west by a future school.

The overall property area is 25.00 acres and consists of both parcels 6115000005 and 6115000001, however the project area and area of disturbance associated with the proposed improvements for the WWTP is significantly smaller, limited to less than one acre. This project area spans the limits of both parcels.

Southwest of the WWTP project limits, an approximately 3-acre area remains disturbed from a previous material stockpile operation. This area lies within the overall property boundary but outside the limits of the proposed improvements and was completed under a separate scope of work.

Excluding the disturbed stockpile area described above, the overall 25-acre property is largely undisturbed native grassland with limited paved and gravel access roads, and a small existing wastewater treatment facility with associated wet-bottom ponds. Based on visual observation of recent Google Earth aerial imagery, the grassland areas of the site are estimated to support greater than 80% native vegetative cover. Access roads, the existing wastewater treatment facility, the disturbed stockpile area, and the wet-bottom ponds were excluded from this determination, as these areas are not capable of supporting continuous vegetative growth. Stabilization of the disturbed stockpile area is discussed later in this narrative.

Soil types in the project area as identified by the Natural Resources Conservation Service (NRCS) are as follows:

Hydrologic Soil Group			
Map unit symbol	**Map unit name**	**Rating**	**Percent of AOI**
71	Pring coarse sandy loam, 3 to 8 percent	B	100%

The site is located near a floodplain for the East Tributary of West Cherry Creek as shown on the FEMA FIRM Map No. 08041C0285G effective December 7, 2018. The majority of the project site lies within Zone X – Area of Minimal Flood Hazard, however there will be a minor amount of cut and impact to the Zone A floodplain at the downstream outfall of the effluent line from the WWTP.

II. GENERAL EXISTING DRAINAGE CHARACTERISTICS

The existing WWTP site is currently developed with several small wastewater treatment structures, a paved asphalt access road, and gravel service paths. The proposed WWTP project area slopes generally to the east, with all runoff sheet flowing toward an on-site wet-bottom pond that serves as the local outfall. There are no defined channels or stormwater infrastructure within the immediate project area, however, apart from the areas directly tributary to the existing wet-bottom ponds, the overall parcels ultimately drain to the East Tributary of West Cherry Creek along the eastern edge of the property, and then to an existing 43" x 27" HECMP culvert flowing north underneath Walker Road. Offsite drainage patterns remain unaffected. Walker Road borders the site to the north, with residential development located to the south and east.

This site lies within Sub-Basin C13 of the "Final Drainage Report for Walden Preserve 2 – Filing No. 5," prepared by JPS Engineering and last revised July 7, 2022. Although technically part of the C13 sub-basin, the area impacted by this project is minor and continues to drain in the same manner as under existing conditions, via sheet flow to the wet-bottom pond. As such, the prior report offers limited detail specific to this location, and no modifications to the approved basin-wide drainage strategy are warranted. See enclosures for the drainage map excerpt from this report.

III. GENERAL PROPOSED DRAINAGE CHARACTERISTICS

The proposed scope of work includes expansion of the WWTP infrastructure, installation of new underground sanitary sewer utilities, and limited gravel access and parking areas. Proposed grading generally maintains existing drainage patterns but introduces a new concrete pan along the west side of the improvements to capture minor nuisance flows and route them north around the WWTP infrastructure before discharging eastward into the existing wet-bottom pond area. This flow path is consistent with historic conditions and ensures that no runoff is conveyed across the WWTP infrastructure or offsite to adjacent properties. As part of the overall project, the existing wet-bottom ponds will be decommissioned and reclaimed, then converted to vegetated basins that receive localized onsite runoff and, once vegetation is established, discharge through new low-flow outlets to the downstream drainage system.

The proposed sanitary sewer effluent outfall will discharge to the existing roadside ditch along Walker Road at Design Point EF shown on the proposed Drainage Plan, south of the right-of-way, and is independent of the site storm drainage system. The outfall will consist of an 8-inch PVC pipe conveying an intermittent discharge of approximately 174 gpm (0.39 cfs). Energy dissipation and erosion protection will be provided by a riprap apron at the outlet. Alternative discharge locations were evaluated; however, the proposed configuration was determined to be the most feasible and constructible option.

Alternatives Considered:

1. Selected Alternative A - Gravity Discharge to On-Site Roadway Drainage (West Cherry Creek Basin)
    - Utilizes existing drainage infrastructure immediately adjacent to the WWTP site
    - Allows gravity flow from the treatment plant, eliminating pumping requirements and associated O&M costs
    - Shortest conveyance distance, minimizing infrastructure and right-of-way needs
    - Discharges to West Cherry Creek Basin via existing drainage pathway

2. Alternative B - Pumped Discharge to Western Drainage Point (West Cherry Creek Basin)
    - Requires approximately 3,950 linear feet of force main to reach alternative drainage point
    - Necessitates lift station with redundant pumps
    - Discharges to same receiving basin (West Cherry Creek Basin) as selected alternative
    - Significantly higher capital cost
    - Does not provide measurable water quality or regulatory benefit vs. selected alternative since both discharge to the same basin
    - Rejected due to cost differential without corresponding environmental or regulatory benefit

As previously mentioned, southwest of the WWTP project limits, an approximately 3-acre area remains disturbed from a previous material stockpile operation. This area lies within the overall property boundary but outside the limits of the proposed improvements and was completed under a separate scope of work. While not part of the current design, as a condition of approval for this project it will be restored prior to construction of the WWTP. Restoration will include regrading to pre-stockpile conditions and permanent stabilization to achieve at least 70% vegetative cover. A letter from the owner has been included in the enclosures to document this.

IV. WATER QUALITY

The El Paso County Drainage Criteria Manual requires that water quality capture volume (WQCV) treatment be provided for applicable development areas of one (1) acre or larger. The direct disturbance associated with the proposed WWTP improvements is approximately 0.39 acres, which is below this threshold and does not, by itself, trigger a requirement for on-site WQCV treatment.

As previously mentioned, an approximately 3-acre area southwest of the WWTP limits was previously disturbed for stockpiling activities, which, when combined with the WWTP disturbance, would exceed the 1-acre disturbance threshold if considered as a single development area. However, this stockpile area is being regraded and permanently stabilized to restore its pre-development condition as vegetated open space, prior to the WWTP project construction, and no permanent impervious surfaces are proposed within this area. Once restored, the stockpile area will function as pervious landscape rather than developed impervious area, and therefore should not be treated as a WQCV-controlled development area under the El Paso County criteria.

In addition, existing wet-bottom ponds associated with the existing wastewater treatment plant will be decommissioned and reclaimed by removing stored liquids, drying and stabilizing the remaining biosolids, and grading and revegetating the lagoon bottoms and side slopes. As part of this work, new low-flow drain pipes will be installed from the reclaimed ponds to the adjacent downstream area to keep them dry. These pipes will remain capped and inactive until vegetation is fully established within the ponds, at which point the ponds will function as vegetated open space areas rather than permanent impoundments. Although the reclamation activities will disturb more than one acre, the work is isolated to the former wet-bottom pond footprints and there will be no stormwater outfall from the ponds during construction and initial establishment, resulting in no discharge of construction stormwater to state waters and, consequently, no anticipated requirement for an El Paso County stormwater construction permit or coverage under the CDPS General Construction Stormwater Permit for this isolated activity.

In accordance with ECM Appendix I.7.2.A, the proposed drainage and water quality strategy for the Walden Sanitation District WWTP has been evaluated using the Four-Step Process for BMP selection.

Step 1 – Employ Runoff Reduction Practices:
The project minimizes new directly connected impervious area by limiting permanent hardscape to the WWTP expansion pads and small gravel access areas (approximately 5,734 square feet total), maintaining the surrounding 25-acre property as predominantly native grassland, and restoring the former stockpile area to stabilized pervious landscape. Runoff from new impervious areas is routed over pervious areas where practicable, and the site grading preserves existing overland flow paths toward the onsite basins, thereby reducing effective imperviousness and peak runoff relative to a more conventionally paved layout.

Step 2 – Stabilize Drainageways:
No new open channels or storm sewer outfalls are introduced as part of this project. Existing drainageways, including the onsite drainage path to the East Tributary of West Cherry Creek and the roadside ditch along Walker Road, remain in place, with minor grading improvements and localized riprap protection at the WWTP effluent outfall to prevent erosion and scour. The reclaimed pond areas will be graded and revegetated to provide stable, vegetated depressions that slow and infiltrate minor flows and will also incorporate a piped outfall to keep the depressions dry in the ultimate condition. The piped outfall will also have localized riprap protection to prevent erosion and scour.

Step 3 – Provide Water Quality Capture Volume (WQCV):
The El Paso County Drainage Criteria Manual requires permanent water quality BMPs providing WQCV for applicable development areas of one acre or larger. In this case, the direct disturbance associated with the WWTP improvements is approximately 0.39 acres, below the threshold, and no new WQCV facility is required. The disturbed stockpile area is being restored to pervious, vegetated open space prior to WWTP construction, and the existing wet-bottom ponds are being decommissioned and converted to vegetated basins with capped low-flow drains until vegetation is established, so they function as stabilized landscape rather than new WQCV-controlled development.

Step 4 – Consider Need for Industrial and Commercial BMPs:
The WWTP is a specialized utility facility rather than a typical commercial or industrial development, and process wastewater is addressed under a separate CDPS discharge permit. Site design has avoided outdoor materials handling areas and exposed process storage that would necessitate additional structural BMPs such as covered storage or dedicated spill containment structures. Operational BMPs, including good housekeeping, spill prevention and response procedures, and routine inspection and maintenance of the effluent outfall and reclaimed pond areas, will be implemented by the owner.

Given the limited extent of permanent impervious area increase associated with the WWTP improvements (approximately 5,734 square feet), the planned restoration of the former stockpile area to stabilized native vegetation, and the planned reclamation of the on-site wet-bottom ponds, no permanent water quality BMPs or WQCV facilities are proposed as part of this project.

V. HYDROLOGIC CALCULATION RESULTS

The project introduces approximately 5,734 square feet of new impervious surface, including paved and gravel areas. Although the total disturbed area remains under one acre and does not trigger a full stormwater quality evaluation, hydrologic calculations have been performed to document changes in runoff characteristics resulting from the proposed development.

The overall 25.00-acre property was analyzed and divided into four sub-basins based on localized drainage divides. A portion of the site along the western boundary was not analyzed, as this area drains to the existing Extended Detention Basin associated with the adjacent Mountain View Academy Development (PCD Project No. PPR-19-009), which is separate from this project. The four on-site sub-basins are described as follows:

EX1 & D1 – Sub-basins EX1 and D1 represent the same drainage area, with EX1 reflecting existing conditions and D1 representing proposed conditions. Under existing conditions, the basin includes portions of asphalt and gravel roadways, the existing wastewater treatment facility, undeveloped open space, and the larger southern wet-bottom pond. Runoff from this basin generally sheet flows east into the existing pond at Design Point 1.

In the proposed condition, new pavement, gravel, and structures associated with the Wastewater Treatment Plant (WWTP) addition are introduced. The proposed grading generally maintains existing drainage patterns but adds a new concrete pan along the west side of the improvements. This pan will capture minor nuisance flows, routing them north around the proposed infrastructure before discharging eastward towards the pond. This flow path remains consistent with historic conditions and ensures that no runoff is conveyed across the WWTP infrastructure.

In addition, the existing wet-bottom pond will be dewatered by pumping all liquid to the new wastewater treatment plant for processing, after which the remaining biosolids will be allowed to dry and freeze in place prior to removal. Dried biosolids will then be excavated and relocated/disposed of. Following biosolids removal, the pond liners will be replaced with native soils and the pond bottom will be graded and revegetated to allow for infiltration of minor stormwater flows. Once vegetation is established, a low-flow drain pipe will be installed at design point 1 to allow storm runoff entering the restored pond to flow into the adjacent pond in basin D3, which will have the same reclamation process performed.

EX2 – This sub-basin consists primarily of undeveloped open space and a segment of the existing gravel access road. Runoff from this basin generally flows northeast offsite into the East Tributary of West Cherry Creek at Design Point 2. The proposed WWTP project does not alter this basin; ground cover and drainage patterns remain unchanged.

EX3 & D3 – Sub-basins EX3 and D3 represent the same drainage area, with EX3 reflecting existing conditions and D3 representing proposed conditions. Under existing conditions, this sub-basin includes disturbed open space currently being restored from a former stockpile area to its vegetated historic condition, as well as a portion of an existing paved access road and the northern, smaller wet-bottom pond. Runoff from this basin flows northeast into the existing pond at Design Point 3.

In the proposed condition, the existing wet-bottom pond will be dewatered by pumping all liquid to the new wastewater treatment plant for processing, after which the remaining biosolids will be allowed to dry and freeze in place prior to removal. Dried biosolids will then be excavated and relocated/disposed of. Following biosolids removal, the pond liners will be replaced with native soils and the pond bottom will be graded and revegetated to allow for infiltration of minor stormwater flows. Once vegetation is established, a low-flow drain pipe will be installed at design

point 3 to allow storm runoff entering the restored pond to discharge northeast into Sub-Basin EX4 and ultimately to Design Point 4 and the existing 43” x 27” HECMP culvert under Walker Road.

EX4 – This sub-basin primarily consists of undeveloped open space, a segment of the East Tributary of West Cherry Creek, and a portion of the paved access road. Runoff flows north to an existing 41" x 26" HECMP culvert that conveys the tributary beneath Walker Road at Design Point 4. This location corresponds to Design Point 4 in the Walden Preserve 2 – Filing No. 5 Final Drainage Report. An excerpt from that report is included in the enclosures, showing historic and detained flow rates at this point.

Per the Walden Preserve 2 – Filing No. 5 Final Drainage Report, the existing 43" x 27" elliptical CMP culvert at Walker Road (Design Point 4/EX4) has an estimated capacity of 55 cfs and is currently undersized relative to the basin’s design flows, prior to accounting for any development from this project.

For the minor 5-year event, the report documents a historic peak flow of 234.8 cfs and an ultimate detained peak flow of 226.7 cfs at Design Point 4, indicating that even under planned conditions the culvert is substantially undersized before any contribution from the WWTP project. Under the proposed WWTP expansion design, the recommissioned ponds (Basins D1 and D3) are routed to this culvert and are estimated to contribute 1.93 cfs in the 5-year storm, with the WWTP effluent adding 0.39 cfs, for a combined project increase of 2.32 cfs (approximately 1% of the ultimate detained minor flow). When added to the ultimate detained 5-year flow, the resulting 229.02 cfs remains below the historic 5-year peak of 234.8 cfs at this location.

For the major 100-year event, the Filing No. 5 report identifies peak flows of 620.0 cfs under historic conditions and 601.4 cfs under ultimate detained conditions at Design Point 4. The WWTP effluent contributes 0.39 cfs regardless of event magnitude, and the combined outfall from the recommissioned ponds (Basins D1 and D3) contributes 13.78 cfs in the 100-year storm, for a total project increase of 14.17 cfs. When this increment is added to the ultimate detained 100-year flow, the resulting 615.57 cfs remains below the historic 100-year peak of 620.0 cfs at the culvert (an increase of about 2.4% over the ultimate detained condition, but still slightly less than the historic condition). Accordingly, while the culvert’s 55 cfs capacity confirms that it is hydraulically undersized for both minor and major events, the WWTP improvements (including the recommissioned ponds) do not increase 5-year or 100-year peak flows at Walker Road beyond historic levels and therefore do not materially worsen the existing condition.

The peak flow analysis, including tabulations of tributary areas, runoff coefficients, times of concentration, rainfall intensities, and peak discharge rates (Q) for both existing and proposed conditions, is provided in the enclosures.

Peak Flow Rate and Pipe Sizing for the WWTP Effluent Line:

The effluent discharge system operates as a batch discharge from the Phosphorus Polishing Break Tank (1,810-gallon working volume). The discharge pump operates at 174 gpm (0.388 cfs), resulting in a velocity of 1.1 ft/s in the 8-inch discharge pipe.

Pipe Sizing Verification:

- Flow Rate: Q = 0.388 cfs
- Pipe Diameter: 8 inches (0.667 ft)
- Pipe Area: $A = \pi(D/2)^2 = 0.349$ ft²

- Velocity: V = Q/A = 0.388 cfs / 0.349 ft² = 1.1 ft/s

The 8-inch pipe was sized to provide adequate capacity while maintaining velocity below 2.0 ft/s to minimize turbulence and potential for erosion at the outfall point.

Each batch discharge cycle lasts approximately 10 minutes (1,810 gallons ÷ 174 gpm).

Under design conditions:

- **Design Flow (150,000 gpd):** Approximately 83 batches per day (average 17-minute intervals)
- **Peak Daily Flow (225,000 gpd):** Approximately 124 batches per day (average 12-minute intervals)

The discharge is intermittent, not continuous. Each discharge event is brief (10 minutes), with significant recovery time between events.

The ROW ditch was selected as the discharge point based on the following considerations:

1. **Proximity and Feasibility:** The ROW ditch is the nearest suitable outfall point, minimizing pipeline length and construction disturbance.
2. **Gravity Discharge:** The routing allows for gravity discharge to an established drainage conveyance, eliminating the need for additional pumping infrastructure.
3. **Existing Infrastructure:** The ROW ditch is an established drainage feature designed to convey stormwater. The treated effluent discharge represents a minor addition to the ditch's design capacity and is significantly cleaner than typical stormwater runoff.

Outfall Protection for the WWTP Effluent Line:

Outlet protection for the effluent discharge was evaluated using the Mile High Flood District (MHFD) Culvert v4.01 spreadsheet by modeling the terminal 8-inch effluent pipe as a culvert barrel to determine outlet velocity and required energy dissipation. For the design discharge of 0.388 cfs, the calculated minimum protection consists of a Type VL riprap apron with a required length of approximately 2 feet and width of 1 foot.

Due to the frequent and repetitive nature of the intermittent effluent discharges, the riprap apron has been conservatively enlarged to approximately 5.5 feet wide by 12.5 feet long to provide additional scour protection and improve long-term stability at the outfall.

In accordance with the El Paso County Drainage Criteria Manual, Volume 2, Table 10-4, the lowest permissible mean channel velocity for vegetated earth channels is 2.5 ft/s. Hydraulic calculations included in the appendix indicate the receiving ditch velocity is approximately 1.4 ft/s with a maximum shear stress of 0.23 lb/sf. Both the ditch velocity and the pipe outlet velocity (1.1 ft/s) are well below the permissible limits; therefore, channel lining is not required. Type VL riprap outlet protection is provided solely to prevent localized scour at the pipe discharge point.

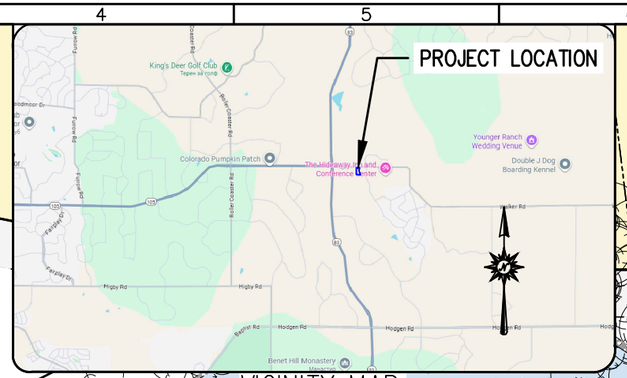
VI. CONCLUSION

The proposed improvements to the Walden Sanitation District Wastewater Treatment Plant represent a minor expansion within an already developed and previously approved drainage basin. The immediate project site will maintain its existing drainage patterns, with onsite runoff continuing to flow eastward toward the reclaimed pond system and ultimately to the existing culvert at Walker Road, and the net increase in impervious area is minimal such that no new regional conveyance or detention facilities are required. As part of the project, the existing wet-bottom ponds will be decommissioned and reclaimed, then converted to stabilized vegetated basins with low-flow outlets that maintain historic flow paths and do not increase 5-year or 100-year peak flows at Design Point 4 (existing culvert under Walker Road) beyond historic levels.

In addition, the proposed sanitary effluent outfall will discharge intermittently to the existing roadside ditch along Walker Road via an 8-inch PVC gravity line. The discharge is independent of the site storm drainage system and will be protected with a riprap apron to prevent erosion, and the intermittent treated effluent flow represents a minor addition to the capacity of the existing ditch that will not adversely affect downstream drainage patterns or infrastructure. This drainage letter confirms compliance with the El Paso County Drainage Criteria Manual; because the direct disturbance associated with the WWTP improvements is less than one acre and the pond reclamation work will not discharge construction stormwater until vegetation is established, a State Construction Stormwater Discharge Permit and County construction stormwater permit coverage are not anticipated to be required. The existing wastewater treatment plant maintains a valid wastewater discharge permit. No additional drainage improvements or mitigation measures are warranted, no adverse drainage impacts are anticipated, and no variances from County drainage standards are requested.

ENCLOSURES

- Referenced Information
- Hydrologic & Hydraulic Calculations
- Drainage Plans



VICINITY MAP
NOT TO SCALE

0 80 160 FEET

S1° 46' 10.68"W L=139.99
25' BSL
S12° 45' 13.68"W L=329.91
25' BSL
S88° 12' 20.32"E L=300.00
25' BSL
FEMA ZONE X
FIRM PANEL:
08041C0285G
EFF. 12/7/2018
FEMA ZONE A
FIRM PANEL:
08041C0285G
EFF. 12/7/2018
WALKER RD
EXISTING PONDS TO BE DECOMISSIONED, GRADED AND RESEEDED 27716.30 SQ FT
EXISTING PONDS TO BE DECOMISSIONED, GRADED AND RESEEDED 77129.98 SQ FT
EXISTING BAR SCREEN TO BE REMOVED 17.08 SQ FT
10 LF OF EXISTING INFLUENT PIPE TO BE CUT AND PLUGGED
ELECTRIC TRANSFORMER TO BE REMOVED 26.91 SQ FT
EXISTING INFLUENT PIPE TO BE ABANDONED IN PLACE
EXISTING POND
EXISTING FLOW METER TO BE REMOVED 47.60 SQ FT
PROPOSED CONCRETE DUMPSTER PAD 393.63 SQ FT
PROPOSED TRANSFORMER PAD 61.11 SQ FT
PROPOSED INFLUENT LINE
EXISTING WWTP STRUCTURES TO REMAIN
PROPOSED GRAVEL WITH PARKING AREA 5216.16 SQ FT
EXISTING INFLUENT LINE-A
PROPOSED WWTP CONCRETE LID AREA 3852.64 SQ FT
EXISTING POND
EXISTING MHS TO BE DEMOLISHED
WWTP
LIMIT OF PROPOSED WWTP DEVELOPMENT IMPACT AREA 12576.04 SQ FT
EXISTING TREE TO BE REMOVED (3)
EXISTING INFLUENT LINE-B
EXISTING GRAVEL ROAD
NEW WWTP BUILDING SITE
LIMIT OF PROPOSED PIPE DISTURBED AREA 3014.92 SQ FT
PROPOSED EFFLUENT LINE
EXISTING PAVED ROAD
INGRESS/EGRESS
EXISTING POND (APPROVED WITH MOUNTAIN VIEW ACADEMY PROJECT)
LIMIT OF PROPOSED DITCH DEVELOPMENT IMPACT AREA 1180.40 SQ FT
PROPOSED OUTLET STRUCTURE
EXISTING FENCE TO BE RELOCATED 435 LF
PROPOSED DRAIN PIPE AND OUTLET STRUCTURE
EXISTING PAVED ROAD
S88° 12' 10.15"E L=410.30
S23° 39' 18.32"E L=818.26
L=521.07 N25° 18' 05.83"W
103.66'
37.17'
N69° 49' 00.75"E L=200.43
S10° 13' 39.32"E L=189.99
25' BSL
N20° 12' 19.32"W L=135.99
25' BSL
25.00' BUILDING SETBACK BUFFER ZONE
TEMPORARY STOCKPILE
PROPOSED FOR APPROVAL GRAVEL ROAD (EXISTING ON-SITE) 11397.53 SQ FT
EX SS
SS
25.00' BUILDING SETBACK BUFFER ZONE
CURRENTLY DISTURBED 130864.48 SQ FT STOCKPILE AREA TO BE REGRADED TO PRE-STOCKPILE CONDITIONS AND PERMANENTLY STABILIZED TO achieve MINIMUM 70% VEGETATIVE COVER SEE CONSTRUCTION DRAWINGS (GEC PLAN). PROPOSED RE-SEEDING
25' BSL

SITE DEVELOPMENT PLAN
1" = 80'

SITE DATA TABLE:

OWNER NAME:	WALDEN CORPORATION	
PHONE NUMBER:	719-243-1111	
EMAIL ADDRESS:	billdunston@gmail.com	
PROPERTY ADDRESS:	WALDEN SANITATION DISTRICT WWTP 3155 WALKER ROAD COLORADO SPRINGS EL PASO COUNTY, COLORADO	
TAX SCHEDULE NUMBER:	LOT 1: R6115000005	LOT 2: R6115000001
ZONING:	RR-5 RESIDENTIAL RURAL ZONE (5 ACRES)	
LEGAL DESCRIPTION:	T TRACT IN NE4 SEC 15-11-66 AS FOLS, COM AT NE COR OF SD SEC 15, TH N 88<13'11" W ON N LN THEREOF 2225.64 FT, TH S 1<46'49" W 30.00 FT TO S R/W LN OF HWY 50 FOR POB, TH S 25<17' E 520.99 FT, S 1<46'49" W 200.00 FT, S 69<46'49" W 200.00 FT, N 23<40'09" W 818.25 FT TO S R/W LN OF HWY 50, TH S 88<13'11" E ALG SD S LN 300.00 FT TO POB	

LOT SOIL DISTURBANCE CALCULATION:

AREA	AREA (AC)	AREA (SQ.FT)
EXISTING DISTURBANCE	6.05	263,436.45
DISTURBANCE DURING CONSTRUCTION (EXISTING DISTURBANCE + CONSTRUCTION DISTURBANCE)	3.97	172,833.23
DISTURBANCE POST CONSTRUCTION AFTER RE-VEGETATION (EXISTING DISTURBANCE + POST CONSTRUCTION DISTURBANCE)	0.75	329,16.26

COLORADO LICENSED
ADAM SOMMERS
38169
4/24/26
PROFESSIONAL ENGINEER

THE OWNER (S) AGREE ON BEHALF OF HIM/HERSELF AND ANY DEVELOPER OF BUILDER SUCCESSORS AND ASSIGNEES THAT THE OWNER AND/OR SAID SUCCESSORS AND ASSIGNS SHALL BE REQUIRED TO PAY TRAFFIC IMPACT FEES IN ACCORDANCE WITH THE EL PASO COUNTY ROAD IMPACT FEE PROGRAM (RESOLUTION NO. 25-337), OR ANY AMENDMENTS THERETO, AT OR PRIOR TO THE TIME OF BUILDING PERMIT SUBMITTALS. THE FEE OBLIGATION, IF NOT PAID AT FINAL PLAT RECORDING, SHALL BE DOCUMENTS ON ALL SALES DOCUMENTS AND IN PLAT NOTES TO ENSURE THAT A TITLE SEARCH WOULD FIND THE FEE OBLIGATION BEFORE SALE OF THE PROPERTY.

LEGEND
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- 25' SETBACK LINE
- LIMIT OF PROPOSED DEVELOPMENT
- WWTP PROPOSED WWTP
- INGRESS/EGRESS ARROWS

PCD PROJ. NO. :PPR2538

REV. No:	DATE:	BY:	REVISION DESCRIPTION:

DESIGNED BY: MG
CHECKED BY: AS
FILE PRINTED ON: 4/24/2026 5:06:37 PM
COPYRIGHT: AQUAWORKS DBO, INC.
0 1 IF THIS BAR DOES NOT READ 1" DRAWING IS NOT LABELED TO SCALE

AquaWorks DBO INC
DESIGN BUILD OPERATE

PROJECT: WALDEN CORPORATION WWTP
3155 WALKER ROAD COLORADO SPRINGS
EL PASO COUNTY, COLORADO

ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
(303) 477-5915

SHEET TITLE: SITE DEVELOPMENT PLAN

PROJECT NUMBER:	SCALE:	SHEET:
PCD FILE PPR2538	1" = 80'	C1.2

National Flood Hazard Layer FIRMette

FEMA

104°46'14"W 39°6'9"N

104°45'36"W 39°5'42"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

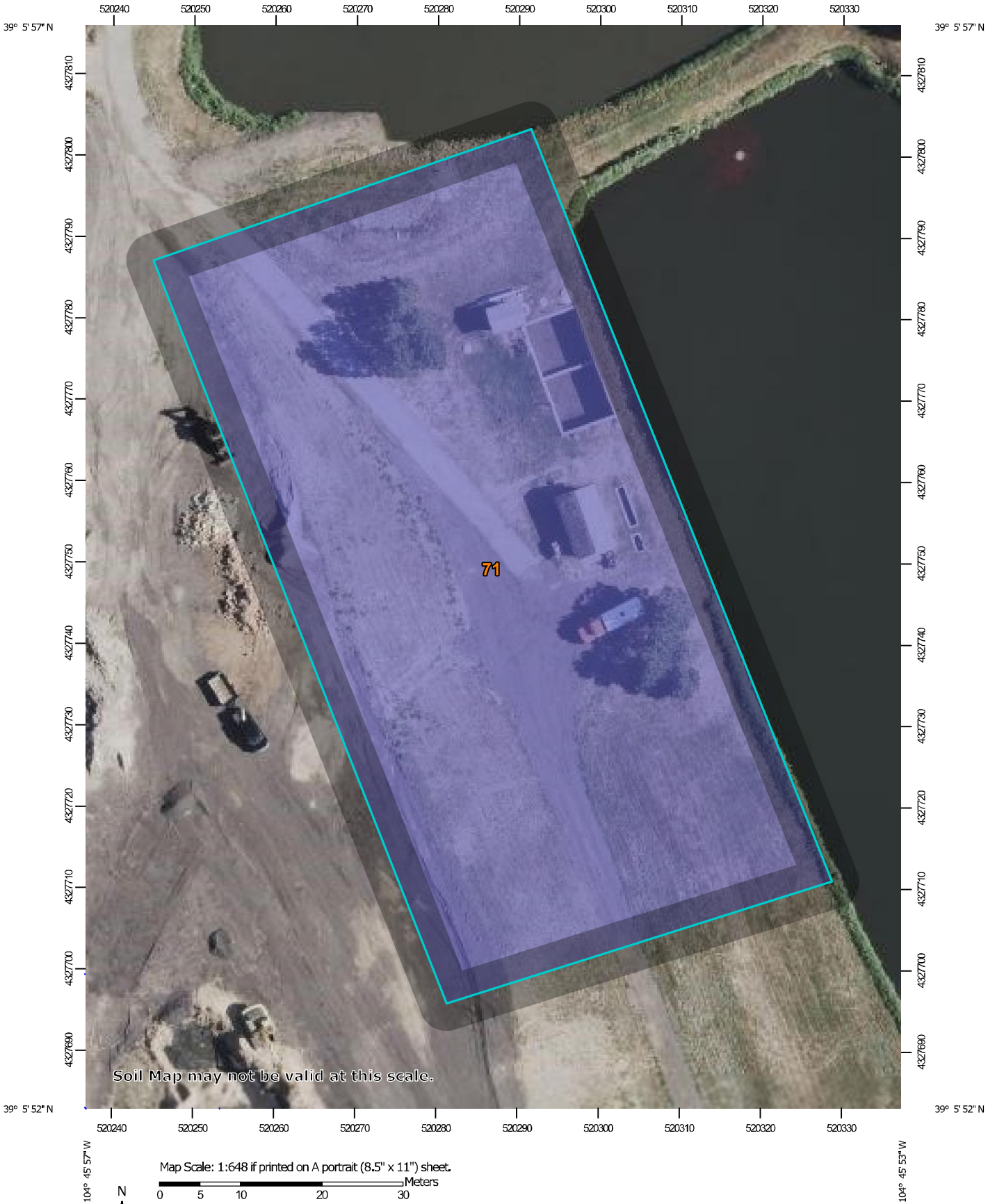
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/10/2025 at 5:56 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—El Paso County Area, Colorado
(Walden Sanitation District WWTP)



Map Scale: 1:648 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 23, Aug 29, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 23, 2024—Aug 4, 2024

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
71	Pring coarse sandy loam, 3 to 8 percent slopes	B	1.2	100.0%
Totals for Area of Interest			**1.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOAA Atlas 14, Volume 8, Version 2
Location name: Colorado Springs, Colorado, USA*
Latitude: 39.0986°, Longitude: -104.7653°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.235 (0.193-0.286)	0.287 (0.236-0.351)	0.378 (0.310-0.463)	0.458 (0.374-0.563)	0.575 (0.454-0.734)	0.670 (0.515-0.864)	0.770 (0.571-1.01)	0.875 (0.621-1.18)	1.02 (0.696-1.41)	1.14 (0.752-1.58)
10-min	0.343 (0.283-0.419)	0.421 (0.346-0.514)	0.554 (0.454-0.678)	0.671 (0.547-0.824)	0.842 (0.665-1.08)	0.981 (0.755-1.26)	1.13 (0.836-1.48)	1.28 (0.909-1.73)	1.50 (1.02-2.06)	1.67 (1.10-2.32)
15-min	0.419 (0.345-0.511)	0.513 (0.422-0.626)	0.676 (0.554-0.827)	0.819 (0.667-1.00)	1.03 (0.811-1.31)	1.20 (0.920-1.54)	1.37 (1.02-1.81)	1.56 (1.11-2.11)	1.82 (1.24-2.52)	2.03 (1.34-2.83)
30-min	0.606 (0.499-0.739)	0.741 (0.610-0.904)	0.974 (0.799-1.19)	1.18 (0.960-1.45)	1.48 (1.17-1.89)	1.72 (1.32-2.22)	1.98 (1.47-2.60)	2.25 (1.60-3.03)	2.62 (1.79-3.62)	2.92 (1.93-4.07)
60-min	0.771 (0.636-0.941)	0.931 (0.766-1.14)	1.22 (0.997-1.49)	1.47 (1.20-1.81)	1.86 (1.48-2.39)	2.18 (1.68-2.83)	2.53 (1.88-3.34)	2.90 (2.06-3.92)	3.43 (2.34-4.75)	3.86 (2.55-5.37)
2-hr	0.937 (0.776-1.13)	1.12 (0.928-1.36)	1.46 (1.20-1.77)	1.77 (1.45-2.16)	2.24 (1.80-2.87)	2.65 (2.06-3.41)	3.08 (2.31-4.06)	3.56 (2.55-4.79)	4.24 (2.91-5.84)	4.79 (3.19-6.63)
3-hr	1.02 (0.849-1.23)	1.21 (1.00-1.46)	1.56 (1.29-1.89)	1.90 (1.56-2.30)	2.42 (1.95-3.10)	2.87 (2.24-3.70)	3.37 (2.54-4.43)	3.92 (2.82-5.26)	4.71 (3.25-6.47)	5.36 (3.58-7.38)
6-hr	1.20 (0.997-1.43)	1.39 (1.16-1.67)	1.77 (1.47-2.13)	2.15 (1.77-2.59)	2.75 (2.23-3.51)	3.28 (2.58-4.21)	3.86 (2.93-5.06)	4.52 (3.28-6.05)	5.48 (3.81-7.50)	6.27 (4.22-8.59)
12-hr	1.42 (1.19-1.68)	1.64 (1.37-1.95)	2.07 (1.73-2.46)	2.49 (2.06-2.98)	3.16 (2.58-4.00)	3.75 (2.97-4.77)	4.40 (3.36-5.72)	5.13 (3.75-6.82)	6.20 (4.34-8.43)	7.09 (4.79-9.64)
24-hr	1.67 (1.41-1.97)	1.95 (1.64-2.30)	2.46 (2.07-2.92)	2.95 (2.46-3.50)	3.69 (3.02-4.61)	4.33 (3.44-5.45)	5.03 (3.85-6.46)	5.80 (4.25-7.62)	6.90 (4.85-9.28)	7.80 (5.31-10.5)
2-day	1.95 (1.66-2.29)	2.31 (1.96-2.71)	2.95 (2.49-3.46)	3.51 (2.95-4.14)	4.34 (3.55-5.34)	5.03 (4.00-6.24)	5.76 (4.42-7.30)	6.53 (4.80-8.49)	7.62 (5.38-10.1)	8.49 (5.82-11.4)
3-day	2.14 (1.82-2.49)	2.53 (2.15-2.96)	3.22 (2.73-3.77)	3.82 (3.22-4.49)	4.71 (3.85-5.75)	5.43 (4.33-6.70)	6.19 (4.76-7.81)	6.99 (5.16-9.04)	8.11 (5.75-10.7)	9.00 (6.19-12.0)
4-day	2.29 (1.96-2.67)	2.71 (2.30-3.15)	3.42 (2.90-3.99)	4.05 (3.41-4.74)	4.96 (4.07-6.04)	5.71 (4.56-7.02)	6.49 (5.01-8.17)	7.33 (5.42-9.44)	8.49 (6.03-11.2)	9.41 (6.49-12.5)
7-day	2.69 (2.31-3.11)	3.13 (2.68-3.62)	3.88 (3.31-4.50)	4.55 (3.85-5.29)	5.52 (4.55-6.68)	6.32 (5.08-7.73)	7.16 (5.55-8.95)	8.05 (5.99-10.3)	9.30 (6.64-12.2)	10.3 (7.14-13.6)
10-day	3.04 (2.61-3.51)	3.50 (3.01-4.04)	4.30 (3.68-4.97)	5.00 (4.25-5.81)	6.03 (4.98-7.26)	6.87 (5.54-8.37)	7.76 (6.03-9.66)	8.69 (6.48-11.1)	10.0 (7.17-13.1)	11.0 (7.68-14.6)
20-day	4.02 (3.47-4.60)	4.60 (3.97-5.27)	5.59 (4.80-6.41)	6.43 (5.50-7.40)	7.64 (6.33-9.09)	8.60 (6.96-10.4)	9.60 (7.50-11.8)	10.6 (7.97-13.4)	12.1 (8.69-15.6)	13.2 (9.23-17.3)
30-day	4.83 (4.18-5.50)	5.53 (4.79-6.30)	6.69 (5.77-7.64)	7.67 (6.57-8.79)	9.02 (7.48-10.6)	10.1 (8.16-12.1)	11.1 (8.73-13.6)	12.2 (9.20-15.4)	13.7 (9.90-17.7)	14.8 (10.4-19.4)
45-day	5.86 (5.09-6.64)	6.72 (5.83-7.62)	8.11 (7.01-9.22)	9.24 (7.95-10.5)	10.8 (8.94-12.6)	11.9 (9.68-14.2)	13.1 (10.3-15.9)	14.2 (10.7-17.7)	15.7 (11.4-20.1)	16.8 (11.9-21.9)
60-day	6.75 (5.87-7.62)	7.74 (6.73-8.75)	9.32 (8.08-10.6)	10.6 (9.12-12.0)	12.3 (10.2-14.3)	13.5 (11.0-15.9)	14.7 (11.5-17.7)	15.9 (11.9-19.6)	17.3 (12.6-22.0)	18.4 (13.0-23.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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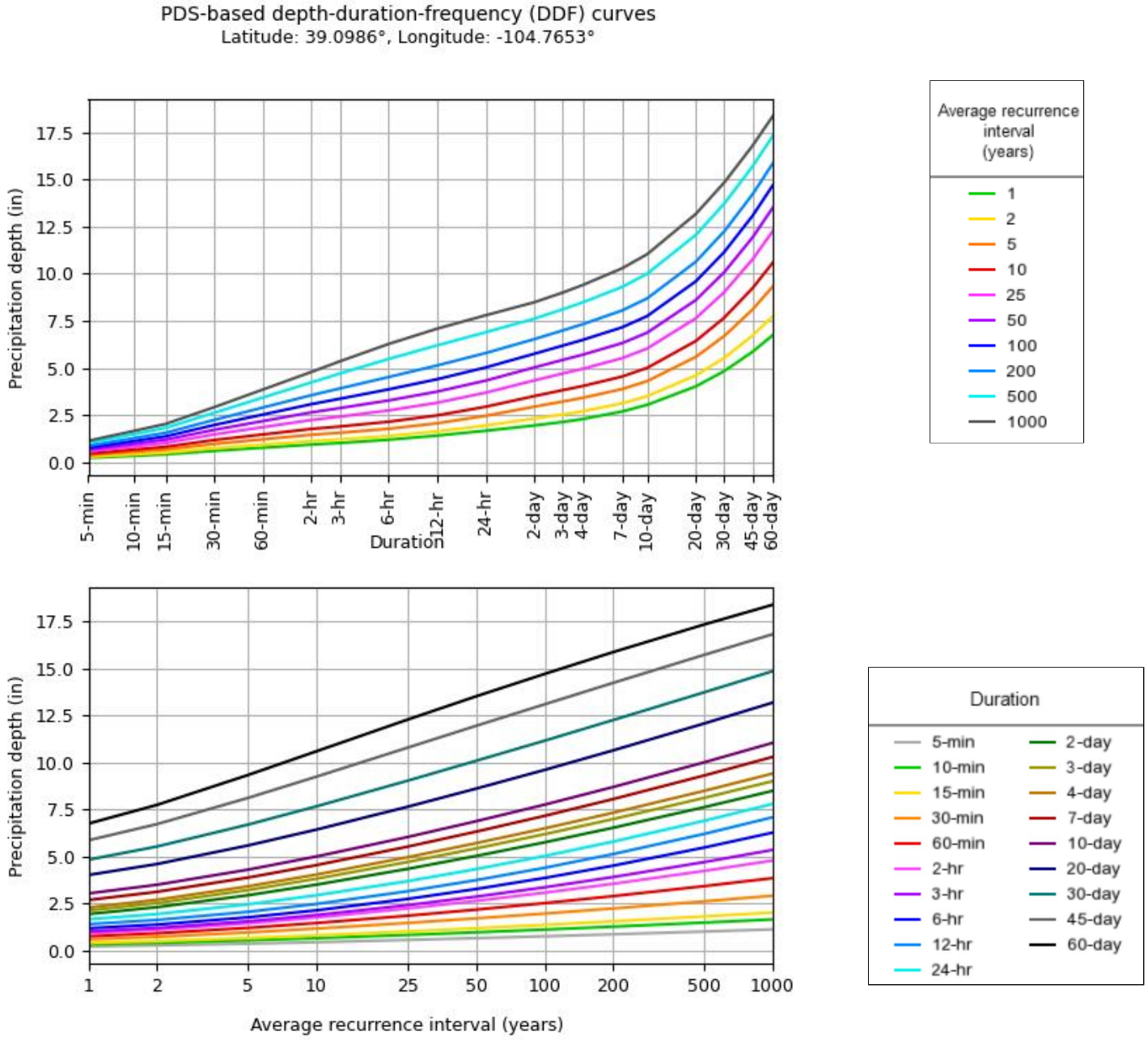
PF graphical



NOAA Atlas 14, Volume 8, Version 2

Created (GMT): Mon Nov 10 17:55:01 2025

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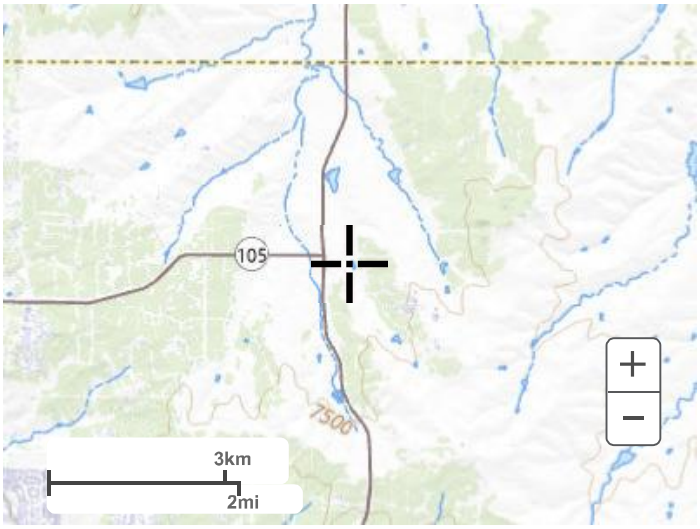
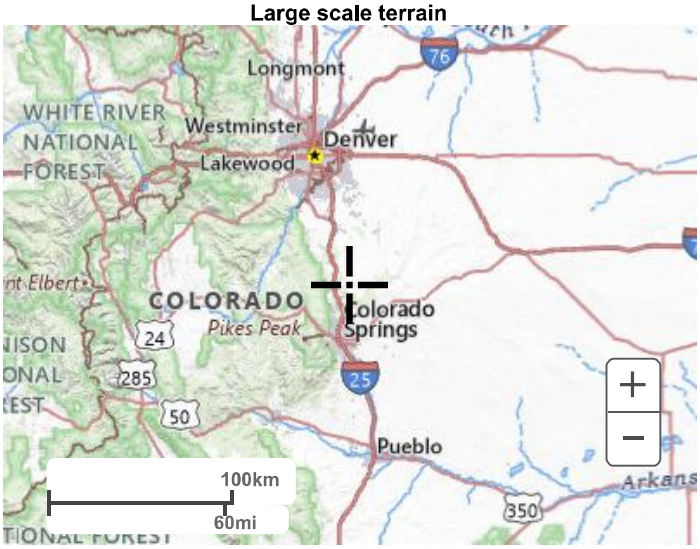
Maps & aerials

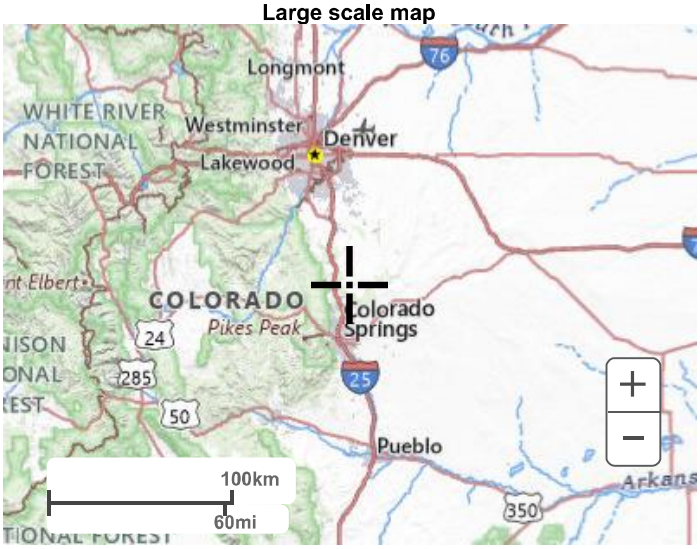
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Historic Flows:

Design Point	Peak Flow							
	Area (ac)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)	
1	337.1	11.2	39.4	78.5	118.0	188.1	240.8	
2	490.5	39.3	73.4	121.5	169.9	256.2	321.3	
4	902.7	145.8	234.8	322.2	400.0	527.9	620.0	

[a] Note that Design Point #3 is an intermediate developed DP not included in the historic model

Developed Flows:

Design Point	Peak Flow							Comparison of Developed to Historic Flow (Q_{100}%)
	Area (ac)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)	
1	342.0	59.8	99.6	139.8	176.3	238.7	285.5	119% (increase)
2	504.7	117.0	189.1	262.6	327.1	432.5	508.9	158% (increase)
3	737.8	187.7	295.8	404.7	501.4	656.3	764.9	
4	902.7	204.0	324.4	445.1	552.4	724.7	845.4	136% (increase)

As detailed in the "Final Drainage Report for Walden Preserve 2 Filing No. 4," Appendix B includes the HEC-HMS model for detained flows incorporating the calculated outflows from the upgrade of Pond B to full-spectrum detention. The resulting ultimate discharges at downstream Design Point #4 remain at or below historic levels for the full spectrum of design storms:

Detained Flows:

Design Point	Peak Flow Comparison						
	Area (ac)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)
4 (Historic)	902.7	145.8	234.8	322.2	400.0	527.9	620.0
4 (Detained)	902.7	139.0	226.7	314.1	391.5	515.3	601.4
Comparison [a]		95%	97%	97%	98%	98%	97%

[a] Comparison of Detained Flow / Historic Flow

D. Detention Ponds

The total developed storm runoff downstream of the proposed subdivision will be maintained at historic levels by routing flows through an existing detention pond (Pond B) located along the main tributary channel running through the property, along with ultimate construction of four additional ponds (Rain Gardens C2, C4, and C12, and Detention Pond C8) serving the northern parts of the

comprises over 500 acres so this channel will periodically be expected to experience high flows. The channel downstream of Pond B is an existing deficient condition from a drainage design standpoint. No structural improvements (i.e. riprap lining, drop structures) were constructed to stabilize this segment of channel when the original Walden Subdivision was developed, and as a result this segment of channel does not meet County standards for public drainage facilities. The channel downstream of Pond B flows through a row of existing private backyards, and a number of existing private structures are located along the drainage channel. The channel has historically shown signs of erosion in several areas, and limited maintenance access is available along this private reach of channel. We are aware of one existing downstream property that has experienced periodic flooding as a result of the basement level being below the existing channel elevation.

Recognizes the existing deficiencies in the channel downstream of Pond B, Filing No. 4 improvements included upgrading Pond B to full-spectrum detention standards to provide a substantial decrease in peak outflows compared to predevelopment peak flows across the full spectrum of design storms (see UD-Detention modeling in Appendix D1). An engineered energy dissipation structure was previously constructed at the Pond B discharge point to further mitigate the impact of flows from the Walden Preserve Subdivision.

The existing 43"x27" elliptical CMP culvert at Walker Road has an estimated capacity of 55 cfs. The existing culvert is undersized based on the calculated historic flows from the basin. While the existing roadway would be expected to overtop during major storm events, we are not aware of any reported drainage problems at this crossing and we are not aware of any County plans for replacement of the existing culvert. The existing stock ponds upstream in the main channel provide a significant level of stormwater detention/retention in their current condition, which likely has minimized historic concerns with flows overtopping the roadway at this crossing.

Combined flows in the East Tributary of West Cherry Creek continue flowing northerly through a grass-lined channel following a 100-foot wide drainage easement through the Shamrock Hills Subdivision north of Walker Road, ultimately reaching a confluence with West Cherry Creek. The existing channel downstream of the culvert crossing Walker Road consists of a broad grass-lined swale with no signs of active erosion. On-site detention ponds mitigate the developed drainage impacts from the Walden Preserve Subdivision, so there is no need for this development to upgrade existing downstream facilities.

G. Anticipated Drainage Problems and Solutions

Stormwater detention ponds have been designed to mitigate the impacts of developed drainage from the overall Walden Preserve 2 PUD project. The previously completed construction and upgrades to Pond B are sufficient to provide stormwater detention for WP2 Filings No. 1-4. Stormwater Detention Basin C8 and Water Quality Rain Gardens C4 and C12 will provide stormwater detention and water quality mitigation for Filing No. 5.

The overall drainage plan for the subdivision includes a system of roadside ditches, channels, and culverts to convey developed flows through the site. The primary drainage problems anticipated

EXCERPT FROM THE WALDEN PRESERVE 2 - FILING NO. 5 FINAL DRAINAGE REPORT
PCD FILE NO. SF2211

EXISTING 42"x26" HECMP CULVERT (CROSSING WALKER ROAD)

WWTP PROJECT SITE

EXISTING WASTEWATER TREATMENT FACILITY

APPROXIMATE EDGE OF POND

DETENTION POND C14 (MA SITE)

EXISTING 30" CMP CULVERT

D 10.27 AC.

OD3 10.3 AC.

OD2 4.5 AC.

OD1 3.3 AC.

WALDEN PINES

CONECREST LANE

KAPPEL

WRIGHT

BALCERZAK

GONNORS

PATE

POHLOD

BROWN

SILVA

KIZLYK

CALLOWAY

VERRIE

POPE

WOODHAVEN DRIVE

PARCEL #61150-00-005 WALDEN CORPORATION 20.29 AC.

C13 22.44 AC.

CHANNEL C6

OC2.2 19.24 AC.

C12.1 PROPOSED WQ RAIN GARDEN C12

RG

GB

FILING NO. 5

C12 17.77 AC.

FIL 5 27 1.0 AC

FIL 5 26 1.0 AC

FIL 5 25 1.0 AC

DITCH C12.2 @ 3.9% SLOPE

DITCH C12.1 @ 6.7% SLOPE

EXISTING TRAIL

WALDEN III FILING NO. 2

OC2.1 62.48 AC.

N

100' 0 100' 200'

ORIGINAL SCALE: 1"=100' (24"x36" SHEET)
CONTOUR INTERVAL=2'

LEGEND

- PROPERTY LINES
- DRAINAGE BASIN BOUNDARY
- SUB-BASIN BOUNDARY
- 6520 EXISTING CONTOUR
- PROPOSED CULVERT
- FLOW DIRECTION ARROW
- FLOWLINE
- 5 DESIGN POINT
- C14 / 23.21 AC. DEVELOPED BASIN DESIGNATION / BASIN AREA (ACRES)
- RR RIPRAP APRON
- GB GRASS BUFFER STRIP
- RG RAIN GARDEN

SUMMARY HYDROLOGY TABLE

DESIGN POINT	Q5 (CFS)	Q100 (CFS)
C12.1	30.5	72.4

MATCH LINE - SEE SHEET D1.02

JPS ENGINEERING
19 E. Willamette Ave.
Colorado Springs, CO 80903
PH: 719-477-9429
FAX: 719-471-0766
www.jpsengr.com

CALL UTILITY NOTIFICATION CENTER OF COLORADO 1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

No.	REVISION	BY	DATE

WALDEN PRESERVE

DEVELOPED DRAINAGE PLAN

HORZ. SCALE: 1"=100'	DRAWN: BJJ
VERT. SCALE: N/A	DESIGNED: JPS
SURVEYED: RAMPART	CHECKED: JPS
CREATED: 10/03/11	LAST MODIFIED: 1/10/22
PROJECT NO: 040201	MODIFIED BY: BJJ

SHEET: D1.01

C:\Users\Owner\Dropbox\jpsprojects\040201 walden\dwg\civil\D1101-104.dwg Jan 12, 2022 - 8:24am

WALDEN CORPORATION

PO BOX 1870
MONUMENT CO 80132
719-559-2229
waldencorporation@yahoo.com

February 5, 2026

To Whom It May Concern:

Walden Corporation is the owner of the property associated with the proposed Wastewater Treatment Plant project located on Parcel No. 6115000005. An approximately 3-acre area southwest of the project limits was previously disturbed as part of a material stockpile operation conducted under a separate scope of work. This area lies within the overall property boundary but outside the limits of the current improvements.

As a condition of approval for the Walden Sanitation District Wastewater Treatment Plant project, Walden Corporation agrees to restore this disturbed area prior to construction of the project. Restoration will include regrading the area to pre-stockpile conditions and permanently stabilizing the site to achieve a minimum of 70% vegetative cover, in accordance with the El Paso County Drainage Criteria Manual, Volume 2.

Sincerely,

Bill Dunston
Principal

Project:	Walden WWTP
Location:	El Paso County, CO
Designer:	DDK
Date:	11/10/2025
Latest Revision:	4/28/2026

[1]From Tables 6-2 and 6-3 in UDFCD Volume 1
[2]From Table 6-5 in UDFCD Volume 1

IMPERVIOUSNESS AND RUNOFF COEFFICIENT CALCULATIONS

				Roofs & Pavement	Water Surface	Gravel	Undisturbed Open Space	Disturbed Open Space			
			Impervious %[1]	95%	100%	80%	5%	20%			
Basin Designation	NRCS Hydrologic Soil Group	Total Area (ac)	Total Area (sf)	Roofs & Pavement (sf)	Water Surface (sf)	Gravel (sf)	Undisturbed Open Space (sf)	Disturbed Open Space (sf)	Percent Impervious	Runoff Coefficients, C[2]	
										C_5	C_{100}
D1	B	3.93	171,190	6,577	0	8,166	79,317	77,130	18.79%	0.14	0.51
EX1	B	3.93	171,190	3,152	77,130	5,857	85,051	0	52.03%	0.42	0.67
EX2	B	12.62	549,939	0	0	21,700	528,239	0	7.96%	0.05	0.46
D3	B	2.06	89,800	0	0	5,009	0	84,791	23.35%	0.18	0.53
EX3	B	2.06	89,800	0	27,716	5,009	0	57,075	48.04%	0.39	0.65
EX4	B	2.77	120,876	1,116	0	0	119,760	0	5.83%	0.04	0.45
Net Change from EX1 to D1		0.00	0	+3425	-77130	+2309	-5734	+77130	-33.23%	-0.28	-0.15
Net Change from EX3 to D3		0.00	0	0	-27716	0	0	+27716	-24.69%	-0.21	-0.11
Total Net Change		0.00	0	+3425	-104846	+2309	-5734	+104846			

Project:	Walden WWTP
Location:	El Paso County, CO
Designer:	DDK
Date:	11/10/2025
Latest Revision:	4/28/2026

NRCS Conveyance Factors, K[2]	
Type of Land Surface	K
Heavy Meadow	2.5
Tillage/Field	5
Short Pasture/Lawns	7
Nearly Bare Ground	10
Grassed Waterway	15
Paved Areas	20

[1]Max 300 ft in Urban areas and 500 ft in rural areas

[2]From Table 6-2 in UDFCD Volume 1

Minimum T_c 5

TIME OF CONCENTRATION CALCULATIONS

			Initial/Overland Flow Time, T_i			Channelized Flow/Travel Time, T_t					Time of Concentration, T_c (Check		
Basin Designation	Imperviousness (%)	C_5	Length (ft)[1]	Slope (%)	T_i (min)	Land Surface	Length (ft)	Slope (%)	Velocity (ft/sec)	T_t (min)	Computed T_c (min)	First Design Point T_c (min)	Selected T_c (min)
D1	18.79%	0.14	252	4.80	16.41	Short Pasture/Lawns	309	1.00	0.70	7.36	23.77	N/A	23.77
EX1	52.03%	0.42	156	4.80	9.13	Short Pasture/Lawns	0	1.20	0.77	0.00	9.13	17.16	9.13
EX2	7.96%	0.05	300	6.80	17.37	Short Pasture/Lawns	842	5.30	1.61	8.71	26.07	N/A	26.07
D3	23.35%	0.18	300	2.50	21.35	Short Pasture/Lawns	501	1.70	0.91	9.15	30.50	27.25	27.25
EX3	48.04%	0.39	300	2.50	16.50	Short Pasture/Lawns	274	2.40	1.08	4.21	20.71	19.71	19.71
EX4	5.83%	0.04	162	6.70	13.02	Grassed Waterway	233	1.80	2.01	1.93	14.95	N/A	14.95

2.4.1 Initial or Overland Flow Time

The initial or overland flow time, t_i, may be calculated using Equation 6-3:

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_o^{0.33}}$$ Equation 6-3

Where:

t_i = overland (initial) flow time (minutes)
C_5 = runoff coefficient for 5-year frequency (from Table 6-4)
L_i = length of overland flow (ft)
S_o = average slope along the overland flow path (ft/ft).

2.4.2 Channelized Flow Time

The channelized flow time (travel time) is calculated using the hydraulic properties of the conveyance element. The channelized flow time, t_t, is estimated by dividing the length of conveyance by the velocity. The following equation, Equation 6-4 (Guo 2013), can be used to determine the flow velocity in conjunction with Table 6-2 for the conveyance factor.

$$t_t = \frac{L_t}{60K\sqrt{S_o}} = \frac{L_t}{60V_t}$$ Equation 6-4

Where:

t_t = channelized flow time (travel time, min)
L_t = waterway length (ft)
S_o = waterway slope (ft/ft)
V_t = travel time velocity (ft/sec) = $K\sqrt{S_o}$
K = NRCS conveyance factor (see Table 6-2).

$$t_c = t_i + t_t$$ Equation 6

Where:

t_c = computed time of concentration (minutes)
t_i = overland (initial) flow time (minutes)
t_t = channelized flow time (minutes).

2.4.3 First Design Point Time of Concentration in Urban Catchments

Equation 6-4 was solely determined by the waterway characteristics and using a set of empirical formulas. A calibration study between the Rational Method and the Colorado Urban Hydrograph Procedure (CUHP) suggests that the time of concentration shall be the lesser of the values calculated by Equation 6-2 and Equation 6-5 (Guo and Urbonas 2013).

$$t_c = (26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$$ Equation 6-5

Where:

t_c = minimum time of concentration for first design point when less than t_c from Equation 6-1.
L_t = length of channelized flow path (ft)
i = imperviousness (expressed as a decimal)
S_t = slope of the channelized flow path (ft/ft).

2.4.4 Minimum Time of Concentration

Use a minimum t_c value of 5 minutes for urbanized areas and a minimum t_c value of 10 minutes for areas that are not considered urban. Use minimum values even when calculations result in a lesser time of concentration.

Project:	Walden WWTP
Location:	El Paso County, CO
Designer:	DDK
Date:	11/10/2025
Latest Revision:	4/28/2026

Design Storm:	5-Yr
1-hr Design Point Rainfall (in):	1.22

5-YEAR PEAK RUNOFF CALCULATIONS

Basin Designation	Design Point	Area (ac)	C_5	C X A	T_c (min)	Intensity (in/hr)	Peak Flow, Q (cfs)
D1	1	3.93	0.14	0.55	23.77	2.19	1.19
EX1	2	3.93	0.42	1.65	9.13	3.42	5.66
EX2	3	12.62	0.05	0.69	26.07	2.08	1.43
D3	3	2.06	0.18	0.36	27.25	2.02	0.73
EX3	4	2.06	0.39	0.80	19.71	2.42	1.92
EX4	1	2.77	0.04	0.11	14.95	2.77	0.30

Project:	Walden WWTP
Location:	El Paso County, CO
Designer:	DDK
Date:	11/10/2025
Latest Revision:	4/28/2026

Design Storm:	100-Yr
1-hr Design Point Rainfall (in):	2.53

100-YEAR PEAK RUNOFF CALCULATIONS

Basin Designation	Design Point	Area (ac)	C_{100}	C X A	T_c (min)	Intensity (in/hr)	Peak Flow, Q (cfs)
D1	1	3.93	0.51	2.02	23.77	4.53	9.15
EX1	2	3.93	0.67	2.62	9.13	7.09	18.61
EX2	3	12.62	0.46	5.85	26.07	4.31	25.17
D3	4	2.06	0.53	1.10	27.25	4.20	4.63
EX3	4	2.06	0.65	1.34	19.71	5.02	6.71
EX4	1	2.77	0.45	1.26	14.95	5.75	7.23

Channel Report

Project filename: Ditch Calcs.stx

Studio Express by Hydrology Studio v 1.0.0.20

02-06-2026

Effluent Outfall Ditch

Channel 1

TRAPEZOIDAL

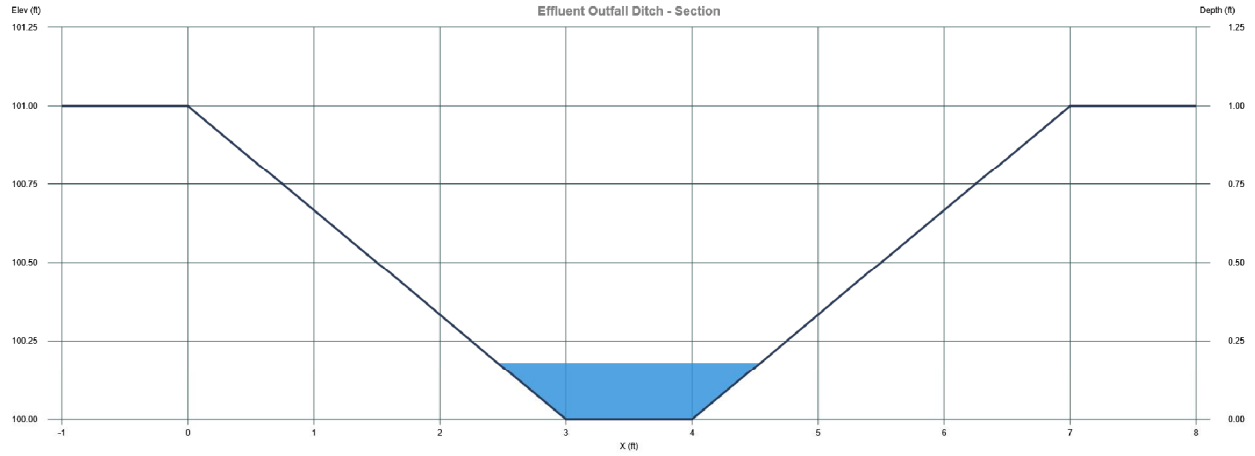
Bottom Width	= 1.00 ft
Side Slope Left, z:1	= 3.00
Side Slope Right, z:1	= 3.00
Total Depth	= 1.00 ft
Invert Elevation	= 100.00 ft
Channel Slope	= 2.030 %
Manning's n	= 0.035

DISCHARGE

Method	= Known Q
Known Q	= 0.39 cfs

CALCULATION SAMPLE

Flow	Depth	Area	Velocity	WP	n-value	Crit Depth	HGL	EGL	Max Shear	Top Width
(cfs)	(ft)	(sqft)	(ft/s)	(ft)		(ft)	(ft)	(ft)	(lb/sqft)	(ft)
0.39	0.18	0.28	1.40	2.14	0.035	0.15	100.18	100.21	0.23	2.08

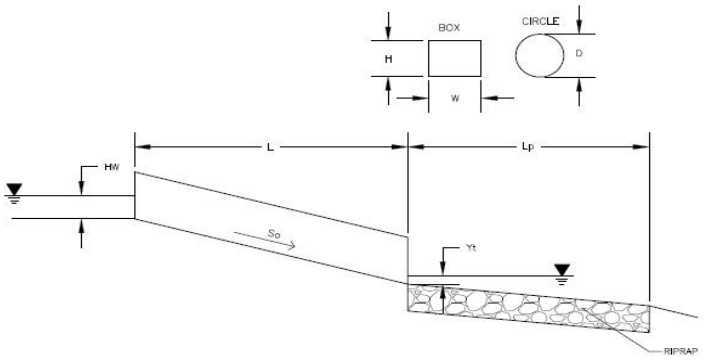


DETERMINATION OF CULVERT HEADWATER AND OUTLET PROTECTION

MHFD-Culvert, Version 4.01 (April 2025)

Project: Walden WWTP

ID: Effluent Outfall



Soil Type:
Choose One:
(●) Sandy
( ) Non-Sandy

Supercritical Flow! Using Adjusted Diameter to calculate protection type.

Design Information:

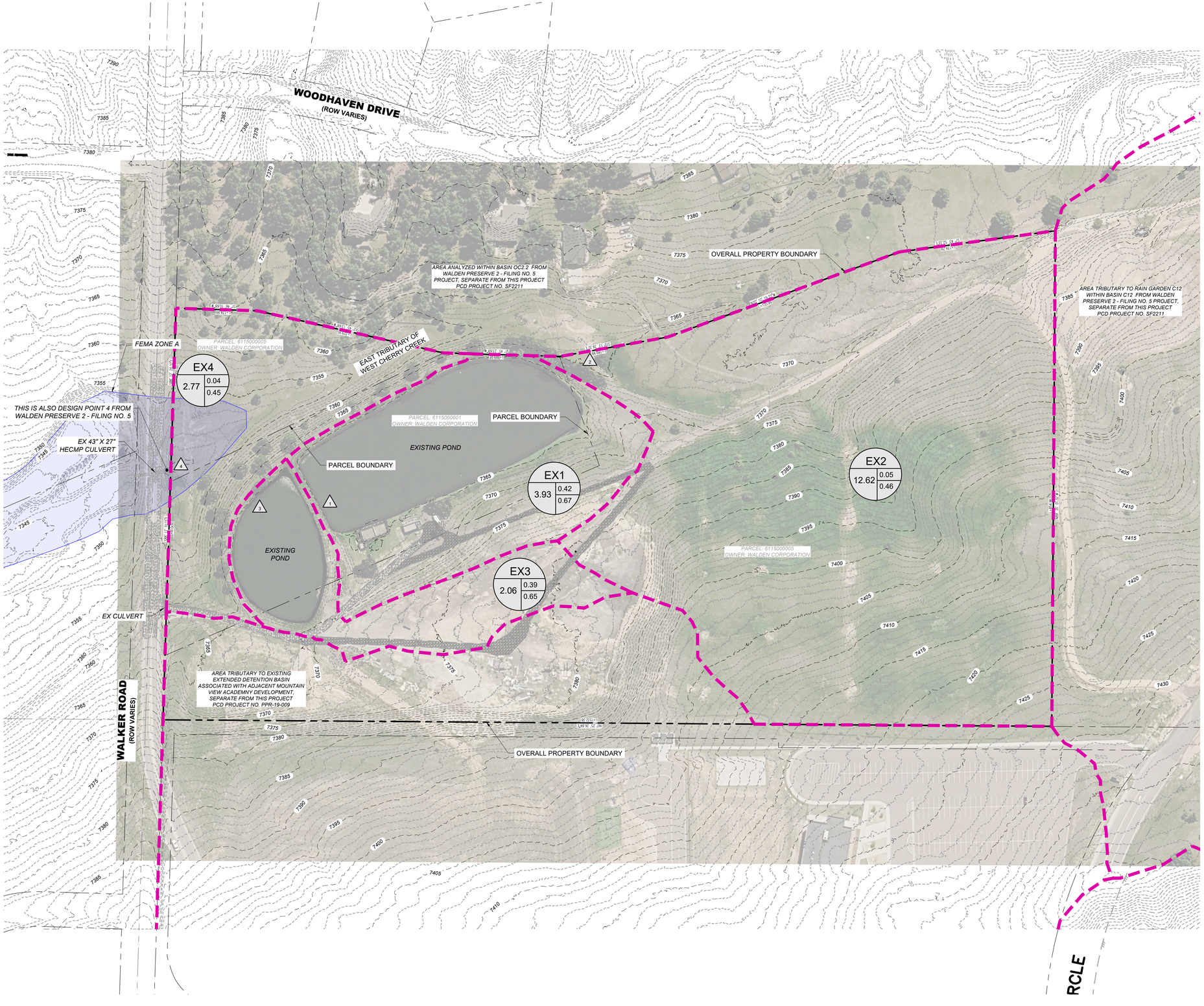
Design Discharge	Q =	0.388	cfs
Circular Culvert:			
Barrel Diameter in Inches	D =	8	inches
Inlet Edge Type (Choose from pull-down list)		Beveled Edge (1.5:1)	
OR:			
Box Culvert:		OR	
Barrel Height (Rise) in Feet	H (Rise) =		ft
Barrel Width (Span) in Feet	W (Span) =		ft
Inlet Edge Type (Choose from pull-down list)			
Number of Barrels	# Barrels =	1	
Inlet Elevation	Elev IN =	7352.85	ft
Outlet Elevation OR Slope	Elev OUT =	7351.94	ft
Culvert Length	L =	105	ft
Manning's Roughness	n =	0.012	
Bend Loss Coefficient	k_b =	0	
Exit Loss Coefficient	k_x =	1	
Tailwater Surface Elevation	$Y_{t,\ Elevation}$ =		ft
Max Allowable Channel Velocity	V =	5	ft/s

Calculated Results:

Culvert Cross Sectional Area Available	A =	0.35	ft^2
Culvert Normal Depth	Y_n =	0.26	ft
Culvert Critical Depth	Y_c =	0.29	ft
Froude Number	Fr =	1.25	Supercritical!
Entrance Loss Coefficient	k_e =	0.20	
Friction Loss Coefficient	k_f =	4.78	
Sum of All Loss Coefficients	k_s =	5.98	ft
Headwater:			
Inlet Control Headwater	HW_I =	0.40	ft
Outlet Control Headwater	HW_O =	N/A	ft
Design Headwater Elevation	HW =	N/A	ft
Headwater/Diameter OR Headwater/Rise Ratio	HW/D =	N/A	

Outlet Control Headwater Approximation Method Inaccurate for Low Flow - Backwater Calculations Required

Outlet Protection:			
Flow/(Diameter^2.5)	Q/D^2.5 =	1.07	$ft^{0.5}/s$
Tailwater Surface Height	Y_t =	0.27	ft
Tailwater/Diameter	Yt/D =	0.40	
Expansion Factor	1/(2*tan(Θ)) =	6.63	
Flow Area at Max Channel Velocity	A_t =	0.08	ft^2
Width of Equivalent Conduit for Multiple Barrels	W_{eq} =	-	ft
Length of Riprap Protection	L_p =	2	ft
Width of Riprap Protection at Downstream End	T =	1	ft
Adjusted Diameter for Supercritical Flow	Da =	0.46	ft
Minimum Theoretical Riprap Size	d_{50} min=	1	in
Nominal Riprap Size	d_{50} nominal=	6	in
MHFD Riprap Type	Type =	VL	



LEGEND

- BASIN DESIGNATION: D1
- BASIN AREA (ACRES): 1.00
- C5: 0.62
- C100: 0.78
- DESIGN POINT
- DRAINAGE BASIN BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

BASIN SUMMARY TABLE

Basin Designation	Area (ac)	Q_5 (cfs)	Q_{100} (cfs)
EX1	3.93	5.66	18.61
EX2	12.62	1.43	25.17
EX3	2.06	1.92	6.71
EX4	2.77	0.30	7.23

0 80' 160'
1" = 80' (HORIZONTAL)

KATZ —LDE—

DATE
DESCRIPTION
REV. NO.

4/28/2026

EL PASO COUNTY, COLORADO

EXISTING DRAINAGE PLAN

PRELIMINARY
THIS DRAWING HAS NOT BEEN APPROVED BY GOVERNING AGENCIES AND IS SUBJECT TO CHANGE

PROJ NO: 250041
ENG: DDK
DATE: 2/15/2026

SHEET
DR1
1 OF 2

PLOT DATE: 4/28/2026 2:20 PM
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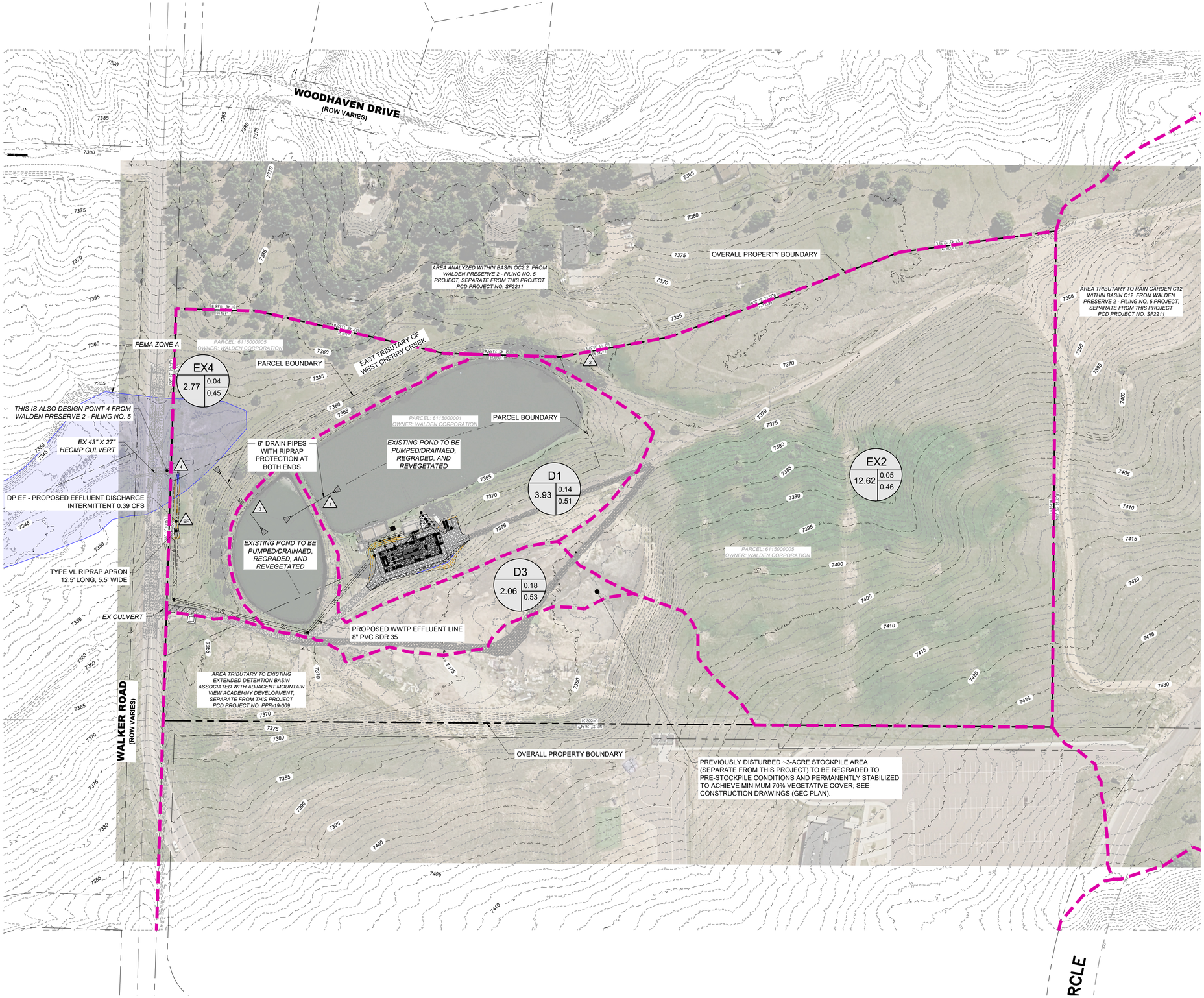

LEGEND

BASIN DESIGNATION — D1 — C5
BASIN AREA (ACRES) — 1.00 — C100

- DESIGN POINT
- DRAINAGE BASIN BOUNDARY
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

BASIN SUMMARY TABLE

Basin Designation	Area (ac)	Q_5 (cfs)	Q_{100} (cfs)
D1	3.93	1.19	9.15
EX1	3.93	5.66	18.61
EX2	12.62	1.43	25.17
D3	2.06	0.73	4.63
EX3	2.06	1.92	6.71
EX4	2.77	0.30	7.23
Net Change from EX1 to D1	**0.00**	**-4.46**	**-9.46**
Net Change from EX3 to D3	**0.00**	**-1.19**	**-2.09**
Total Net Change	**0.00**	**-5.65**	**-11.55**

0 80' 160'
1" = 80' (HORIZONTAL)

KATZ —LDE—

REV. NO.	DESCRIPTION	DATE

WALDEN SANITATION DISTRICT WWTP
EL PASO COUNTY, COLORADO
PROPOSED DRAINAGE PLAN

PRELIMINARY
THIS DRAWING HAS NOT BEEN APPROVED BY GOVERNING AGENCIES AND IS SUBJECT TO CHANGE

PROJ NO: 250041
ENG: DDK
DATE: 4/28/2026

SHEET
DR2
2 OF 2

PLOT DATE: 4/28/2026 2:30 PM
PLOT PATH: K:_PROJECTS\250041 - WALDEN WWTP DRAINAGE LETTER - EL PASO COUNTY, CO\05 - DESIGN\DRAINAGE\04 - DRAWINGS\PROPOSED DRAINAGE PLAN.DWG