# | PLANNING COMMISSION 6:00 P.M. | AUGUST 11, 2025 |
# CITY OF FORT MORGAN WASTE WATER TREATMENT FACILITY SPECIAL USE

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# MORGAN COUNTY
# PLANNING AND ZONING DEPARTMENT

July 22, 2025

Victor Perez
18169 CO RD 22
Fort Morgan, CO. 80701
[redacted]

Brent Nation
City of Fort Morgan
710 E. Railroad Ave.
Fort Morgan, CO 80701
[redacted]

Andrew Stewart
Project Manager
Merrick & Company
[redacted]

Dear Applicant/Landowner:

Your Application for an Amended Special Use permit has been received by our office and will go to review and decision by the Planning Commission and Board of County Commissioners. The hearing for the Planning Commission will be held on **Monday, August 11, 2025 at 6:00 P.M.**

**As per Section 2-450 (B) notification sign postings need to occur no later than 10 days prior to each hearing and photographs accompanied by an affidavit to our office no later than 5 days prior to each hearing**. One sign facing each public right-of-way adjacent to the property is required. The county will provide (1) sign for each hearing for the entry to the facility. It is up to you to post it.

Planning Commission sign notice dates: **Posted by August 1, 2025**
**Pictures and Affidavit by August 6, 2025**
The PC sign will be ready to be picked up in our office on **June 28, 2025**.

It is necessary that the landowners be present at the hearing to answer any questions the Planning Commission may have. If any of the landowners are unable to attend, a letter stating who will be representing them will be needed for each hearing. Do not hesitate to contact us at any time if you have questions.

Sincerely,

*Nicole Hay*
Nicole Hay
Planning Administrator

# FILE SUMMARY

**MORGAN COUNTY**
**PLANNING AND ZONING DEPARTMENT**

**MORGAN COUNTY PLANNING COMMISSION**
**FILE SUMMARY**
**August 7, 2025**
**Hearing date – August 11, 2025**

**LANDOWNERS and APPLICANTS: City of Fort Morgan**

The City of Fort Morgan has submitted an application to amend its special use permit, which was originally granted through Resolution 95 BCC 8. The original SUP was issued for a new wastewater treatment plant. The amendment would allow for its update and expansion.

The current permitted area is in a part of the SE¼ of Section 34, Township 4 North, Range 57 West of the 6th P.M., Morgan County, Colorado, also known as 18169 County Road 22, Fort Morgan, Colorado. The property is zoned Agriculture Production, is in the Fort Morgan Fire District, and a portion of the property is located in the Special Floodplain Hazard Area (SFHA), Zone AE.

Along with several changes and upgrades internal to existing buildings and equipment there are proposed additions to the site that include:

- Addition of a splitter box
- Splitting the 2 large existing biological nutrient reactor (BNR) basins into 4 smaller BNR basins and adding a 5th one.
- Expansion of the main building connecting a new blower room
- Adding a third clarifier
- Removal of discharge weir.
- Adding a maintenance garage
- Adding a digester
- Expanding the solids handling building.

The proposed overall construction activities will go through October 2027.

In reviewing this application, the Planning Commission and Board of County Commissioners are required to make a finding that the criteria for granting a Use by Special Review in Section 2-455 of the Morgan County Zoning Regulations has been met.

Section 2-455 Special Use Permit Criteria:

A. The use and its location as proposed are in conformance with the Morgan County Comprehensive Plan. Specifically:

*The property is located in the north central planning area as defined by the Morgan County Comprehensive Plan. In this area Comprehensive Plan goals include:*

> *Ensure that adequate and financially secure public utilities are provided to all developments in Morgan County and to develop essential facilities and services which contribute to providing high quality of life for the residents of Morgan County. The expansion and update of the wastewater treatment facility will allow and encourage development within the growth management area of Fort Morgan.*

B. All the application documents are complete and present a clear picture of how uses are to be arranged on the site or within Morgan County.

*The application satisfies this criteria.*

C. The site plan conforms to the district design standards of these Regulations.

*The site plan satisfies this criteria.*

D. All on and off-site impacts have been satisfactorily mitigated either through agreement, public improvements, site plan requirements or other mitigation measures.

*The operation impacts are expected to be minimal. The City of Fort Morgan and Merrick & Company as the engineer are in conversations with the Upper Platte and Beaver Canal to discuss any improvement that can be made to mitigate groundwater impact on the project.*

E. The special use proposed has been made compatible with the surrounding uses and adequately buffered as determined by the County.

*Adjacent uses include Interstate 76 right-of-way to the north and farmland to the south on the other side of the of the Upper Platte and Beaver Canal. The current use is not changing and the facility has been there since 1995.*

F. The special use poses only the minimum amount of risk to the public health, safety and welfare as set by either federal, state or county regulation, whichever is the strictest.

*The purpose of this project is to protect public health and the environment by treating wastewater prior to discharge to the South Platte River.*

G. The special use proposed is not planned to be developed on a non-conforming parcel.

*The proposed special use is located on a conforming parcel.*

H. The applicant has adequately documented a public need for the project, all pertinent technical information, adequate financial resources to implement it, and has paid all fees and review costs levied by the County for application processing and review.

*CDPHE has issued regulatory restrictions on the South Platte River pertaining to nutrient removal and limiting water quality degradation. The facility's upgrade allows its ability to meet the current and future regulatory requirements. Adequate financial resources are available to implement the project and the applicant has paid all fees.*

I. For any special use requiring a supply of water for human consumption that the applicant has demonstrated a source of water which is adequate for the proposed use in terms of quantity, quality, and reliability. For any special use which does not require a supply of water for human consumption, an adequate source of water for the proposed use in terms of quantity and reliability must be obtained prior to commencement of the use.

*Water for human consumption is currently available and will not change.*

Recommendation

The application generally meets the criteria as explained above and staff recommends approval of the application subject the following conditions:

1. The Applicant shall submit the updated CDPHE permit to the Planning Department within 10 days of receipt.

2. The Applicant shall supply any agreement made with the Upper Platte and Beaver Canal to the Planning Department within 10 days of execution of such agreement.

3. Prior to the commencement of construction, the Applicant will enter into a road use agreement with the Morgan County regarding the maintenance of County Road 22 during construction. Such agreement must be approved by the Board of County Commissioners.

4. Prior to commencement of construction, the Applicant shall obtain a building permit through the Building Department.

Nicole Hay,
Morgan County Planning Administrator

1995 BCC 8

RESOLUTION
95 BCC 8

WHEREAS on April 18, 1995, the Board of County Commissioners of Morgan County, Colorado held a public hearing pursuant to the Morgan County Zoning Regulations and on the application of the City of Fort Morgan, Colorado, for a special use permit for a waste water treatment plant to be located in the SE¼ Section 34, Township 4 North, Range 57 West of the 6th P.M., and

WHEREAS the notice of public hearing was properly published and the subject property was properly posted, and

WHEREAS the Board of County Commissioners received testimony and evidence from the applicant, and

WHEREAS the Board of County Commissioners received the testimony and comments of citizens regard the application.

Upon motion duly made, seconded and unanimously carried, the following resolution was adopted:

NOW BE IT RESOLVED by the Board of County Commissioners of Morgan County, Colorado:

1. The application of the City of Fort Morgan, Colorado for a special use permit for a waste water treatment plant located in the SE¼ of Section 34, Township 4 North, Range 57 West of the 6th P.M., is hereby granted.

2. The permitted property is more particularly described as:

A parcel of land in the SE¼ of Section 34, Township 4 North, Range 57 West of the 6th P.M., Morgan County, Colorado, described as commencing at a point on the east side of said SE¼ and 1305.1 feet north of the SE corner thereof, said point also being 16.0 feet south of the NE corner of the S½SE¼ and considering the East side of said SE¼ as bearing S00°23'13"W with all other bearings relative thereto, thence N89°27'58"W, 16 feet south of and parallel to the north side of said S½SE¼ 296.3 feet to a point 16 feet south of the south bank of the Upper Platte & Beaver Canal as currently used and fenced; thence following said line along the south bank of the Canal the following: S65°00'57"W 442.4 feet; thence S61°33'12"W 140.3 feet; thence S63°40'12"W 81.0 feet; thence S66°35'01"W 284.8 feet; thence S65°31'08"W 238.5 feet; thence S67°12'43"W 284.2 feet; thence S70°29'28"W 730.6 feet; thence S72°41'21"W 127.1 feet; thence S74°16'23"W 228.9 feet to the west line of said SE¼ of Section 34 and 327.3 feet north of the S¼ corner of Section 34, thence along the west line of said SE¼ N00°12'00"E 807.1 feet to the South right of way line of

Interstate Highway Number 76; thence N74°44'24"E 2762.6 feet along said South right of way line to the East side of said SE¼; thence S00°23'13"W along the East line of said SE¼, 581.5 feet to the point of beginning, containing in all 41.4 acres more or less and subject to rights of way for the Upper Platte & Beaver Canal and all other rights of way of record pertaining hereto.

3. The permit is in conformance with the Morgan County Comprehensive Plan.

4. All applicable design standards have been met; however, the applicant shall submit its final plans to the County Commissioners prior to commencing construction. The County Commissioners retain continuing jurisdiction on the issue of design standards.

5. All on and off site impacts have been satisfactorily mitigated by the terms and conditions of this permit. Mitigation measures shall include but not be limited to the following:

a. The applicant will apply dust suppressant to that portion of Morgan County Road 22 between U.S. Highway 34 and the plant site prior to and during construction of its plant. It will further be responsible for materials to repair and/or upgrade Morgan County Road 22 if said road deteriorates due to increased traffic due to its sewage treatment plant.

b. The applicant will pave at least the first 150 feet of Morgan County Road 22.5, north of U.S. Highway 34, to reasonable standards set by the Morgan County Road and Bridge Department. This shall be accomplished prior to any sludge application on the applicant's property in Section 35, Township 4 North, Range 57 West of the 6th P.M. The applicant will provide the material to repair and/or upgrade Morgan County Road 22.5 if it is necessary to accommodate traffic for the applicant's sludge application operation.

c. In the event that the property to the south of the applicant's site is developed for residential purposes within 10 years of the date of this resolution, the applicant will be responsible for fifty percent (50%), not to exceed $5,000.00, of the cost to construct appropriate site screening which may include but not be limited to an earthen berm and vegetation. This provision shall be enforced only at the request of the adjoining land owners or the appropriate land use authority at the time of development.

d. The facility shall be located, constructed, and operated so that under normal conditions and circumstances, no foul, nauseating or unpleasant odor will be detectable at the nearest property line of the owner or at any point within 100 feet of any office building or structure or any dwelling unit.

6. The special use has been made satisfactorily compatible with surrounding uses as adequately buffered from surrounding property pursuant to Paragraph 5 above.

7. It is in the public health, safety and welfare to grant the application.

8. The parcel is located on a conforming parcel of land.

9. There is a public need for the project and all pertinent technical information has been provided to the County and the applicant has sufficient financial resources to implement the project.

10. The Board of County Commissioners retains continuing jurisdiction on this permit to address future possible problems with the site and to insure the compliance with the conditions of this permit. The County also retains jurisdiction and the right and authority of County personnel to inspect the site at any reasonable time.

11. The applicant shall comply with all regulatory agency requirements for the protection of health, welfare and safety of the inhabitants of the area and of Morgan County, including but not limited to compliance with Colorado Department of Health, United States Environmental Protection Agency, other state and federal requirements. Should any of the permits or approvals obtained by the applicant vary significantly or cause material change in the project as proposed and approved in this resolution, then the application shall be reconsidered by the Planning Commission and Board of County Commissioners as an amendment to this resolution. Should the variance or change be nonmaterial, then a written description thereof shall be filed with the Morgan County Planning Department.

12. The applicant shall submit the following additional items within 30 days of receipt:

Copies of each Colorado Department of Health, Environmental Protection Agency, other state and federal permits or approvals which it receives in the course of construction permitting of the project. The Board of County Commissioners reserves the right to review the submitted documents and impose additional requirements, after hearing and notice of the applicant and the public, why the information presented in the said documents.

13. The ground surfaces served by applicant's construction activities shall be restored by reseeding as soon as possible after the project has been completed, or any major portion thereof. Good soil conservation practices shall be commenced and continue to minimize soil and wind erosion. Applicant shall not disturb in excess of six acres of ground surface without applying for a fragile grassland disturbance permit from the County Planning Department. In the event of any problems reported by the public concerning fugitive dust from the construction site or operations of the proposed project, the County may require the applicant to take immediate or reasonable steps to mitigate the same.

14. The applicant shall be responsible for complying with all of the foregoing requirements and design standards. Noncompliance with any of the foregoing requirements or design standards may be reason for revocation of the permit by the Board of County Commissioners.

Dated this 26th day of April, 1995.

BOARD OF COUNTY COMMISSIONERS
MORGAN COUNTY, COLORADO

Mark A. Arndt

Mark A. Arndt, Chairman

Cynthia L. Erker

Cynthia L. Erker, Commissioner

John A. Crosthwait

John A. Crosthwait, Commissioner

ATTEST:

FAY A. JOHNSON
CLERK TO THE BOARD

By: Fay A. Johnson

[SEAL]

CERTIFICATION

Fay A. Johnson, Clerk to the Board of County Commissioners, does hereby certify that the above and foregoing resolution dated April 26, 1995, is a true and correct copy of the resolution appearing in the records and minutes of the Board of County Commissioners of Morgan County, Colorado.

Dated this 26th day of April, 1995.

Fay A. Johnson

Clerk to the Board

# ORIGINAL SUBMITTAL

Original Application

Right to Farm

Statement of Authority

Technical Memorandum

Maps/Plans

Title Commitment

Water & Wastewater Bill

Driveway Permit

Mineral Certification

Ditch Notification – UPBC

Traffic Impact Analysis

MORGAN COUNTY PLANNING
ZONING & BUILDING DEPT.
231 Ensign, P.O. Box 596
Fort Morgan, Colorado 80701
PHONE (970)542-3526
FAX (970)542-3509
EMAIL: permits_licensing@co.morgan.us

PERMIT # ASU2025 - 0001

Date Received 7 / 17 / 25 Received By CB
App Fee $ 800 Ck/CC #: 6570 Paid 7 / 17 / 25
Minor Amend Fee: $ _____ CK/CC #: _____ Paid ___/___/___
Recording Fee $ _____ Ck/CC #: _____ Paid ___/___/___
PC Date: 8 / 11 / 25 BOCC Date: ___/___/___
100 Year Floodplain? (Y) / N Taxes Current? (Y) /N

# SPECIAL USE PERMIT APPLICATION

*(Also to be used as application for Amendments to Existing Special Use Permits)*

Landowner **MUST** Sign Application and Right to Farm Policy

## APPLICANT

Name Victor Perez
Address 18169 Morgan County Rd 22
Fort Morgan, CO 80701
Phone [redacted]
Email [redacted]

## LANDOWNER

Name City of Fort Morgan
Address 710 E. Railroad Ave
Fort Morgan, CO 80701
Phone [redacted]
Email _____

## BRIEF DESCRIPTION OF APPLICATION

Update and expansion to the Wastewater Treatment Facility (WWTF) for the City of Fort Morgan.

## PROPERTY LEGAL DESCRIPTION

Address (if available):
18169 Morgan County Rd 22, Fort Morgan CO, 80701

S: 34 T: 4 R: 57 ____ ½ SE ¼ ____ ¼
Property Size 42 ac (sq. ft. or acres)
Parcel #: 1039 - 340 - 00 - 900
Zone District: _____
Subdivision: 2600-FM 5 MI RAD C/I
Lot #(s): _____

Is property located within 1320' (1/4 mile) of a livestock confinement facility? Y/(N)

**SEE REQUIRED ATTACHMENT LIST ON BACK OF THIS PAGE.**

**INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED OR PROCESSED.**

# SPECIAL USE PERMIT REQUIRED ATTACHMENT LIST

**Fee:** ☒ **Non-Refundable Application Fee**

**Additional fees and charges may be required pursuant to Section 2-160 of Morgan County Zoning Regulations. Applicant will be responsible for any legal fees after the first 5 hours.*

**Project Narrative:** ☒ **Narrative– Including the following:**

- ☒ Project Description
- ☒ Purpose of request
- ☒ How this proposal complies with the Morgan County Comprehensive Plan
  See:*https://morgancounty.colorado.gov/sites/morgancounty/files/Comprehensive- Plan-2008.pdf*
- ☒ How this project/proposed use meets the criteria for Special Use Permit pursuant to Sec. 2-455 of the Zoning Regulations
- ☒ How the project/proposed use meets any specific criteria related to the project/proposed use. *See Morgan County Zoning Regulations Chapter 4-Supplementary Regulations, including but not limited to: Campgrounds, Livestock Confinement, Kennels, Outdoor Shooting Ranges, Home Occupations, Oil and Gas, Mobile Home Parks, Wireless Service Facilities, Solar, Wind and BESS*
- ☒ How project will relate to or impact existing adjacent uses
- ☒ All off-site impacts and proposed mitigation measures
- ☒ Development or implementation schedule of project
- ☒ Proposed length of time the permit, if applicable
- ☒ Discussion of any public improvements required to complete the project

**Environmental Impacts**: ☒ Discuss any environmental impacts the Special Use will have on the following and the proposed mitigation measures:

| | | | |
|---|---|---|---|
| ☒ Air Quality | ☒ Dust | ☒ Existing Vegetation | ☒ Land Forms |
| ☒ Noise | ☒ Odor | ☒ Storm Water Runoff | ☒ Water Resources |
| ☒ Wetlands | ☒ Wildlife | ☒ Visual Amenities | ☐ Other _____ |

**Map & Plans** ☑ **Special Use Map** meeting the requirements of Se. 2-470 and any specific map requirements for the proposed use including but not limited to: *Campgrounds, Livestock Confinement, Kennels, Outdoor Shooting Ranges, Home Occupations, Oil and Gas, Mobile Home Parks, Wireless Service Facilities, Solar, Wind and BESS. Sample Map attached to application for reference*

☐ **Drainage/Run-Off Control Plan** may be required if the Planning Administrator determines that the use or building meets one of the following criteria:

(1) The accessory use or building may have a drainage impact on adjacent properties;
(2) The accessory use or building may have a drainage impact on adjacent right of ways;
(3) The accessory structure is 5000 square feet or larger.

☐ **Decommissioning Plan** [Wind, Solar, BESS]
☑ **Geotechnical Report** [Wind, Solar]
☐ **Maintenance Statement** [Wind, Solar, BESS]
☐ **Water and/or Wind Erosion Control Plan** [Wind, Solar]
☐ **Fire Mitigation Plan** [BESS]
☐ **Specification Sheet** [BESS]
☑ **Emergency Operation Plan** [BESS]

**Ownership:**
☑ **Current title insurance commitment (last 6 months)**
☑ **Mineral Rights Holders Notification** – None
☐ **Notice to FFA & Approval Letter** [Wind]
☐ **Notice to Operator of Communication Link (if applicable)** [Wind]
☑ **Proof of current paid taxes** – Tax Exempt

**Utilities/Access:**
☑ **Water tap (Engineering Report from Quality Water or proof of access to a well)**

☐ **Sewer (Septic Permit, Will Serve Letter from NCHD or proof of other public system)**

☑ **Electric (Electric bill or letter of commitment from electricity provider)**

☑ **Driveway Permit from CDOT or Morgan County Road & Bridge (If required by staff)**

☑ **Ditch Company- Proof of contact if there is a ditch on or next to subject property**

☐ **Architecture Control Approval (if applicable)**

☐ **Utility Interconnection or Crossing Certification** [Wind, Solar]

☐ **Road Agreement** [Wind, Solar]

☐ **Electrical Diagram** [BESS]

**Vested Rights:** ☐ **Vesting Rights** (Optional). If applying for vested rights with special use application, the following must be submitted:

- ☐ Period of time Vesting Rights are requested
- ☐ Development schedule including timeline and phases
- ☐ Reason for request
- ☐ Other pertinent factors concerning the development
- ☐ Additional application fee for vesting rights application

**Miscellaneous:** ☑ **Right to Farm Policy** signed by Landowner(attached)

- ☐ **Liability Insurance for Solar, Wind and/or BESS projects**
- ☐ _____**# Paper Application sets**
- ☐ _____**Digital Copy of Application** (One sided only)
- ☐ **Posted Public Notice Verification:**
  - ☐ Notarized affidavit with photographs from a distance & close-up

  This must be submitted PRIOR to Planning Commission hearing and PRIOR to Morgan County Board of Commissioners hearing

☑ **Additional Information required by staff:**

Statements of Authority

APPLICANT & LANDOWNERS **MUST** SIGN APPLICATION ON NEXT PAGE

## APPLICANT & LANDOWNER'S STATEMENT

I certify that the information and exhibits I have submitted are true and correct to the best of my knowledge.
Application must be signed by landowners as shown on title insurance/commitment.

| | | | |
|---|---|---|---|
| [signature] 4/3/25 | | Brent M. Nation 3-11-25 | |
| Applicant Signature | Date | Landowner Signature | Date |
| | | | |
| Applicant Signature | Date | Landowner Signature | Date |

# MORGAN COUNTY RIGHT TO FARM POLICY

Morgan County is one of the most productive agricultural counties in Colorado. Ranching, farming, animal feeding, and all agricultural activities and operations in Morgan County are integral and necessary elements of the continued vitality of the County's economy, culture, landscape, and lifestyle. Over 70% of the County's acreage is devoted to farming and raising livestock with over 700 farms. The agricultural products produced by those farms create millions of dollars of market value. Morgan County recognizes the importance of agricultural operations as necessary and worthy of recognition and protection and supports policies to maintain the high-quality rural character of the County.

Living in Morgan County requires residents to accept the effects of agriculture and rural living as part of daily life. Agricultural users of the land are not expected to change their long-established agricultural practices to accommodate the intrusions of residential activities into a rural area. These effects may include noise from tractors, equipment, and aerial spraying at any time; dust from animal pens, field work, harvesting, and use of gravel roads; odor from confinement animal feeding operations, silage and manure; smoke from ditch burning; flies and mosquitoes; the use of pesticides and fertilizers; and movement of livestock or machinery on public roads. Under Colorado law, these activities are not considered nuisances and are protected.

Residents must also accept that public services in rural areas are different than urban or suburban areas. Specifically, regular road maintenance may be less available and may be at a lower level. In certain circumstances, the standard for maintenance may be determined on whether the road is passable and usable and not whether the road surface is rough. County gravel roads, no matter how often they are maintained, will not provide the same kind of surface expected from a paved road and will not support travel at the recommended speed. Further, the County may permit certain road maintenance activities by agricultural producers or other industries to allow those commercial activities to continue when County resources are unavailable due to other road issues or events. The County considers these activities to be integral to the protection of agricultural operations in Morgan County.

In addition, in Morgan County, utility services may be nonexistent or subject to interruption; law enforcement, fire protection and ambulance service will have considerably longer response times; and snow may not be removed from County roads for several days after a major snowstorm. The County prioritizes snow removal as it deems necessary.

People are exposed to different hazards in a rural setting than they are in an urban or suburban area. Farms, ponds, irrigation ditches, electrical service to pumps and oil field equipment and operations, noxious weeds, livestock, and territorial animals may present real threats to people. It is necessary that all activities are supervised for both the protection of the people and protection of agricultural activities and owners may need to fence property to ensure a safe environment.

All County residents are encouraged to learn about their rights and responsibilities and to act as good neighbors and citizens of Morgan County. This includes but is not limited to obligations under Colorado State law, including but not limited to, the Colorado Fence and Right to Farm laws, and Morgan County Zoning Regulations regarding maintenance of fences, controlling weeds, and keeping animals under control. Residents are responsible for understanding and accepting the implications of living in a rural agricultural area.

Information regarding these topics may be obtained from the Morgan County Extension Office and Planning and Zoning Department.

## RECEIPT AND STATEMENT OF UNDERSTANDING

I hereby certify that I have read and understood the Morgan County Right to Farm Policy. I further state that I am aware and acknowledge that the conditions of living in a rural area, primarily used for agricultural production, and that I understand these activities are protected under Colorado law and are not considered a nuisance.

Brent M. Nation 6-3-25

Signature Date

Brent M. Nation, City Manager

Printed Name

P.O. Box 100, Fort Morgan 80701

Address

Signature Date

Printed Name

Address

*Adopted by the Morgan County Board of County Commissioners by Resolution 2025 BCC 21*

# RECEIPT


## Morgan County

231 Ensign, Fort Morgan, CO 80701

(970) 542-3526


### SU2025-0003 | Special Use Permit

Receipt Number: 545810

**Payment Amount:** **$800.00**

July 17, 2025

| *Transaction Method* | *Payer* | *Cashier* | *Reference Number* |
|---|---|---|---|
| Credit Card | Brent Nation | Jenafer Santos | 6570 |

### Comments

### Assessed Fee Items

Fee items being paid by this payment

| *Assessed On* | *Fee Item* | *Account Code* | *Assessed* | *Amount Paid* | *Balance Due* |
|---|---|---|---|---|---|
| 07/21/25 | Special Use - Full Review | | $800.00 | $800.00 | $0.00 |
| | | ***Totals:*** | $800.00 | $800.00 | |
| | | | | **Previous Payments** | $0.00 |
| | | | | **Remaining Balance Due** | $0.00 |

### Application Info

**Property Address**

18169 County Road 22
Fort Morgan, CO 80701

**Property Owner**

City of Fort Morgan

**Property Owner Address**

710 E. Railroad Ave
Fort Morgan, CO 80701

**Valuation**

**Description of Work**

Update and expansion to the Wastewater Treatment Facility for the City of Fort Morgan

**June 5, 2025**

Subject: Statement of Authority
Morgan County Planning and Zoning

Attention: Ms. Nicole Hay, Director
Morgan County Planning and Zoning
231 Ensign Street, Fort Morgan, CO 80701

Project No.: 100541.00

Dear Ms. Hay:

This statement serves to confirm that the City of Fort Morgan authorizes Brent M. Nation and Victor Perez to apply for the Special Use Permit for the City of Fort Morgan Wastewater Treatment Facility.

Brent M. Nation is the City Manager for the City of Fort Morgan, and Victor Perez is the Wastewater Treatment Facility Superintendent. Both individuals are authorized to act on behalf of the City of Fort Morgan in matters related to the Special Use Permit application, including providing this confirmation of legal standing.

Brent M. Nation
City Manager
City of Fort Morgan

Victor Perez
Wastewater Treatment Superintendent
City of Fort Morgan

STATE OF COLORADO }
COUNTY OF MORGAN } SS

The foregoing instrument was acknowledged before me this 5th day of June,
by Brent M Nation and Victor Perez.
Witness my hand and official seal.

Notary Public

My commission expires: December 12, 2025

JILL CURTIS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20134077531
MY COMMISSION EXPIRES DECEMBER 12, 2025

# TECHNICAL MEMORANDUM

**DATE:** May 22, 2025
**TO:** Morgan County Planning and Zoning Department
**FROM:** Merrick & Company
**JOB NO.:** 100541-00
**SUBJECT:** Special Use Permit Amendment Request

# SECTION 1 Project Narrative

## 1.1 Introduction

The City of Fort Morgan (City) is in the design process of expanding and updating its Wastewater Treatment Facility (WWTF). Merrick and Company (Merrick) is the engineer of record for the design and permitting of the project. The City and Merrick understand the WWTF is under the original Special Use Permit approved in 1995. In communication with Morgan County Planning and Zoning, they requested an amendment to the original special use permit as a part of the project. The following tech memo has been submitted in accordance with the requirements of the Special Use Permit Regulations.

## 1.2 Project Description

The existing liquid stream treatment process consists of the following unit processes:

- Screening
- Grit removal
- Influent flume (flow measurement)
- Extended aeration with the post-anoxic zone (aeration basins)
- Secondary clarification
- Ultraviolet (UV) disinfection
- River outfall

Flow is conveyed through the treatment facility by gravity.

The WWTF expansion includes the following adjustments to the site/equipment.

- Pretreatment Building
    - Replacement of the second bar screen (internal to the building)
    - Replacement of the grit system (internal to the building)
- Secondary Treatment
    - Addition of a splitter box to the west of the existing biological nutrient reactor (BNR) basins
    - Split existing two (2) larger BNR basins into four (4) smaller BNR basins
    - Expansion to the north with an additional BNR basin (providing a 5$^{th}$ BNR to match other modified four (4) BNRs above)
    - Expansion to the north with a new blower room connected to the main building
    - Expansion to the north with a third clarifier

    - Replacement of existing blowers and pumps (internal to the Main Administration and Mechanical building)
- Disinfection Treatment
    - Removal of discharge weir
- Storage Building and Maintenance Garage
    - Addition of a new maintenance garage to the south of the existing Disinfection Building
- Solids Treatment
    - The addition of a third digester to the east of the existing two digesters
    - Expansion of the Solids Handling Building to the east
    - Replacement of blowers and pumps (internal to this building)
    - Replacement of mixing and aeration (internal to the existing digesters)

## 1.3 Purpose of Request

The original treatment plant design (completed in 1996) included a special use permit (dated 1995) for constructing and operating the Wastewater Treatment Facility. The purpose of the request is to update and amend the original special use Permit to accommodate the planned expansion.

## 1.4 Morgan County Comprehensive Plan Compliance

The design meets and accounts for the Morgan County Comprehensive Plan by accommodating the following elements into design:

- Preserve wetlands and control drainage discharges from the site, working to preserve water quality to the South Platte River.
- Encourage development within the growth management area (GMA) for the City of Fort Morgan by increasing the capacity and treatment capabilities of the WWTF, thereby accommodating future growth.
- Upgrade the performance of the wastewater treatment system to substantially decrease pollutant loadings to the South Platte River, including nutrients (nitrogen and phosphorus) that directly contribute to eutrophication.

## 1.5 Morgan County Special Use Permit Criteria Compliance

### 1.5.1 MORGAN COUNTY COMPREHENSIVE PLAN CONFORMANCE

The project's design and development are in compliance with the Morgan County Comprehensive Plan as they meet the environmental and utility sections' intent for environmental responsibility and encouragement of development within the GMA.

### 1.5.2 APPLICATION DOCUMENTS ARE COMPLETE AND CLEAR

This memorandum intends to provide complete and clear documentation in accordance with the Special Use Permit application.

### 1.5.3 SITE PLAN CONFORMANCE

The design development takes into account the City, County, State, and Federal requirements for site constraints and design standards. The site uses Mile High Flood District requirements for stormwater

controls, County requirements for setbacks, and State and Federal requirements for wastewater treatment and discharge.

### 1.5.4 ON AND OFFSITE IMPACTS

The design and development of the project includes the following assessments

- Odor control measures in compliance with CDPHE and County regulations,
- Stormwater control measures comply with CDPHE, County and City regulations, and best practices.
- Traffic and road impacts are due to the transportation of solid waste from the Facility to the city-owned land application site.

The City and Merrick are initiating conversations with the Ditch company adjacent to the site to understand if improvements can be made to mitigate groundwater impact on the project and the continued use of the site. The project would like to line the portion of the ditch adjacent to the site to limit irrigation seepage into the groundwater table from the ditch.

### 1.5.5 COMPATIBILITY WITH SURROUNDING LAND USE

The WWTF is currently adjacent to I-76 ROW and agricultural property. The site is buffered with a berm along the ditch to the south, which resides on the agricultural property. The berm then has an access road below it, which further buffers the site buildings and treatment basins. On the north side of the City property, wetlands confine the site, which are directly adjacent to the I-76 ROW corridor. The wetlands include native trees that provide a visual buffer from the highway.

### 1.5.6 PUBLIC HEALTH, SAFETY, AND WELFARE RISK

The purpose of the project and the WWTF is to protect public health and environmental safety by treating municipal and industrial waste prior to discharge to the South Platte River. The river provides recreational activities for the surrounding area, and protecting the water quality is important for all.

### 1.5.7 PROPOSED SPECIAL USE

The WWTF is not changing its special use and does not plan to develop the property in any non-conforming way.

### 1.5.8 PROJECT PUBLIC NEED

The Colorado Department of Public Health and Environment (CDPHE) has issued regulatory restrictions on the South Platte River. These restrictions mostly pertain to nutrient removal and limiting water quality degradation. The Facility's upgrade improves its ability to remove and treat phosphorus and nitrogen. The upgrades also set the Facility up for future regulatory restrictions when added to its discharge permit. This project is necessary to meet the current and future regulatory requirements set forth by CDPHE.

### 1.5.9 POTABLE WATER (CONSUMPTIVE USE)

The WWTF is not increasing the consumptive use of potable water on site with the project.

## 1.6 Morgan County Supplementary Regulations

The design has set back requirements of 150 feet from the property line or 350 feet from any residence, whichever is greater. The current Facility is over 1,000 feet from any residence but falls within 150 feet from the south property line. The existing pretreatment building is approximately 120 feet from the property line

along the property's southern edge. The adjacent property is agricultural, separated by the Upper Platte and Beaver Canal. The property owner is Joel Degenhart, who owns a residential property at the intersection of MCR 22 and E. Riverview Ave. However, the adjacent property is at least 10 ft in elevation above the WWTF. Any catastrophic event where a release is possible would not impact the agricultural property.

## 1.7 Adjacent Use Impact

The design does not impact adjacent uses. The Facility will continue to operate as it currently does. During construction, traffic along Morgan County Road 22 will increase. The project team will include a vehicle tracking pad prior to entering and leaving Morgan County Road 22 at the paved intersection.

## 1.8 Offsite Mitigation Measures

The project team will include the following design elements to mitigate negative offsite issues:

- Vehicle tracking pad before entering and leaving Morgan County Road 22 at the paved intersection.
- Construction dewatering using existing and new and existing groundwater wells
    - Request for lining of the adjacent ditch to minimize dewatering efforts
- Stormwater and dewatering best management practices to mitigate wetland and offsite degradation of water quality
- Concrete walls around top of digesters to prevent foam or liquid release from overtopping of digesters
- No rise in flood elevation or mitigation issues.

## 1.9 Development & Implementation Schedule

The following is a tentative schedule for the project:

- Engineering Design – February 2024 to September 2025
- Construction Bidding – October 2025 to December 2025
- Pre-Construction Activities – January 2026 to March 2026
- Construction Activities – April 2026 to October 2027

## 1.10 Proposed Length of Permit

The Facility has been designed to remain operable for 50 years without requiring significant changes to the site plan. The proposed length of time of the permit is 20 years. Vesting rights will not be required as a result of the length of time, per the City Manager.

## 1.11 Public Improvements

This project does not require other public improvements.

# SECTION 2 Environmental Impact

The Facility has been designed to mitigate impacts on the following:

- Air Quality: no change is expected.
- Noise: contractor will be responsible and required to mitigate noise and no significant impacts are expected to occur.

- Wetlands: the Facility has been designed specifically to avoid any changes to wetlands and no impacts are expected to occur.
- Dust: the Contractor will be responsible and required to mitigate dust issues and no significant impacts are expected to occur.
- Odor: system improvements include odor mitigation.
- Wildlife: no changes are expected to occur.
- Existing Vegetation: the Contractor will be required to replace any vegetation loss outside of new or expanded buildings.
- Stormwater Runoff: best practices will be closely followed during construction and post-construction mitigation for protecting water quality of adjacent properties.
- Visual Amenities: the project includes updates to building aesthetics and planting of vegetation.
- Land Forms: no expected changes.
- Water Resources: water consumption is not expected to greatly increase. Facility upgrades will result in cleaner water in the South Platte River.

# SECTION 3 Maps and Plans

The following information is included to satisfy the Maps and Plans requirements of the application:

- Special Use Map: see Attachment 1 – Special Use Map
- Drainage/Runoff Control Plan: the site does not meet the Criteria as outlined in the Application.
- Geotechnical Report: see attachment 2 – Geotechnical Report
- Maintenance Statement: the project does not include changes to the Facility's maintenance. The City owns and will maintain all wastewater treatment facilities, following best practices and industry standards.
- Water and/or Wind Erosion Control Plan: see Attachment 3 – Erosion Control Plan
- Specification Sheet: the design specifications are numerous and are readily available upon request to Andrew Stewart, Program Manager [redacted]
- Emergency Operation Plan: see Attachment 4 – Emergency Operation Plan

# SECTION 4 Ownership

The following information is included to satisfy the Ownership requirements of the application:

- Current Title Insurance Commitment: see Attachment 5 – Title Insurance Commitment
- Mineral Rights Holders Notification: there are no mineral rights holders for the property.
- Proof of Current Paid Taxes: the property is tax exempt.

# SECTION 5 Utilities/Access

The following information is included to satisfy the Utilities/Access requirements of the application:

- Water Tap: the City has an existing water tap sufficient for potable water use on site.
- Sewer: the Facility's treatment system is utilized for all sanitary waste.
- Electric: the Facility has two connections to the electrical grid and an on-site backup generator, which will be upgraded as part of the expansion.

- Ditch Company: see the attached file for proof of contact with the Ditch Company adjacent to the site's south side.
- Architecture Control Approval: not applicable

# SECTION 6 Vested Rights

Vesting Rights are not applicable to this application.

# SECTION 7 Miscellaneous

The following information is included to satisfy the Miscellaneous requirements of the application:

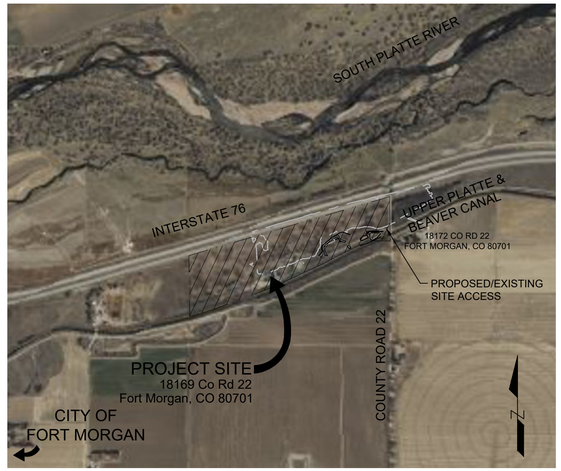
- Right to Farm Policy: see Attachment 6 – Right to Farm Policy
- Posted Public Notice Verification: the City will post a Public Notice in conformance with the project and funding requirements.
- The following is a list of names and addresses of adjacent property owners within 1,320 feet of the area's perimeter for the special use permit.
    - Joel M. Degenhart
        - 21267 Hwy 34, Fort Morgan, CO 80701
        - 18019 Co Rd 22, Fort Morgan, CO 80701
    - William and Nancy Lauch
        - 21801 Hwy 34, Fort Morgan, CO 80701
    - Gary and Carol Foos
        - 18172 Co Rd 22, Fort Morgan, CO 80701
    - Clark, Nicolas, and Ryan H Trust
        - 22789 N 176 Frontage Rd, Fort Morgan, CO 80701
    - Colorado Department of Transportation
        - 10601 W. 10th St., Greeley, CO 80634
    - South Platte Sportsman Group, Inc
        - PO Box 597, Fort Morgan, CO 80701
    - DPG Farms, LLC
        - 3300 S. Parker Rd, Suite 300, Aurora, CO 80014
    - FUR, FIN, and Feather Inc.
        - PO Box 597, Fort Morgan, CO 80701; Attention: Andrew F. McClary

# CITY OF FORT MORGAN

## WWTF EXPANSION - SPECIAL USE PLAN MAP

FORT MORGAN, CO

JULY, 2025




VICINITY MAP

SCALE: 1:1000

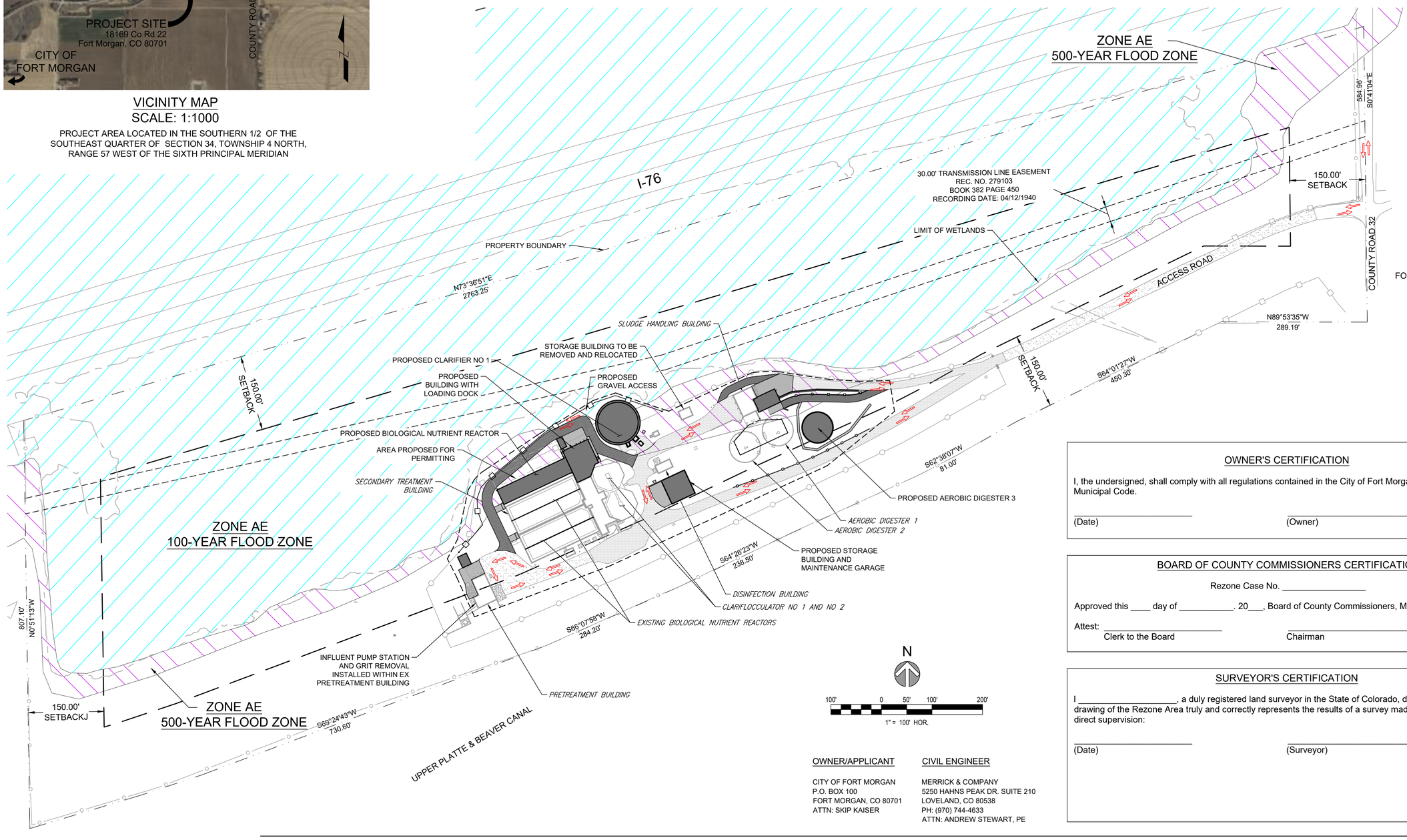
PROJECT AREA LOCATED IN THE SOUTHERN 1/2 OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 4 NORTH, RANGE 57 WEST OF THE SIXTH PRINCIPAL MERIDIAN

## LEGAL DESCRIPTION

A PARCEL OF LAND IN THE SE1/4 OF SECTION 34, TOWNSHIP 4 NORTH, RANGE 57 WEST OF THE 6TH P.M., MORE PARTICULARLY DESCRIBED IN THE WARRANTY DEED RECORDED OCTOBER 12, 1994 AT RECEPTION NO. 744887 IN BOOK 973 AT PAGE 311, LESS AND EXCEPT ANY PORTION THEREOF DESCRIBED IN THE SPECIAL WARRANTY DEED RECORDED SEPTEMBER 23, 1957 AT RECEPTION NO. 437254 IN BOOK 589 AT PAGE 186, COUNTY OF MORGAN, STATE OF COLORADO.

## FLOODPLAIN STATEMENT

PROPOSED AND EXISTING BUILDINGS AND STRUCTURES ARE NOT LOCATED WITHIN THE 100-YEAR FLOODPLAIN, PER FEMA FIRM NO. 08087CO475E EFFECTIVE 05/18/2021.




18172 CO RD 22
FORT MORGAN, CO 80701

### OWNER/APPLICANT

CITY OF FORT MORGAN
P.O. BOX 100
FORT MORGAN, CO 80701
ATTN: SKIP KAISER

### CIVIL ENGINEER

MERRICK & COMPANY
5250 HAHNS PEAK DR. SUITE 210
LOVELAND, CO 80538
PH: (970) 744-4633
ATTN: ANDREW STEWART, PE

### OWNER'S CERTIFICATION

I, the undersigned, shall comply with all regulations contained in the City of Fort Morgan Charter and Municipal Code.

(Date) (Owner)

### BOARD OF COUNTY COMMISSIONERS CERTIFICATION

Rezone Case No. _____

Approved this ____ day of _____. 20___, Board of County Commissioners, Morgan County, Colorado.

Attest: _____ _____
Clerk to the Board Chairman

### SURVEYOR'S CERTIFICATION

I _____, a duly registered land surveyor in the State of Colorado, do hereby certify the this drawing of the Rezone Area truly and correctly represents the results of a survey made by me or under my direct supervision:

(Date) (Surveyor)

SCALE BAR
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS DRAWING ADJUST SCALES ACCORDINGLY

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CITY OF FORT MORGAN, COLORADO
WASTEWATER TREATMENT FACILITY EXPANSION PROJECT
SPECIAL USE PLAN MAP

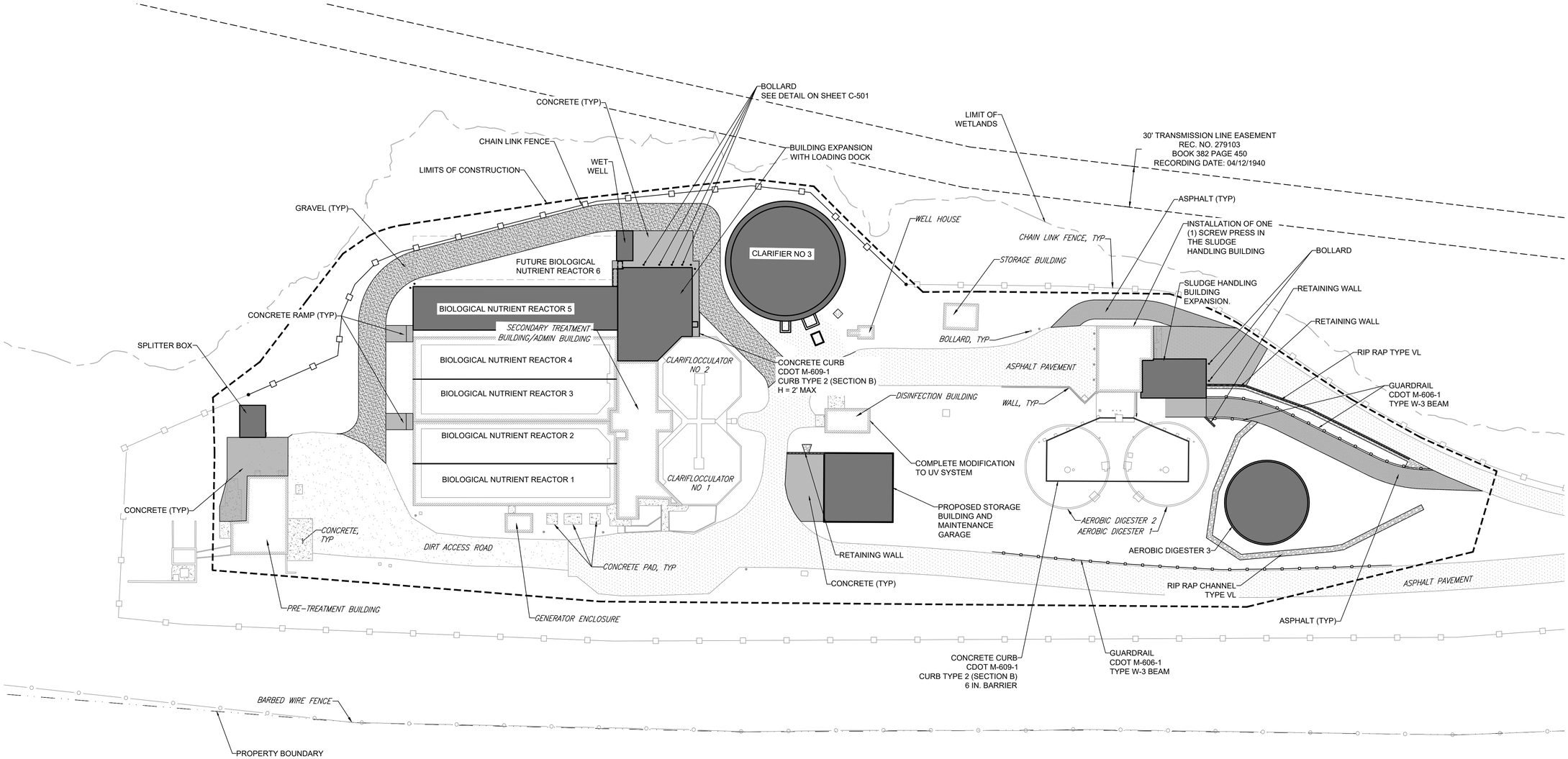
ISSUED FOR REVIEW

100541

JULY, 2025

SUP-1

1 OF 1




Know what's **below.** **Call** before you dig.

N

40' 0 20' 40' 80'

1" = 40' HOR.

60% DESIGN REVIEW

SCALE BAR
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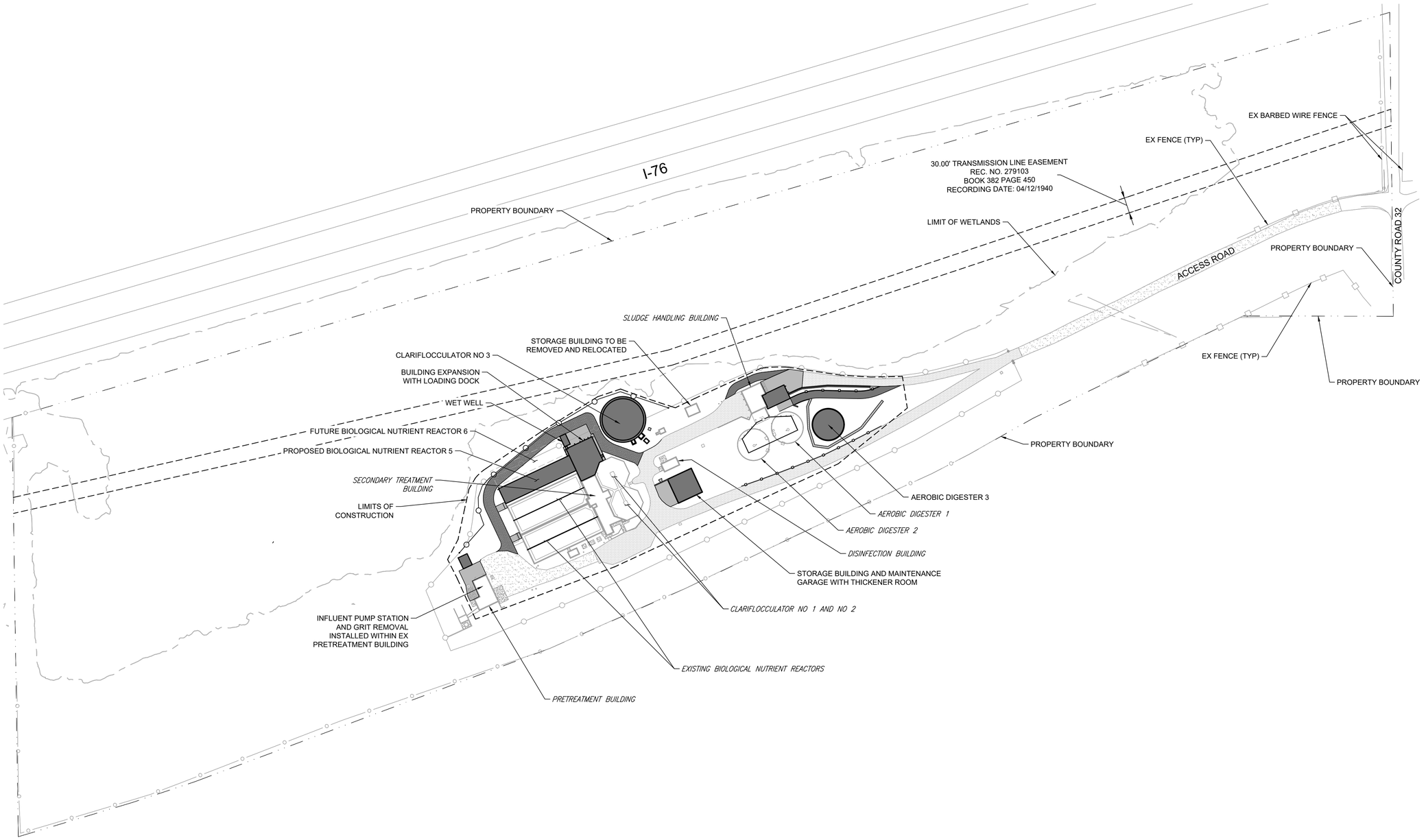
| REV | REVISION DESCRIPTION | DATE | DSGN | CHKD | APPR |
|---|---|---|---|---|---|
| | | | | | |

DESIGNED BY: ----
DRAWN BY: ----
CHECKED BY: ----
APPROVED BY: ----

TITLE
CITY OF FORT MORGAN, COLORADO
WASTEWATER TREATMENT FACILITY EXPANSION PROJECT
SITE IMPROVEMENTS KEY PLAN

PE STAMP
ISSUED FOR REVIEW
FOR AND ON BEHALF OF MERRICK AND COMPANY

PROJECT NUMBER 100541
DATE JULY, 2025
SHEET C-102
DRAWING NO. #####




## SITE CIVIL LEGEND

- ASPHALT PAVEMENT
- CONCRETE
- GRAVEL
- BUILDING
- WOOD FENCE
- CHAIN LINK FENCE
- WIRE FENCE
- BARBED WIRE FENCE
- VINYL FENCE
- RETAINING WALL

N

100' 0 50' 100' 200'

1" = 100' HOR.

60% DESIGN REVIEW

811 Know what's below. Call before you dig.

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| REV | REVISION DESCRIPTION | DATE | DSGN | CHKD | APPR |
|---|---|---|---|---|---|
| | | | | | |

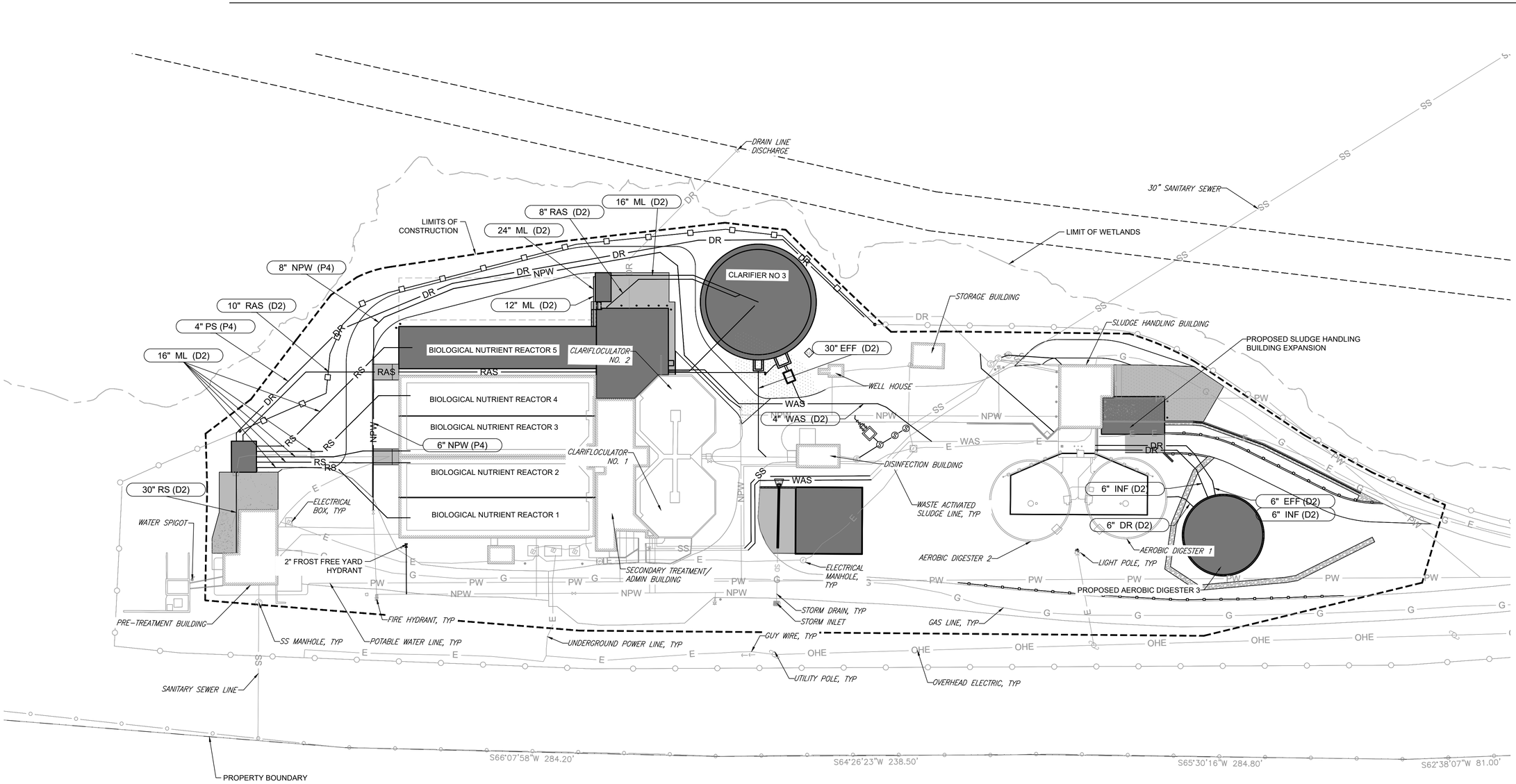
DESIGNED BY: -----
DRAWN BY: -----
CHECKED BY: -----
APPROVED BY: -----

TITLE
# CITY OF FORT MORGAN, COLORADO
WASTEWATER TREATMENT FACILITY EXPANSION PROJECT

## OVERALL SITE PLAN

PE STAMP
ISSUED FOR REVIEW
FOR AND ON BEHALF OF MERRICK AND COMPANY

PROJECT NUMBER 100541
DATE APRIL, 2025
SHEET C-101
DRAWING NO. ####




NOTES:

1. DUCTILE IRON PIPE TO RECEIVE POLYETHYLENE ENCASEMENT WRAP. SEE DETAIL SHEET C-501 FOR POLYETHYLENE WRAP DETAIL
2. REFERENCE SPECIFICATIONS FOR MANUFACTURER AND TYPE OF POLYETHYLENE WRAP MATERIAL
3. SEE SPECIFICATIONS FOR TYPE OF JOINT RESTRAINT DETAIL TO BE USED
4. SEE DETAIL SHEET C-501 FOR JOINT RESTRAINT SCHEDULE OF LENGTHS.
5. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL UTILITY DESIGN.

40' 0 20' 40' 80'

1" = 40' HOR.

60% DESIGN REVIEW

Know what's **below.** **Call** before you dig.

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| REV | REVISION DESCRIPTION | DATE | DSGN | CHKD | APPR |
|---|---|---|---|---|---|
| | | | | | |

DESIGNED BY: -----
DRAWN BY: -----
CHECKED BY: -----
APPROVED BY: -----

TITLE
CITY OF FORT MORGAN, COLORADO
WASTEWATER TREATMENT FACILITY EXPANSION PROJECT
PROPOSED UTILITY PLAN

PE STAMP
ISSUED FOR REVIEW
FOR AND ON BEHALF OF MERRICK AND COMPANY

PROJECT NUMBER 100541
DATE JULY, 2025
SHEET C-113
DRAWING NO. #####

# DRAINAGE MEMORANDUM
# CITY OF FORT MORGAN – WWTF EXPANSION

**DATE:** JUNE 26, 2025

**TO:** CITY OF FORT MORGAN

**FROM:** CONNER BURBA, PE

**CC:** FILE – MERRICK PROJECT NO. 100541.00

The purpose of this memorandum is to summarize the proposed improvements at the City of Fort Morgan (City) Wastewater Treatment Facility (WWTF) and confirm compliance with City and Colorado Department of Health and Environment (CDPHE) drainage and water quality standards.

The study area is located in the Southeast 1/4 of Section 34, Township 4 North, Range 57 West of the 6$^{th}$ Principle Meridian in Fort Morgan, Colorado. At grade improvements to the site include installation of an open-air Biological Nutrient Reactor, installation of an open-air clariflocculator, installation of a storage building, expansion of an existing sludge handling building, and installation of approximately 8,820 square feet (sf) of asphalt and concrete drive, 10,180 sf of gravel drive, and 7,995 sf of additional covered building area. Total impervious area added to the site with all improvements is approximately 26,995 sf.

The soil type across the site consists of GP type soil (Pits, Gravel). The soil present on the site is of Hydrologic Soil Group A.

A portion of the proposed improvements (gravel access road) is within a 100-year floodplain, FIRM #08087C0475E; effective 05/18/2021. No buildings are being proposed within the 100-year floodplain.

Runoff from the site sheet flows, generally, overland to the north and is captured in an existing freshwater wetland. The existing wetland has an area of approximately 965,000 ft$^2$ and is, by definition, a non-jurisdictional wetlands. The existing wetlands accounts for over one-half of the overall property area and provides water quality and detention for runoff from the site. Runoff treated and detained in the wetlands is conveyed to one of two inlet structures to the north of the site along the southern boundary of I-76 where it is conveyed to the north underneath I-76 to a natural channel where it is conveyed to the South Platte River. It is approximately 6,000 LF from the nearest outlet structure to the outfall to the South Platte River.

Runoff reduction is obtained through infiltration between the proposed impervious areas and the limits of the freshwater wetland. The total area of receiving pervious area between the site improvements and the wetlands is approximately 48,338 square feet. Total Water Quality Capture

Volume (WQCV) reduction exceeds the required volume of 1,012 $ft^3$ for the additional impervious area from the site improvements. Additional water quality, detention and infiltration is achieved within the 965,000 $ft^2$ wetland prior to being conveyed to the South Platte River. It is the professional opinion of the Engineer that the proposed improvements shall not dramatically increase the anticipated flows being conveyed to the South Platte River, nor will it impact the water quality at the outfall to the South Platte River. No additional on-site detention or water quality is proposed for the improvements being made to the WWTF.

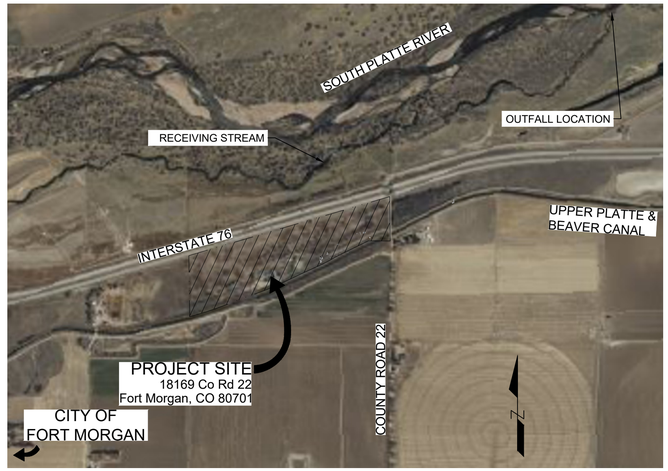
# APPENDICES

# CITY OF FORT MORGAN

## WWTF EXPANSION - IMPROVEMENTS MAP

FORT MORGAN, CO

JUNE, 2025




VICINITY MAP

SCALE: 1:1000

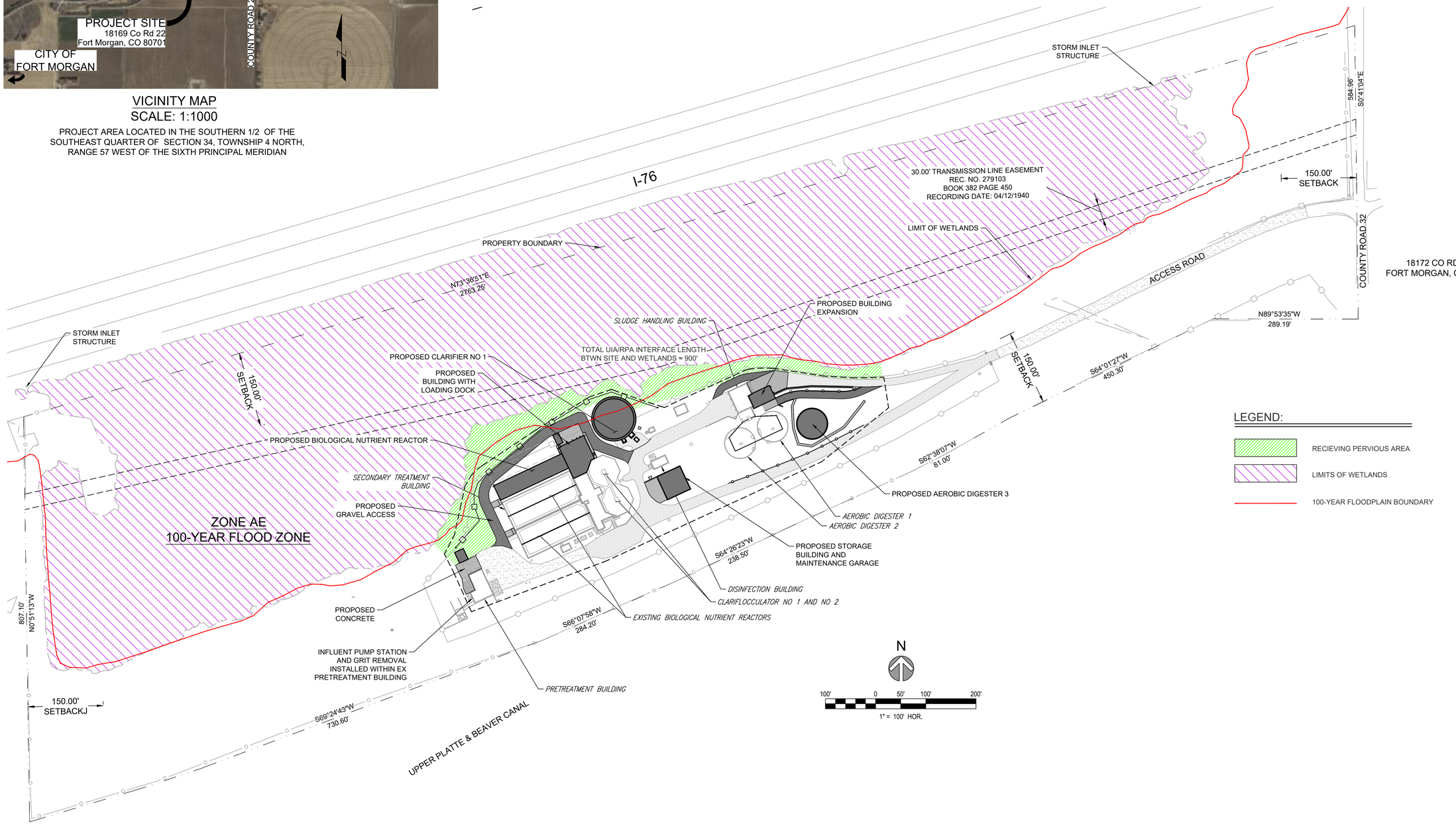
PROJECT AREA LOCATED IN THE SOUTHERN 1/2 OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 4 NORTH, RANGE 57 WEST OF THE SIXTH PRINCIPAL MERIDIAN

## LEGAL DESCRIPTION

A PARCEL OF LAND IN THE SE1/4 OF SECTION 34, TOWNSHIP 4 NORTH, RANGE 57 WEST OF THE 6TH P.M., MORE PARTICULARLY DESCRIBED IN THE WARRANTY DEED RECORDED OCTOBER 12, 1994 AT RECEPTION NO. 744887 IN BOOK 973 AT PAGE 311, LESS AND EXCEPT ANY PORTION THEREOF DESCRIBED IN THE SPECIAL WARRANTY DEED RECORDED SEPTEMBER 23, 1957 AT RECEPTION NO. 437254 IN BOOK 589 AT PAGE 186, COUNTY OF MORGAN, STATE OF COLORADO.

## FLOODPLAIN STATEMENT

PROPOSED AND EXISTING BUILDINGS AND STRUCTURES ARE NOT LOCATED WITHIN THE 100-YEAR FLOODPLAIN, PER FEMA FIRM NO. 08087CO475E EFFECTIVE 05/18/2021.




LEGEND:

- RECIEVING PERVIOUS AREA
- LIMITS OF WETLANDS
- 100-YEAR FLOODPLAIN BOUNDARY

18172 CO RD 22
FORT MORGAN, CO 80701

SCALE BAR
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
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CITY OF FORT MORGAN, COLORADO
WASTEWATER TREATMENT FACILITY EXPANSION PROJECT

SITE IMPROVEMENTS PLAN MAP

ISSUED FOR REVIEW

100541

JUNE 26, 2025

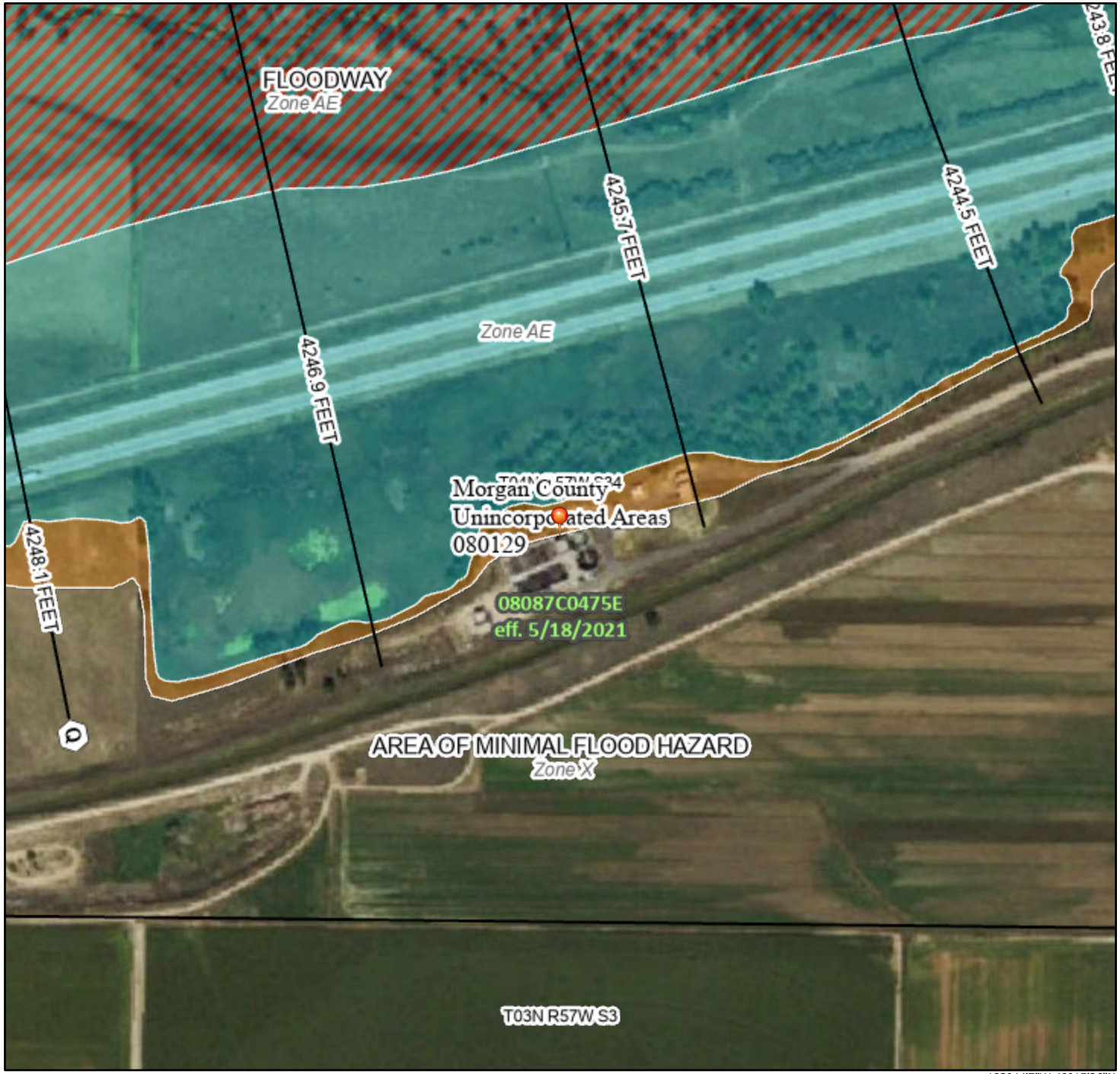
DR-1

1 OF 1

# National Flood Hazard Layer FIRMette

FEMA

103°44'44"W 40°16'4"N




103°44'7"W 40°15'36"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
- 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

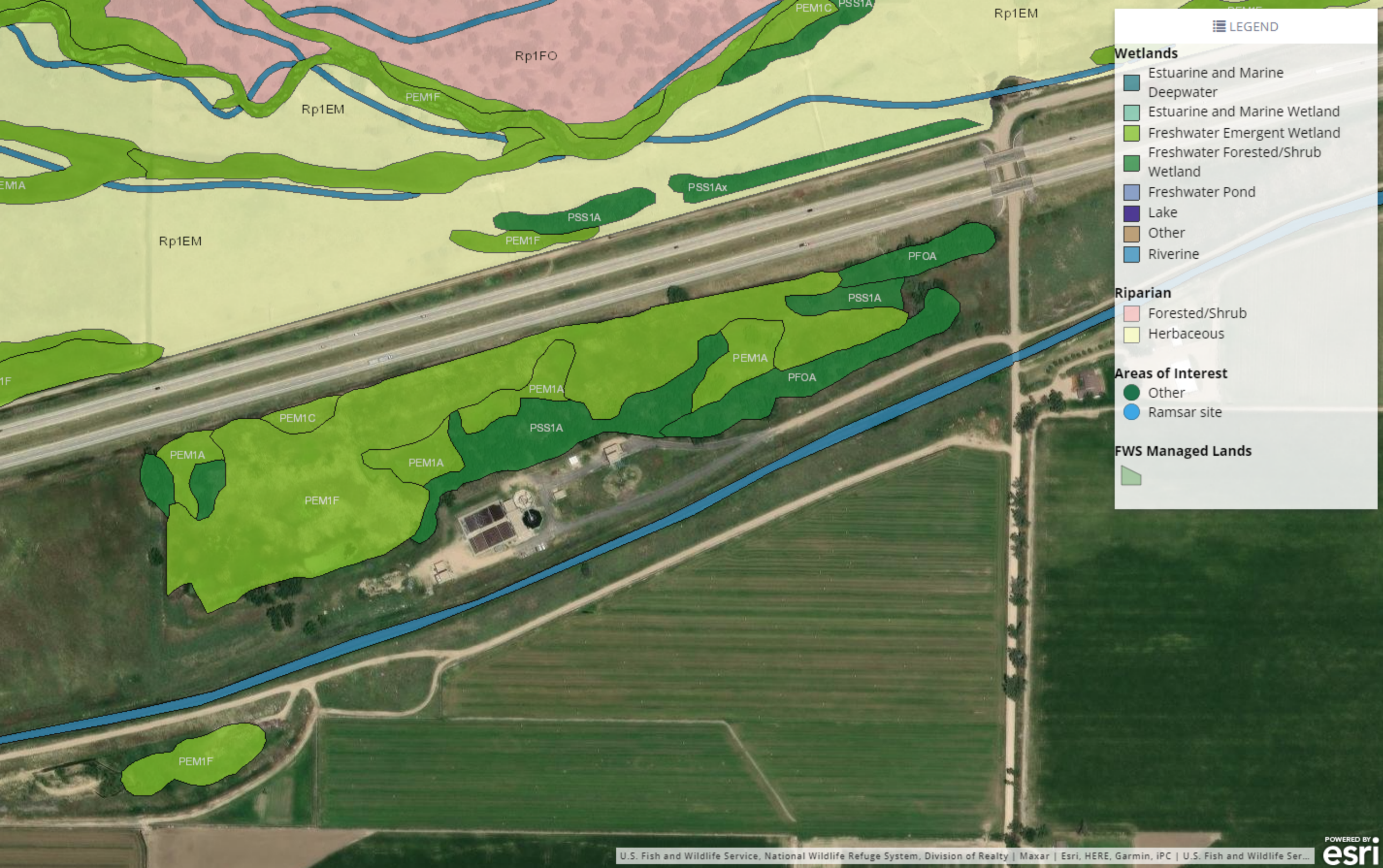
N

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 6/25/2025 at 3:45 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.


Rp1FO
Rp1EM
PEM1F
Rp1EM
PSS1Ax
PSS1A
PEM1F
Rp1EM
PEM1C
PSS1A
PFOA
PSS1A
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PFOA
PEM1A
PEM1C
PSS1A
PEM1A
PEM1A
PEM1F
PEM1F
LEGEND
Wetlands
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
Riparian
Forested/Shrub
Herbaceous
Areas of Interest
Other
Ramsar site
FWS Managed Lands
U.S. Fish and Wildlife Service, National Wildlife Refuge System, Division of Realty | Maxar | Esri, HERE, Garmin, iPC | U.S. Fish and Wildlife Ser...
POWERED BY esri

# Design Procedure Form: Runoff Reduction

UD-BMP (Version 3.07, March 2018) **Sheet 1 of 1**

| | |
|---|---|
| **Designer:** | **Conner Burba** |
| **Company:** | **Merrick & Company** |
| **Date:** | **June 25, 2025** |
| **Project:** | **Fort Morgan WWTF** |
| **Location:** | **Fort Morgan, CO** |

## SITE INFORMATION (User Input in Blue Cells)

WQCV Rainfall Depth: 0.60 inches

Depth of Average Runoff Producing Storm, $d_6$ = 0.43 inches (for Watersheds Outside of the Denver Region, Figure 3-1 in USDCM Vol. 3)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area Type | UIA:RPA | | | | | | | | | | | |
| Area ID | 1 | | | | | | | | | | | |
| Downstream Design Point ID | 2 | | | | | | | | | | | |
| Downstream BMP Type | CWP | | | | | | | | | | | |
| DCIA ($ft^2$) | -- | | | | | | | | | | | |
| UIA ($ft^2$) | 26,995 | | | | | | | | | | | |
| RPA ($ft^2$) | 48,338 | | | | | | | | | | | |
| SPA ($ft^2$) | -- | | | | | | | | | | | |
| HSG A (%) | 100% | | | | | | | | | | | |
| HSG B (%) | 0% | | | | | | | | | | | |
| HSG C/D (%) | 0% | | | | | | | | | | | |
| Average Slope of RPA (ft/ft) | 0.050 | | | | | | | | | | | |
| UIA:RPA Interface Width (ft) | 900.00 | | | | | | | | | | | |

## CALCULATED RUNOFF RESULTS

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area ID | 1 | | | | | | | | | | | |
| UIA:RPA Area ($ft^2$) | 75,333 | | | | | | | | | | | |
| L / W Ratio | 0.09 | | | | | | | | | | | |
| UIA / Area | 0.3583 | | | | | | | | | | | |
| Runoff (in) | 0.00 | | | | | | | | | | | |
| Runoff ($ft^3$) | 0 | | | | | | | | | | | |
| Runoff Reduction ($ft^3$) | 1125 | | | | | | | | | | | |

## CALCULATED WQCV RESULTS

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area ID | 1 | | | | | | | | | | | |
| WQCV ($ft^3$) | 1012 | | | | | | | | | | | |
| WQCV Reduction ($ft^3$) | 1125 | | | | | | | | | | | |
| WQCV Reduction (%) | 111% | | | | | | | | | | | |
| Untreated WQCV ($ft^3$) | -112 | | | | | | | | | | | |

## CALCULATED DESIGN POINT RESULTS (sums results from all columns with the same Downstream Design Point ID)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Downstream Design Point ID | 2 | | | | | | | | | | | |
| DCIA ($ft^2$) | 0 | | | | | | | | | | | |
| UIA ($ft^2$) | 26,995 | | | | | | | | | | | |
| RPA ($ft^2$) | 48,338 | | | | | | | | | | | |
| SPA ($ft^2$) | 0 | | | | | | | | | | | |
| Total Area ($ft^2$) | 75,333 | | | | | | | | | | | |
| Total Impervious Area ($ft^2$) | 26,995 | | | | | | | | | | | |
| WQCV ($ft^3$) | 1,012 | | | | | | | | | | | |
| WQCV Reduction ($ft^3$) | 1,125 | | | | | | | | | | | |
| WQCV Reduction (%) | 111% | | | | | | | | | | | |
| Untreated WQCV ($ft^3$) | -112 | | | | | | | | | | | |

## CALCULATED SITE RESULTS (sums results from all columns in worksheet)

| | |
|---|---|
| Total Area ($ft^2$) | 75,333 |
| Total Impervious Area ($ft^2$) | 26,995 |
| WQCV ($ft^3$) | 1,012 |
| WQCV Reduction ($ft^3$) | 1,125 |
| WQCV Reduction (%) | 111% |
| Untreated WQCV ($ft^3$) | -112 |

United States Department of Agriculture

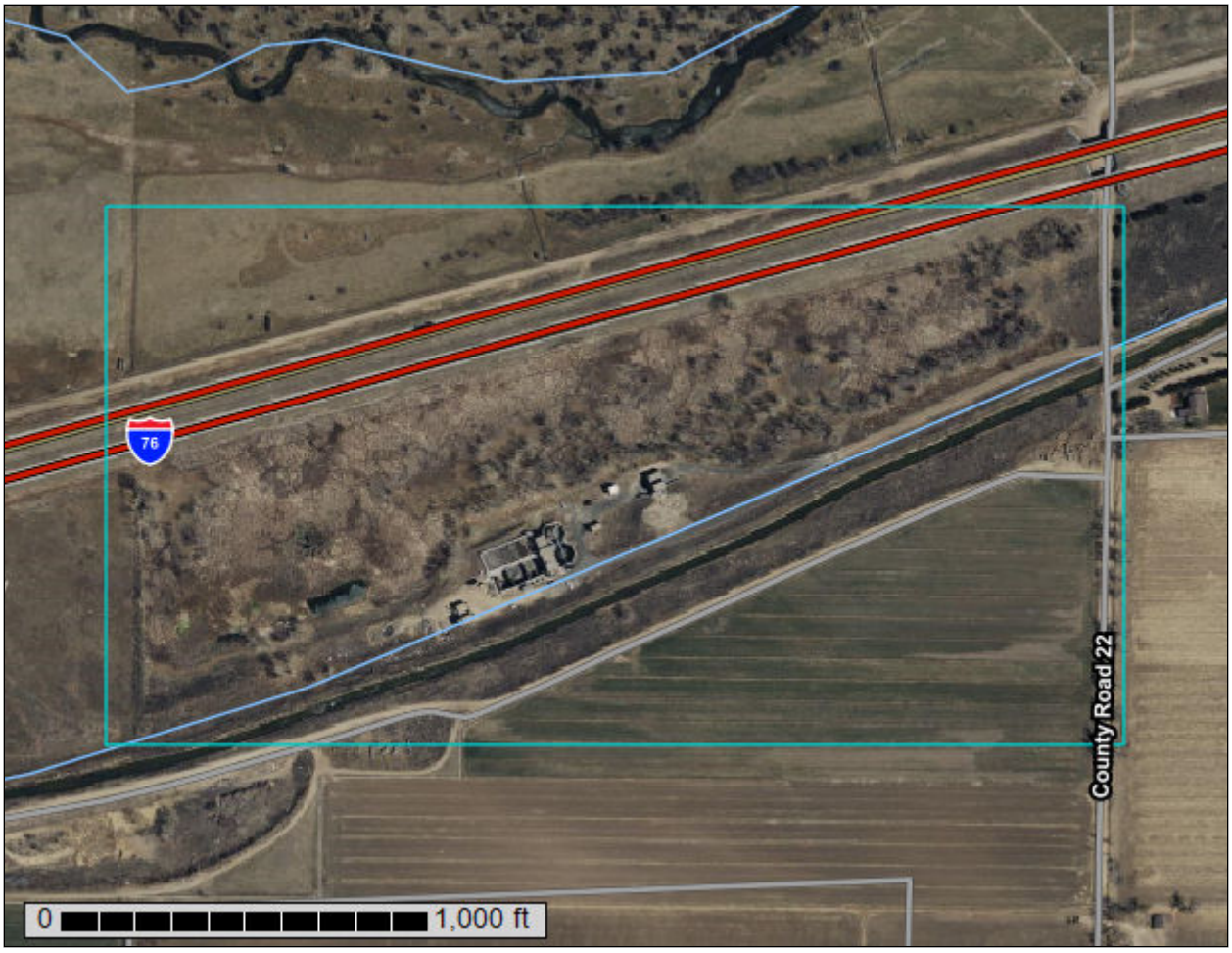
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Morgan County, Colorado

## Fort Morgan WWTF




June 24, 2025

# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# Contents

# How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

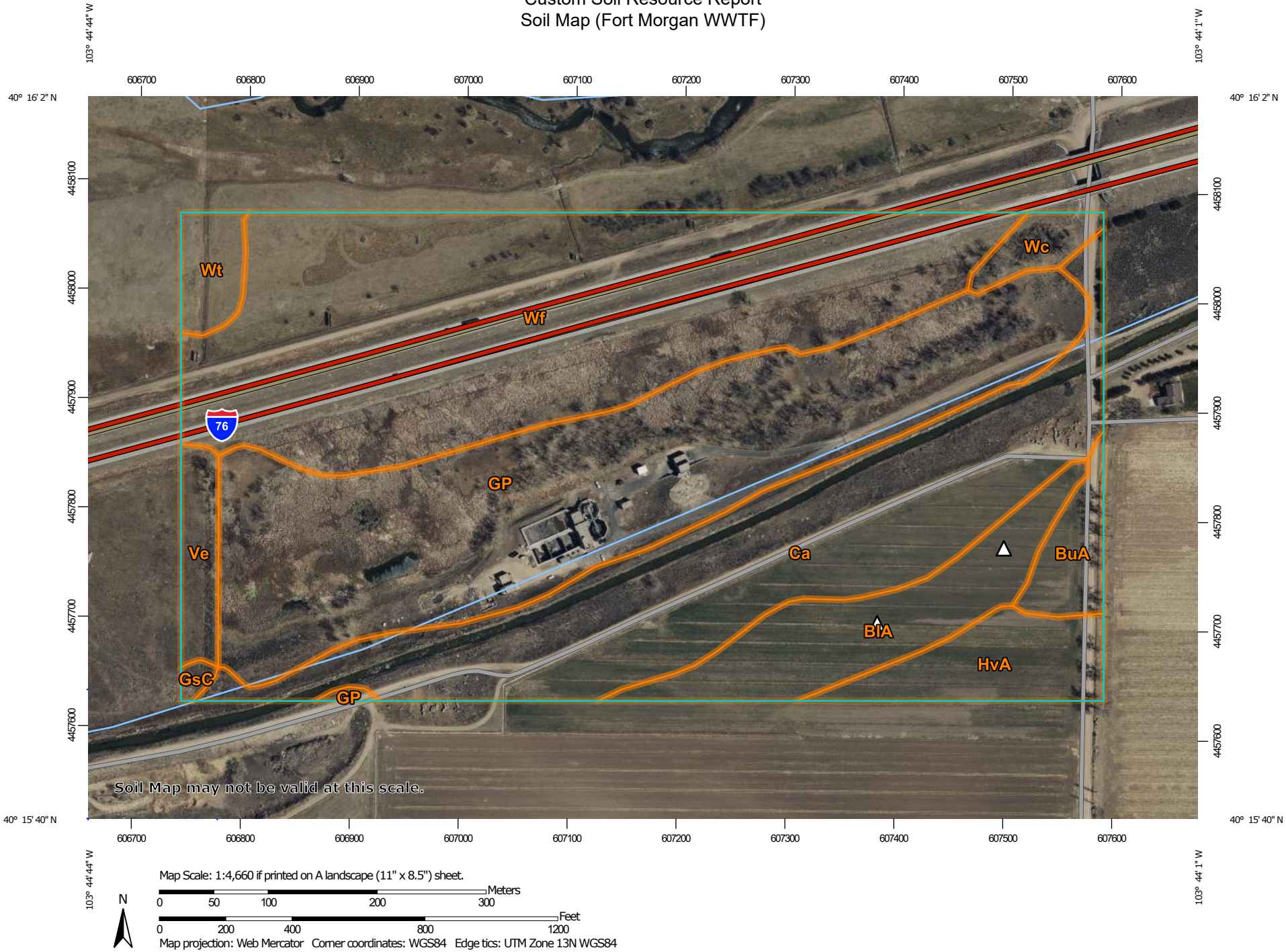
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report
## Soil Map (Fort Morgan WWTF)




Map Scale: 1:4,660 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**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: Morgan County, Colorado
Survey Area Data: Version 25, Aug 29, 2024

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

Date(s) aerial images were photographed: Apr 14, 2022—Jun 15, 2022

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.

# Map Unit Legend (Fort Morgan WWTF)

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| BlA | Bijou loamy sand, 0 to 1 percent slopes | 6.3 | 6.7% |
| BuA | Bresser loamy sand, 0 to 3 percent slopes | 1.8 | 1.9% |
| Ca | Cascajo soils and gravelly land | 19.9 | 21.2% |
| GP | Pits, Gravel | 27.2 | 28.9% |
| GsC | Gilcrest soils, 3 to 5 percent slopes | 0.2 | 0.2% |
| HvA | Heldt sandy loam, 0 to 1 percent slopes | 3.7 | 3.9% |
| Ve | Valent-Dwyer sands, terrace, 0 to 3 percent slopes | 1.7 | 1.8% |
| Wc | Wann clay loam, saline | 1.2 | 1.3% |
| Wf | Wann fine sandy loam, saline | 30.4 | 32.4% |
| Wt | Wet alluvial land | 1.5 | 1.6% |
| **Totals for Area of Interest** | | **93.9** | **100.0%** |

# Map Unit Descriptions (Fort Morgan WWTF)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They

generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Morgan County, Colorado

## BIA—Bijou loamy sand, 0 to 1 percent slopes

### Map Unit Setting

*National map unit symbol:* 3pvt
*Elevation:* 4,400 to 6,000 feet
*Mean annual precipitation:* 14 inches
*Mean annual air temperature:* 46 to 52 degrees F
*Frost-free period:* 140 to 180 days
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Bijou and similar soils:* 90 percent
*Minor components:* 10 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Bijou

#### Setting

*Landform:* Stream terraces
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Noncalcareous alluvium derived from arkose

#### Typical profile

*H1 - 0 to 15 inches:* loamy sand
*H2 - 15 to 52 inches:* coarse sandy loam
*H3 - 52 to 60 inches:* loamy coarse sand

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 5 percent
*Available water supply, 0 to 60 inches:* Low (about 5.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e
*Land capability classification (nonirrigated):* 4e
*Hydrologic Soil Group:* A
*Ecological site:* R067BY024CO - Sandy Plains
*Hydric soil rating:* No

### Minor Components

#### Altvan

*Percent of map unit:* 6 percent
*Hydric soil rating:* No

**Bankard**

*Percent of map unit:* 4 percent
*Hydric soil rating:* No

## BuA—Bresser loamy sand, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* 2swl2
*Elevation:* 4,260 to 6,070 feet
*Mean annual precipitation:* 12 to 18 inches
*Mean annual air temperature:* 46 to 52 degrees F
*Frost-free period:* 135 to 155 days
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Bresser and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Bresser

#### Setting

*Landform:* Stream terraces
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Coarse sandy alluvium derived from igneous, metamorphic and sedimentary rock

#### Typical profile

*Ap - 0 to 9 inches:* loamy sand
*Bt - 9 to 25 inches:* sandy clay loam
*BC - 25 to 30 inches:* sandy loam
*C - 30 to 80 inches:* loamy sand

#### Properties and qualities

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 10 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4s
*Land capability classification (nonirrigated):* 4c
*Hydrologic Soil Group:* B
*Ecological site:* R067BY024CO - Sandy Plains
*Hydric soil rating:* No

**Minor Components**

**Olnest**

*Percent of map unit:* 10 percent
*Landform:* Stream terraces
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* R067BY024CO - Sandy Plains
*Hydric soil rating:* No

**Vona**

*Percent of map unit:* 5 percent
*Landform:* Stream terraces
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* R067BY024CO - Sandy Plains
*Hydric soil rating:* No

## Ca—Cascajo soils and gravelly land

**Map Unit Setting**

*National map unit symbol:* 3pwg
*Elevation:* 4,000 to 9,000 feet
*Mean annual precipitation:* 6 to 13 inches
*Mean annual air temperature:* 39 to 54 degrees F
*Frost-free period:* 80 to 160 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Cascajo and similar soils:* 60 percent
*Gravelly land:* 15 percent
*Minor components:* 25 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Cascajo**

**Setting**

*Landform:* Terraces
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex
*Across-slope shape:* Convex

*Parent material:* Cobbly gravelly outwash

**Typical profile**

*H1 - 0 to 5 inches:* gravelly sandy loam
*H2 - 5 to 12 inches:* very gravelly sandy loam
*H3 - 12 to 60 inches:* very gravelly sand

**Properties and qualities**

*Slope:* 5 to 30 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Excessively drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 25 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 3.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* A
*Ecological site:* R067BY063CO - Gravel Breaks
*Hydric soil rating:* No

## Description of Gravelly Land

**Setting**

*Landform:* Terraces
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Cobbly gravelly outwash

**Typical profile**

*H1 - 0 to 6 inches:* very gravelly sandy loam
*H2 - 6 to 60 inches:* very gravelly sand

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* A
*Hydric soil rating:* No

## Minor Components

**Dix**

*Percent of map unit:* 10 percent
*Hydric soil rating:* No

**Eckley**

*Percent of map unit:* 10 percent
*Hydric soil rating:* No

**Bijou**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## GP—Pits, Gravel

### Map Unit Setting

*National map unit symbol:* vx3d
*Elevation:* 3,900 to 5,200 feet
*Mean annual precipitation:* 11 to 14 inches
*Mean annual air temperature:* 48 to 50 degrees F
*Frost-free period:* 148 to 152 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Pits, gravel:* 100 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pits, Gravel

#### Setting

*Landform:* Plains
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 6 inches:* extremely gravelly sand
*C - 6 to 60 inches:* extremely gravelly sand

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydrologic Soil Group:* A
*Hydric soil rating:* No

## GsC—Gilcrest soils, 3 to 5 percent slopes

### Map Unit Setting

*National map unit symbol:* 3px6
*Elevation:* 4,500 to 5,500 feet
*Mean annual precipitation:* 12 to 16 inches
*Mean annual air temperature:* 46 to 48 degrees F
*Frost-free period:* 160 to 200 days
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Gilcrest and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Gilcrest**

**Setting**

*Landform:* Stream terraces, stream terraces
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Parent material:* Limy strata gravelly alluvium

**Typical profile**

*H1 - 0 to 7 inches:* loamy sand
*H2 - 7 to 15 inches:* gravelly sandy loam
*H3 - 15 to 60 inches:* very gravelly sand

**Properties and qualities**

*Slope:* 3 to 5 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 10 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 3.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* A
*Ecological site:* R067BY015CO - Deep Sand
*Hydric soil rating:* No

**Minor Components**

**Vona**

*Percent of map unit:* 12 percent
*Hydric soil rating:* No

**Bresser**

*Percent of map unit:* 4 percent
*Hydric soil rating:* No

**Valent**

*Percent of map unit:* 3 percent
*Hydric soil rating:* No

**Aquic ustifluvent**

*Percent of map unit:* 1 percent
*Landform:* Terraces
*Hydric soil rating:* Yes

## HvA—Heldt sandy loam, 0 to 1 percent slopes

### Map Unit Setting

*National map unit symbol:* 3pxn
*Elevation:* 4,000 to 6,200 feet
*Mean annual precipitation:* 11 to 15 inches
*Mean annual air temperature:* 46 to 59 degrees F
*Frost-free period:* 110 to 150 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Heldt and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Heldt

#### Setting

*Landform:* Stream terraces
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Clayey alluvium

#### Typical profile

*H1 - 0 to 12 inches:* sandy loam
*H2 - 12 to 22 inches:* clay
*H3 - 22 to 35 inches:* clay
*H4 - 35 to 60 inches:* clay

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 10 percent
*Gypsum, maximum content:* 1 percent
*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 10.0
*Available water supply, 0 to 60 inches:* Moderate (about 8.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e
*Land capability classification (nonirrigated):* 4e
*Hydrologic Soil Group:* C
*Ecological site:* R067BY024CO - Sandy Plains

*Hydric soil rating:* No

**Minor Components**

**Nunn**

*Percent of map unit:* 8 percent
*Hydric soil rating:* No

**Limon**

*Percent of map unit:* 7 percent
*Hydric soil rating:* No

## Ve—Valent-Dwyer sands, terrace, 0 to 3 percent slopes

**Map Unit Setting**

*National map unit symbol:* 2yvr7
*Elevation:* 4,100 to 4,800 feet
*Mean annual precipitation:* 12 to 17 inches
*Mean annual air temperature:* 46 to 52 degrees F
*Frost-free period:* 130 to 155 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Valent and similar soils:* 45 percent
*Dwyer and similar soils:* 44 percent
*Minor components:* 11 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Valent**

**Setting**

*Landform:* Sand sheets on stream terraces
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Wind-reworked, noncalcareous sandy alluvium

**Typical profile**

*Ap - 0 to 4 inches:* sand
*C - 4 to 80 inches:* sand

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Excessively drained
*Runoff class:* Negligible
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.00 to 39.96 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 1 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Very low (about 2.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* A
*Ecological site:* R067BY015CO - Deep Sand
*Hydric soil rating:* No

**Description of Dwyer**

**Setting**

*Landform:* Sand sheets on stream terraces
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Wind-reworked, calcareous sandy alluvium

**Typical profile**

*Ap - 0 to 4 inches:* sand
*C - 4 to 80 inches:* sand

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Excessively drained
*Runoff class:* Negligible
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.00 to 39.96 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 10 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Very low (about 2.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* A
*Ecological site:* R067BY015CO - Deep Sand
*Hydric soil rating:* No

**Minor Components**

**Vona**

*Percent of map unit:* 6 percent
*Landform:* Stream terraces
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* R067BY015CO - Deep Sand
*Hydric soil rating:* No

**Olnest**

*Percent of map unit:* 5 percent

*Landform:* Stream terraces
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* R067BY024CO - Sandy Plains
*Hydric soil rating:* No

## Wc—Wann clay loam, saline

### Map Unit Setting

*National map unit symbol:* 3pzb
*Elevation:* 4,500 to 5,500 feet
*Mean annual precipitation:* 13 to 17 inches
*Mean annual air temperature:* 48 to 50 degrees F
*Frost-free period:* 120 to 150 days
*Farmland classification:* Prime farmland if irrigated and reclaimed of excess salts and sodium

### Map Unit Composition

*Wann and similar soils:* 90 percent
*Minor components:* 10 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Wann

#### Setting

*Landform:* Stream terraces, flood plains
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Sandy and/or clay, lime & gravel loamy organic material

#### Typical profile

*H1 - 0 to 10 inches:* clay loam
*H2 - 10 to 22 inches:* sandy loam
*H3 - 22 to 60 inches:* gravelly coarse sand

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat poorly drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)
*Depth to water table:* About 24 to 36 inches
*Frequency of flooding:* Occasional
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 10 percent
*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 3.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 3w
*Land capability classification (nonirrigated):* 6w
*Hydrologic Soil Group:* C
*Ecological site:* R067BY035CO - Salt Meadow
*Hydric soil rating:* No

**Minor Components**

**Apishapa**

*Percent of map unit:* 5 percent
*Hydric soil rating:* No

**Limon**

*Percent of map unit:* 4 percent
*Hydric soil rating:* No

**Fluvaquentic haplustoll**

*Percent of map unit:* 1 percent
*Landform:* Flood plains
*Hydric soil rating:* Yes

## Wf—Wann fine sandy loam, saline

**Map Unit Setting**

*National map unit symbol:* 3pzc
*Elevation:* 4,500 to 5,500 feet
*Mean annual precipitation:* 13 to 17 inches
*Mean annual air temperature:* 48 to 50 degrees F
*Frost-free period:* 120 to 150 days
*Farmland classification:* Prime farmland if irrigated and reclaimed of excess salts and sodium

**Map Unit Composition**

*Wann and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Wann**

**Setting**

*Landform:* Stream terraces, flood plains
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Sandy, lime loamy

**Typical profile**

*H1 - 0 to 10 inches:* fine sandy loam
*H2 - 10 to 36 inches:* sandy loam
*H3 - 36 to 60 inches:* gravelly coarse sand

**Properties and qualities**

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat poorly drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)
*Depth to water table:* About 24 to 36 inches
*Frequency of flooding:* Occasional
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 10 percent
*Maximum salinity:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 4.1 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 3w
*Land capability classification (nonirrigated):* 6w
*Hydrologic Soil Group:* B
*Ecological site:* R067BY035CO - Salt Meadow
*Hydric soil rating:* No

**Minor Components**

**Haverson**

*Percent of map unit:* 7 percent
*Hydric soil rating:* No

**Limon**

*Percent of map unit:* 6 percent
*Hydric soil rating:* No

**Fluvaquentic haplustolls**

*Percent of map unit:* 2 percent
*Landform:* Flood-plain steps
*Hydric soil rating:* Yes

## Wt—Wet alluvial land

**Map Unit Setting**

*National map unit symbol:* 3pzk
*Elevation:* 3,500 to 4,500 feet
*Mean annual precipitation:* 13 to 17 inches
*Mean annual air temperature:* 46 to 55 degrees F
*Frost-free period:* 110 to 165 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Wet alluvial land:* 75 percent
*Minor components:* 25 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Wet Alluvial Land

### Setting

*Landform:* Flood plains, streams
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Clay, loam, sand & gravel

### Typical profile

*H1 - 0 to 60 inches:* variable

### Properties and qualities

*Slope:* 0 to 1 percent
*Drainage class:* Poorly drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 6.00 in/hr)
*Depth to water table:* About 0 to 24 inches
*Frequency of flooding:* Occasional

### Interpretive groups

*Land capability classification (irrigated):* 6w
*Land capability classification (nonirrigated):* 6w
*Hydrologic Soil Group:* D
*Ecological site:* R067BY035CO - Salt Meadow
*Hydric soil rating:* Yes

## Minor Components

### Typic haplaquolls

*Percent of map unit:* 12 percent
*Landform:* Flood-plain steps
*Hydric soil rating:* Yes

### Wann

*Percent of map unit:* 10 percent
*Hydric soil rating:* No

### Other soils

*Percent of map unit:* 3 percent
*Hydric soil rating:* No

# Soil Information for All Uses

## Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

## Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

### Engineering Properties (Fort Morgan WWTF)

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

*Hydrologic soil group* is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission

rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

*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.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

*Classification* of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group

index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

*Percentage of rock fragments* larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

*Liquid limit* and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

| Engineering Properties–Morgan County, Colorado | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | *In* | | | | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* |
| BlA—Bijou loamy sand, 0 to 1 percent slopes | | | | | | | | | | | | | | |
| Bijou | 90 | A | 0-15 | Loamy sand | SC-SM, SM | A-2, A-1 | 0- 0- 0 | 0- 0- 0 | 85-93-100 | 80-90-100 | 40-58-75 | 15-23-30 | 20-23-25 | NP-3 -5 |
| | | | 15-52 | Coarse sandy loam, sandy loam | SC-SM, SC, SM | A-2, A-4 | 0- 0- 0 | 0- 0- 0 | 90-95-100 | 90-95-100 | 35-58-80 | 25-33-40 | 15-20-25 | NP-5 -10 |
| | | | 52-60 | Loamy coarse sand, loamy sand, sand | SP-SM, SM | A-2, A-3, A-1 | 0- 0- 0 | 0- 0- 0 | 90-95-100 | 90-95-100 | 30-50-70 | 5-18- 30 | — | NP |
| BuA—Bresser loamy sand, 0 to 3 percent slopes | | | | | | | | | | | | | | |
| Bresser | 85 | B | 0-9 | Loamy sand | SM | A-2-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 77-80-84 | 20-23-29 | 20-24-27 | 1-3 -6 |
| | | | 9-25 | Sandy clay loam, clay loam | SC | A-6 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 82-86-90 | 43-48-53 | 29-38-41 | 12-17-19 |
| | | | 25-30 | Coarse sandy loam, sandy loam | SC-SM | A-2-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 70-74-79 | 25-30-36 | 19-22-28 | 3-6 -9 |
| | | | 30-80 | Loamy coarse sand, loamy sand, gravelly loamy sand, gravelly loamy coarse sand | SC-SM | A-2-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 85-97-100 | 67-79-86 | 17-23-28 | 19-22-27 | 4-6 -10 |

| Engineering Properties–Morgan County, Colorado | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | *In* | | | | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* |
| Ca—Cascajo soils and gravelly land | | | | | | | | | | | | | | |
| Cascajo | 60 | A | 0-5 | Gravelly sandy loam | GC-GM, SC-SM, GC, SC | A-2, A-1 | 0- 5- 10 | 0- 8- 15 | 60-70-80 | 55-65-75 | 35-43-50 | 20-25-30 | 25-28-30 | 5-8 -10 |
| | | | 5-12 | Very gravelly sandy loam, very gravelly loamy sand, very gravelly sand | GP-GM, GM, GP | A-1 | 0- 0- 0 | 0- 8- 15 | 30-40-50 | 25-38-50 | 15-23-30 | 0-10- 20 | — | NP |
| | | | 12-60 | Very gravelly loamy sand, very gravelly sand, gravelly sand | GP-GM, SP-SM, GP, SP | A-1 | 0- 0- 0 | 0- 8- 15 | 30-45-60 | 25-43-60 | 15-23-30 | 0- 5- 10 | — | NP |
| Gravelly land | 15 | A | 0-6 | Very gravelly sandy loam | GC-GM, GP-GM, GM | A-1 | 0- 0- 0 | 0- 5- 10 | 35-45-55 | 30-40-50 | 20-28-35 | 10-15-20 | 20-23-25 | NP-3 -5 |
| | | | 6-60 | Gravelly sand, very gravelly sand, gravelly loamy sand | GP-GM, GM, GP, SP | A-1 | 0- 0- 0 | 0-13- 25 | 40-55-70 | 35-50-65 | 20-33-45 | 0- 8- 15 | 20-23-25 | NP-3 -5 |
| GP—Pits, Gravel | | | | | | | | | | | | | | |
| Pits, gravel | 100 | A | 0-6 | Extremely gravelly sand | GW, GP | A-1 | — | 0-13- 25 | 10-18-25 | 5-15- 25 | 0- 8- 15 | 0- 3- 5 | 0-7 -14 | NP |
| | | | 6-60 | Extremely gravelly sand, extremely gravelly coarse sand, very gravelly coarse sand | GW, SW, GP, SP | A-1 | — | 0-13- 25 | 10-33-55 | 5-28- 50 | 0- 8- 15 | 0- 3- 5 | 0-7 -14 | NP |

| Engineering Properties–Morgan County, Colorado | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | *In* | | | | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* |
| GsC—Gilcrest soils, 3 to 5 percent slopes | | | | | | | | | | | | | | |
| Gilcrest | 80 | A | 0-7 | Loamy sand | SM | A-2 | 0- 0- 0 | 0- 0- 0 | 95-98-100 | 90-95-100 | 50-60-70 | 15-23-30 | — | NP |
| | | | 7-15 | Gravelly sandy loam | SC-SM, SM | A-2, A-1 | — | 0- 3- 5 | 70-80-90 | 50-63-75 | 30-40-50 | 15-25-35 | 15-18-20 | NP-3 -5 |
| | | | 15-60 | Very gravelly sand, very gravelly loamy sand | GP-GM, SP-SM, GP, SM | A-1 | — | 0- 3- 5 | 35-60-85 | 25-38-50 | 15-23-30 | 0- 8- 15 | — | NP |
| HvA—Heldt sandy loam, 0 to 1 percent slopes | | | | | | | | | | | | | | |
| Heldt | 85 | C | 0-12 | Sandy loam | SC-SM, SM | A-2, A-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 60-65-70 | 30-35-40 | 20-23-25 | NP-3 -5 |
| | | | 12-22 | Clay | CL, CH | A-7 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 90-95-100 | 75-85-95 | 40-48-55 | 15-23-30 |
| | | | 22-35 | Clay, silty clay | CL, CH | A-7 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 90-95-100 | 75-85-95 | 40-48-55 | 15-23-30 |
| | | | 35-60 | Clay | CL | A-7 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 90-95-100 | 75-85-95 | 40-45-50 | 15-20-25 |
| Ve—Valent-Dwyer sands, terrace, 0 to 3 percent slopes | | | | | | | | | | | | | | |
| Valent | 45 | A | 0-4 | Sand | SP-SM | A-3, A-2-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 92-97-100 | 69-74-79 | 8- 9- 12 | 0-0 -19 | NP-0 -3 |
| | | | 4-80 | Loamy sand, sand | SC-SM, SP-SM | A-3, A-2-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 92-97-100 | 67-75-82 | 6- 8- 15 | 0-0 -20 | NP-0 -4 |
| Dwyer | 44 | A | 0-4 | Sand | SP-SM | A-3, A-2-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 92-97-100 | 69-74-78 | 7- 8- 11 | 0-0 -19 | NP-0 -2 |
| | | | 4-80 | Sand, loamy sand | SC-SM, SP-SM | A-3, A-2-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 92-97-100 | 66-74-81 | 6- 8- 15 | 0-0 -21 | NP-0 -4 |

| Engineering Properties–Morgan County, Colorado | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | *In* | | | | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* | *L-R-H* |
| Wc—Wann clay loam, saline | | | | | | | | | | | | | | |
| Wann | 90 | C | 0-10 | Clay loam | CL | A-6 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 90-95-100 | 70-75-80 | 30-33-35 | 15-18-20 |
| | | | 10-22 | Sandy loam | SC-SM, SM | A-2, A-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 60-65-70 | 30-35-40 | 20-23-25 | NP-3 -5 |
| | | | 22-60 | Gravelly coarse sand | SP-SM, SP | A-1 | 0- 5- 10 | 0- 8- 15 | 60-70-80 | 55-65-75 | 25-33-40 | 0- 3- 5 | — | NP |
| Wf—Wann fine sandy loam, saline | | | | | | | | | | | | | | |
| Wann | 85 | B | 0-10 | Fine sandy loam | SC-SM, CL-ML, ML, SM | A-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 70-78-85 | 40-48-55 | 20-23-25 | NP-3 -5 |
| | | | 10-36 | Sandy loam | SC-SM, SM | A-2, A-4 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 60-65-70 | 30-35-40 | 20-23-25 | NP-3 -5 |
| | | | 36-60 | Gravelly coarse sand | SP-SM, SP | A-1 | 0- 5- 10 | 0- 8- 15 | 60-70-80 | 55-65-75 | 25-33-40 | 0- 3- 5 | — | NP |
| Wt—Wet alluvial land | | | | | | | | | | | | | | |
| Wet alluvial land | 75 | D | 0-60 | Variable | — | — | — | — | — | — | — | — | — | — |

# References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

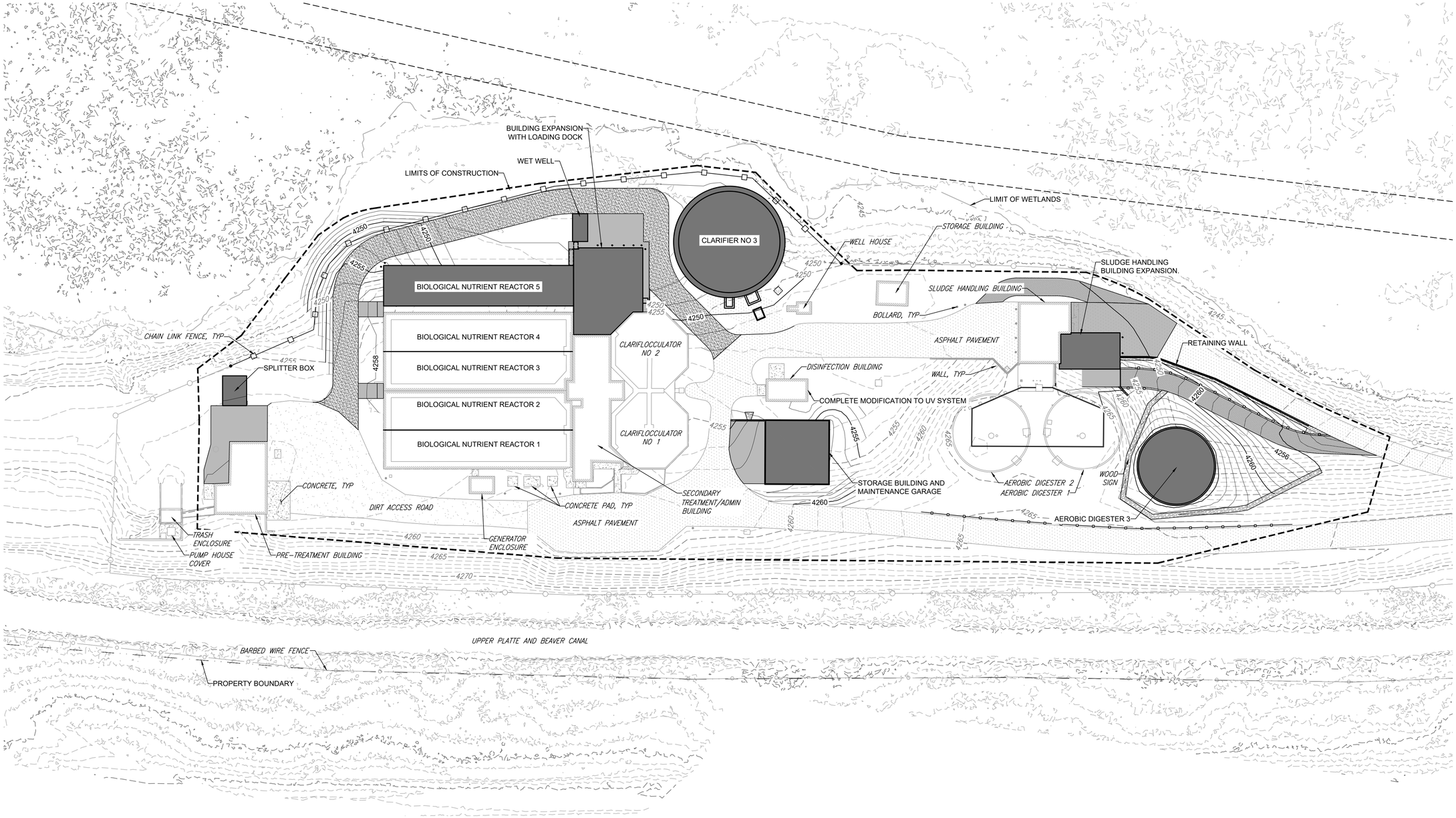
United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

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CHECKED BY: ----
APPROVED BY: ----

TITLE
# CITY OF FORT MORGAN, COLORADO
WASTEWATER TREATMENT FACILITY EXPANSION PROJECT

## GRADING PLAN

PE STAMP

ISSUED FOR REVIEW

FOR AND ON BEHALF OF MERRICK AND COMPANY

PROJECT NUMBER 100541

DATE JULY, 2025

SHEET C-107

DRAWING NO. #####

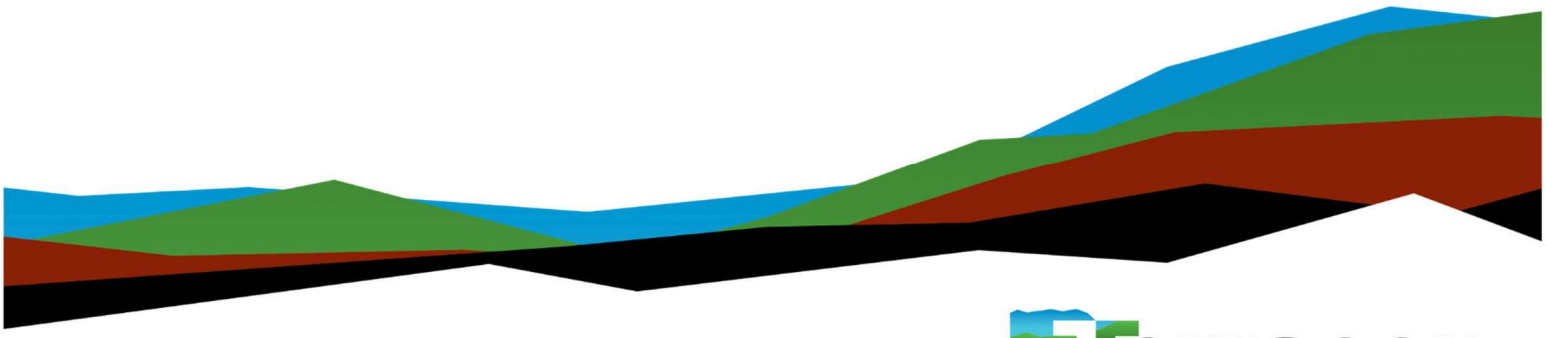
# Fort Morgan Wastewater Treatment Facility Improvements

## Geotechnical Engineering Report

May 6, 2024 | Terracon Project No. 21235021

**Prepared for:**

Merrick & Company
2480 West 26th Avenue, B225
Denver, Colorado 80211



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May 6, 2024

Merrick & Company
2480 West 26th Avenue, B225
Denver, Colorado 80211

Attn: Mr. Andrew Stewart – Project Manager
P: [redacted]
E: [redacted]

Re: Geotechnical Engineering Report
Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22
Morgan County, Colorado
Terracon Project No. 21235021

Dear Mr. Stewart:

We have completed the scope of Geotechnical Engineering services for the project referenced above in general accordance with Terracon Proposal No. P21235021 revised January 23, 2024. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, and floor systems for the proposed project.

We appreciate the opportunity to be of service to you on this project. Materials testing and construction observation services are provided by Terracon as well. We would be pleased to discuss these services with you. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon

COLORADO LICENSED
RACHEL CORWIN POTT
63676
5/6/2024
PROFESSIONAL ENGINEER

Rachel C. Pott, P.E
Geotechnical Group Manager

Eric D. Bernhardt, P.E.
Regional Geotechnical Manager

# Table of Contents

## Figures



## Attachments



**Note:** This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the terracon logo will bring you back to this page. For more interactive features, please view your project online at **client.terracon.com**.

Refer to each individual Attachment for a listing of contents.

# Report Summary

| Topic [1] | Overview Statement [2] |
|---|---|
| **Project Description** | The proposed WWTF expansion includes the facility's incorporation of an anaerobic basin to the biological nutrient reactors (BNR) (two existing, one new, three total), expansion to a third BNR train (anoxic basin, three aerobic basins, a final anoxic basin, and a clarifloculator), replacement of one (1) bar screen in the pre-treatment building, biosolids dewatering capacity expansion, one (1) additional aerobic digester blowers, and physio-chemical phosphorus update removal (via flocculation basin and tertiary membrane bioreactor). The proposed expansion will expand the facility from 2.25 to 3.375 million gallons per day (MGD). The proposed permitted WWTF loading will increase from 4,222 to 6,333 pounds BOD5 per day. Per previous planning, a total nitrogen level of less than 2.01 mg/L and a total phosphorus level of less than 0.17 mg/L are the expected limits for CDPHE 2027 Regulation 31 and 85. The intention of the project is for nutrient removal needed to meet regulatory compliance required by the January 1, 2027. |
| **Dewatering** | Groundwater was encountered in our borings at the time of drilling at depths ranging from about 7 to 21½ feet below existing site grade. We understand new facilities for this project will bear at depths ranging from about 4 to 27 feet below grade. Temporary construction and/or permanent dewatering will be required. Significant dewatering and excavation shoring should be expected and planned for by the contractor. During dewatering, groundwater levels will drop significantly for this project. These drops in groundwater levels can significantly increase effective stresses within soils underlying nearby structures, utilities, pavements, etc. This increase in effective stress can result in subsidence or settlement of soils due to increased stresses. We believe settlement monitoring of nearby structures be performed during the dewatering efforts to check for impacts of increased effective stresses and associated soil settlement on adjacent structures. |
| **Geotechnical Characterization** | Subsurface conditions encountered in our exploratory borings generally consisted of about 5½ to 12½ feet of undocumented fill consisting of sand with varying amounts of silt to clayey sand to |

| Topic [1] | Overview Statement [2] |
|---|---|
| | sandy lean clay over sand with varying amounts of silt to the maximum depth explored of about 35 feet.<br>Groundwater was encountered in our borings at the time of drilling at depths ranging from about 7 to 21½ feet below existing site grade. |
| **Earthwork** | On-site soils typically appear suitable for use as engineered fill and backfill on the site provided, they are placed and compacted as described in this report. Import materials (if needed) should be evaluated and approved by Terracon prior to delivery to the site.<br>We recommend complete removal of existing undocumented fill below shallow foundations. The existing, undocumented fill should be over-excavated to a depth of at least 3 feet below the proposed floor slab and replaced with moisture conditioned, properly compacted engineered fill. |
| **Shallow Foundations** | Terracon recommends constructing the various facility structures on reinforced concrete mats, provided foundations are constructed on at least 3 feet of newly placed, moisture conditioned, properly compacted engineered fill and all existing fill has been completely removed below foundations. |
| **Below-Grade Structures** | We understand the following structures will bear at the following depths below grade:<br>▪ New Anaerobic Basins: 15 feet<br>▪ New Clariflocculation Basin and Membrane Reactor: 14 feet<br>▪ New Biological Nutrient Reactor: 15 feet<br>▪ New Solids Digester: 27 feet<br>▪ Solids Building Expansion: 4 feet<br>Earth pressures acting on below-grade structures are provided in the **Lateral Earth Pressure** section. |
| **Pavements** | Recommended **Pavements** thicknesses for this project include 4½ inches of asphalt over 6 inches of aggregate base course in drive lanes and loading areas. Additional pavement section alternatives and discussion are presented in the report. |
| **General Comments** | This section contains important information about the limitations of this geotechnical engineering report. |

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself.
2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

# Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed Wastewater Treatment Facility Improvements to be located at 18169 County Road 22 in Morgan County, Colorado. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site classification per IBC
- Site preparation and earthwork
- Demolition considerations
- Dewatering considerations
- Foundation design and construction
- Floor system design and construction
- Lateral earth pressures
- Pavement design and construction

The geotechnical engineering Scope of Services for this project included the advancement of test borings, laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and boring and locations are shown in the **Site Location and Exploration Plan** section of this report. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the boring logs and/or as separate graphs in the **Exploration Results** section. We have also included three borings completed as part of the previous geotechnical study for the existing wastewater treatment facility.

# Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

| Item | Description |
|---|---|
| **Information Provided** | The project information described below is based on the following:<br>■ WWTP Clarifier-Aeration Basin Imp Addendum No. 1<br>■ Plan and Sections210319adrs2<br>■ KMZ showing the wastewater treatment plant location<br>■ Email and communication with Andrew Stewart and David Preissler<br>■ Updated site plan showing proposed addition and improvement areas<br>■ Facility type, anticipated foundation support, bearing elevation and required bearing pressure |
| **Project Description** | The proposed WWTF expansion includes the facility's incorporation of an anaerobic basin to the biological nutrient reactors (BNR) (two existing, one new, three total), expansion to a third BNR train (anoxic basin, three aerobic basins, a final anoxic basin, and a clariflocculator), replacement of one (1) bar screen in the pre-treatment building, biosolids dewatering capacity expansion, one (1) additional aerobic digester blowers, and physio-chemical phosphorus update removal (via flocculation basin and tertiary membrane bioreactor). The proposed expansion will expand the facility from 2.25 to 3.375 million gallons per day (MGD). The proposed permitted WWTF loading will increase from 4,222 to 6,333 pounds BOD5 per day. Per previous planning, a total nitrogen level of less than 2.01 mg/L and a total phosphorus level of less than 0.17 mg/L are the expected limits for CDPHE 2027 Regulation 31 and 85. The intention of the project is for nutrient removal needed to meet regulatory compliance required by the January 1, 2027. |
| **Finished Elevation** | We understand the finished floor/bearing elevation for the proposed building(s) and structures will be 4 to 27 feet below grade. |

| Item | Description |
|---|---|
| **Maximum Loads (provided by Merrick)** | ■ New Anaerobic Basins: 1,500 psf<br>■ New Clariflocculation Basin and Membrane Reactor: 1,500 psf<br>■ New Biological Nutrient Reactor: 1,500 psf<br>■ New Solids Digester: 2,500 psf<br>■ Solids Building Expansion:<br>○ Columns: 20 to 80 kips<br>○ Walls: 1 to 3 kips per linear foot (klf)<br>○ Slabs: 150 pounds per square foot (psf) |
| **Grading/Slopes** | Grading plans were not provided to Terracon at the time of this report; however, we understand various structures will be bearing on elevations ranging from about 4 to 27 feet below grade. We anticipate cuts and fills on the order of 5 to 30 feet will be required to achieve proposed grades. |
| **Below-Grade Structures** | We understand the following structures will bear at the following depths below grade:<br>■ New Anaerobic Basins: 15 feet<br>■ New Clariflocculation Basin and Membrane Reactor: 14 feet<br>■ New Biological Nutrient Reactor: 15 feet<br>■ New Solids Digester: 27 feet<br>■ Solids Building Expansion: 4 feet |
| **Design Code** | 2015 International Building Code (IBC), per City of Fort Morgan |

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

# Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

| Item | Description |
|---|---|
| **Parcel Information** | The project is located at 18169 County Road 22 in Morgan County, Colorado. Latitude/Longitude (approximate): 40.26366°N/103.74057°W. See **Site Location** |

| Item | Description |
|---|---|
| **Existing Improvements** | The site is currently occupied by the existing wastewater treatment facility. |
| **Current Ground Cover** | Native grass/weeds, asphalt parking and previously graded soils. |
| **Existing Topography** | The site is relatively flat; however, the ground surface near the existing solids digester is mounded up about 10 to 15 feet for the buried tanks. |

# Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

| Model Layer | Layer Name | General Description |
|---|---|---|
| **1** | **Undocumented Fill** | Undocumented fill consisting of poorly graded to well graded sand with varying amounts of silt to clayey sand to sandy lean clay, dark brown to gray to tan to orange to pink to red, trace FeOx.<br>This material was encountered in all soil borings. |
| **2** | **Sand** | Poorly graded sand to well graded sand with varying amounts of silt, light brown to orange to pink, very loose medium dense, trace FeOx. |

## Groundwater Conditions

The boreholes were observed while drilling and shortly after completion for the presence and level of groundwater. The water levels observed in the boreholes are noted on the attached boring logs, and are summarized below:

| Boring Number | Depth to Groundwater While Drilling, ft. | Depth to Groundwater After Drilling, ft. | Elevation of Groundwater After Drilling, ft.[1] |
|---|---|---|---|
| B-1 | 7 | 7.2 | 4,244.8 |
| B-2 | 9 | 8.9 | 4257.1 |
| B-3 | 9 | 9.1 | 4,241.9 |
| B-4 | 23 | 21.5 | 4,235.5 |
| B-5 | 14 | 14.2 | 4,242.8 |
| B-6 | 14 | 13.6 | 4,243.4 |
| B-7 | 14 | 10.9 | 4,244.1 |

1. Elevation of groundwater is based on the ground surface elevation, obtained by interpolated from USGS National Map Viewer.

Groundwater conditions may change because of seasonal variations in rainfall, runoff, and other conditions not apparent at the time of drilling. Long-term groundwater monitoring was outside the scope of services for this project.

# Seismic Site Class

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7-10 and the International Building Code (IBC), 2015. Based on the soil properties observed at the site as described on the exploration logs and laboratory test results, our professional opinion is a **Seismic Site Classification of D** be considered for the project. Subsurface explorations at this site were extended to a maximum depth of 35 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

# Corrosivity

The table below lists the results of laboratory soluble sulfate, soluble chloride, sulfides, electrical resistivity, Redox, total salts, and pH testing. The values may be used to estimate potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

**Corrosivity Test Results Summary**

| Boring (Sample Depth) | Soluble Sulfate (%) | Soluble Chloride (%) | Sulfides | Total Salts (%) | Electrical Resistivity (Ω-cm)[1] | Redox (mV) | pH |
|---|---|---|---|---|---|---|---|
| B-1 at 1 to 5 feet | 0.00027 | --- | --- | --- | --- | --- | --- |
| B-3 at 1 to 5 feet | 0.00026 | --- | --- | --- | --- | --- | --- |
| B-4 at 1 to 5 feet | 0.00043 | 0.0005 | Nil | 218 | 12,000 | +271 | 7.67 |
| B-5 at 1 to 5 feet | 0.00027 | --- | --- | --- | --- | --- | --- |
| B-6 at 1 to 5 feet | 0.00044 | 0.0004 | Nil | 815 | 3,000 | +249 | 7.58 |

1. Laboratory electrical resistivity testing was performed on saturated samples.

Results of water-soluble sulfate testing indicate Exposure Class S0 according to ACI 318-14. ASTM Type I, IL or II portland cement should be specified for all project concrete on and below grade. Foundation concrete should be designed for low sulfate exposure in accordance with the provisions of the ACI Design Manual, Section 318-14, Chapter 19.

Results of the water-soluble sulfate testing completed on the undocumented fall within the same Exposure Class as the borings completed as part of the previous geotechnical study for the existing wastewater treatment facility. Terracon believes the Exposure Class of S0 is also applicable for the native soils below the undocumented.

Numerous sources are available to characterize corrosion potential to buried metals using the parameters above. ANSI/AWWA is commonly used for ductile iron, while threshold values for evaluating the effect on steel can be specific to the buried feature (e.g., piling, culverts, welded wire reinforcement, etc.) or agency for which the work is performed. Imported fill materials may have significantly different properties than the site materials noted above and should be evaluated if expected to be in contact with metals used for construction. Consultation with a NACE certified corrosion professional is recommended for buried metals on the site.

# Geotechnical Overview

Based on subsurface conditions encountered in the borings, the site appears suitable for the proposed construction from a geotechnical point of view provided certain precautions and design and construction recommendations described in this report are followed. We have identified several geotechnical conditions that could impact design, construction and performance of the proposed structures and other site improvements. These included existing, undocumented fill, shallow groundwater, and potentially loose, low strength sand soils. These conditions will require particular attention in project planning, design and during construction and are discussed in greater detail in the following sections.

## Existing, Undocumented Fill

Existing, undocumented fill was encountered to depths up to about 5½ to 12½ feet in the borings drilled at the site. Existing fill could exist at other locations on the site and extend to greater depths. We do not possess any information regarding whether the fill was placed under the observation of a geotechnical engineer. Undocumented fill can present a greater than normal risk of post-construction movement of site improvements supported on or above these materials. The lowest risk alternative is complete removal of existing fill below foundations, slabs and other site improvements and replacement with newly compacted engineered fill. Discussion regarding alternatives to complete removal of existing fill are presented in the **Existing Fill** section of **Earthwork**.

## Shallow Groundwater

As previously stated, groundwater was measured at depths ranging from about 7 to 21½ feet below existing site grades. Terracon recommends maintaining a separation of at least 2 feet between the bottom of proposed below-grade foundations and measured groundwater levels. It is also possible and likely that groundwater levels below this site may rise as water levels in the nearby water features rise. Terracon estimates groundwater elevations may vary about 3 to 4 feet annually. Final site grading should be planned and designed to avoid cuts where shallow groundwater is known to exist, and also in areas where such grading would create shallow groundwater conditions. If deeper cuts are unavoidable, temporary construction dewatering and/or installation of a subsurface drainage system may be needed.

## Low Strength Soils

Loose soils were encountered within the upper approximately 15 to 20 feet of the borings completed at this site. These materials present a risk for potential settlement of shallow foundations, floor slabs, and other surficial improvements. These materials can also be susceptible to disturbance and loss of strength under repeated construction

traffic loads and unstable conditions could develop. Stabilization of loose soils may be required at some locations to provide adequate support for construction equipment and proposed structures. Terracon should be contacted if these conditions are encountered to observe the conditions exposed and to provide guidance regarding stabilization (if needed).

## Dewatering

Groundwater was encountered in our borings at the time drilling at depths ranging from about 7 to 21½ feet below existing site grade. We understand new facilities for this project will bear at depths ranging from about 4 to 27 feet below grade. Temporary construction and/or permanent dewatering will be required. Significant dewatering and excavation shoring should be expected and planned for by the contractor. During dewatering, groundwater levels will drop significantly for this project. These drops in groundwater levels can significantly increase effective stresses within soils underlying nearby structures, utilities, pavements, etc. This increase in effective stress can result in subsidence or settlement of soils due to increased stresses. We believe settlement monitoring of nearby structures be performed during the dewatering efforts to check for impacts of increased effective stresses and associated soil settlement on adjacent structures.

Preliminary site concepts indicate the proposed below-grade areas will extend below the observed groundwater levels. Thus, permanent dewatering may be needed to lower groundwater levels below permanent excavations. We recommend that on a long-term basis, groundwater levels be maintained at least 2 feet below floor slabs and any below-grade areas or foundations. As an alternative, structures extending below groundwater should be design as "water-tight" structures and to resist uplift from buoyant forces.

If a permanent dewatering system is judged necessary by the project team, we suggest the dewatering system consist of a combination of drains and sumps. The configuration of the system will depend on the size of the below-grade areas. The locations of the drains and/or sumps must consider maintenance accessibility.

A possible configuration would be a subsurface drain around the exterior of below-grade perimeter walls. The drain pipe should be properly-sized, perforated PVC or other type of hard pipe embedded in properly graded drainage gravel. The invert of the drain pipe should be at least 12 inches below the bottom of the floor slab for below-grade areas. The drain pipe should discharge into a sump(s) accessible within the base of the below-grade area.

The drainage gravel should extend vertically over the drain pipes to at least 2 feet above the highest groundwater levels observed in the soil borings. Thus, the drain gravel will extend into the below-grade area foundation wall backfill. The foundation walls for the below-grade areas adjacent to the drain gravel should be properly water-proofed.

Provision must be made to prevent migration or piping of the native soils into the drainage gravel. Ideally, this would be by a properly graded sand filter. Alternatively, a filter fabric could be used. If a filter fabric is used, we strongly recommend completion of the installation in the dry condition. That is, the contractor should dewater the excavation so that it is free of standing water during installation of the drain components.

Other issues to be considered include:

- **Outfall of the developed water**, which could be to a storm water basin. Evaluation of the amount of water likely to be discharged from a permanent dewatering system was not included in our scope of services for this study but should be evaluated, if a permanent dewatering system is selected.

- **Possible permitting requirements.** If the dewatering system is considered to be a well, permits would be required at a minimum from the Colorado State Engineer's Office and the State of Colorado Department of Public Health and Environment. The permits, should they be needed, will require regular reporting of discharge water quality. Adequate time should be included in the project schedule to obtain the permits.

- **Maintenance.** All permanent dewatering systems require regular maintenance to assure the drains and pumps are in proper operating condition. Underground drains associated with the system should have cleanouts so that the system can be flushed/cleaned periodically as underground dewatering systems can become clogged with anaerobic microbial and other growth. The cleanout locations should be readily accessible and a source of high pressure (water main pressure) water available to flush the drains.

- **Monitoring.** By their nature, permanent dewatering systems tend to be "out of sight and out of mind". Therefore, we recommend there be a monitoring system to alert maintenance personnel if the pumps have failed and water levels are rising in the sumps. A simple monitoring system would be to install a water detector in a sump about 1 to 2 feet below the bottom of the below-grade area floor slab that would activate a flashing warning light in the structures.

## Foundation and Floor System Recommendations

Terracon recommends constructing the various facility structures on reinforced concrete mats, provided 3 feet of moisture conditioned, properly compacted engineered fill and all existing fill has been completely removed below foundations.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration Results**), engineering analyses, and

our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

# Earthwork

Earthwork is anticipated to include demolition, site preparation, excavations, subgrade preparation, soil stabilization (if needed), and engineered fill placement. The following sections provide recommendations for use in the preparation of specifications for the project. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations and floor slabs.

## Demolition

Demolition of any existing structures or site features should include complete removal of all foundation systems, below-grade structural elements, pavements (if any), and exterior flatwork within the proposed construction area. This should include removal of any utilities to be abandoned along with any loose utility trench backfill or loose backfill found adjacent to existing foundations. All materials derived from the demolition of existing structures and pavements should be removed from the site. The types of foundation systems supporting the existing structures are not known. If some or all the existing buildings or structures planned for demolition and removal are supported by drilled piers, the existing piers should be truncated a minimum depth of 3 feet below areas of planned new construction.

Our experience suggests a portion of the demolition of site features or removal of buried elements sometimes happens weeks to several months prior to site grading and new construction. Our recommendations for subgrade preparation, fill placement and other activities associated with earthwork on the project site should be performed during these initial demolition activities. We recommend fill be placed and tested for moisture content and percent compaction during backfill of the excavations made during initial demolition activities. If the fill materials are not properly placed and confirmed with compaction testing, there is an increased risk of movement and poor performance for foundations, floor slabs or other site features constructed on the fill placed as part of restoring the site after initial demolition.

## Site Preparation

Prior to placing fill, existing vegetation, topsoil, and root mats should be removed. Complete stripping of the topsoil should be performed in the proposed building and structure areas. As previously stated, we also recommend complete removal of existing, undocumented fill within proposed foundation areas. Existing fill was encountered in our

borings extending to depths of about 5½ to 12½ feet below existing site grades. Stripped organic materials should be wasted from the site or used to re-vegetate landscaped areas or exposed slopes after completion of grading operations. Prior to the placement of fills, the site should be graded to create a relatively level surface to receive fill, and to provide for a relatively uniform thickness of fill beneath proposed structures.

Where fill is placed on existing slopes steeper than 5H:1V, benches should be cut into the existing slopes prior to fill placement. The benches should have a minimum vertical face height of 1 foot and a maximum vertical face height of 3 feet and should be cut wide enough to accommodate the compaction equipment. This benching will help provide a positive bond between the fill and natural soils and reduce the possibility of failure along the fill/natural soil interface.

Although no evidence of underground facilities (such as septic tanks, cesspools, basements, and utilities) was observed during the exploration and site reconnaissance, such features could be encountered during construction. If unexpected fills or underground facilities are encountered, such features should be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

## Existing Fill

As noted in **Geotechnical Characterization**, all borings encountered existing fill to depths ranging from about 5½ to 12½ feet below the ground surface at the time of our field subsurface exploration. Existing fill could exist at other locations on the site and extend to greater depths. We do not possess any information regarding whether the fill was placed under the observation of a geotechnical engineer. Undocumented fill can present a greater than normal risk of post-construction movement of site improvements supported on or above these materials. The lowest risk alternative is complete removal of existing fill below foundations, slabs and other site improvements and replacement with newly compacted engineered fill.

## Excavation

We anticipate excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Excavations into the on-site soils will encounter weak and/or saturated soil conditions with possible caving conditions. The bottom of excavations should be thoroughly cleaned of loose/disturbed materials prior to backfill placement and/or construction.

Any over-excavation that extends below the bottom of foundation elevation should extend laterally beyond all edges of the foundations at least 8 inches per foot of over-excavation depth below the foundation base elevation. The over-excavation should be

backfilled to the foundation base elevation in accordance with the recommendations presented in this report.

Any existing foundations that are exposed during the excavation of the existing fill or for the new foundation excavations should be examined and evaluated by Terracon to determine the need for any shoring or underpinning. Excavations should not extend into the stress influence zone of the existing foundations without prior evaluation by Terracon. The stress influence zone is defined as the area below a line projected down at a 1(h) to 1(v) slope from the bottom edge of the existing foundation. Excavations within the influence zone of existing foundations can result in loss of support, and can create settlement or failure of the existing foundations. While the evaluation of existing foundations and the design of a shoring system are beyond the scope of this study, we can perform these tasks as a separate study.

Depending upon depth of excavation and seasonal conditions, surface water infiltration and/or groundwater may be encountered in excavations on the site. We anticipate pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth. Groundwater seepage should be anticipated for excavations approaching the level of bedrock.

The subgrade soil conditions should be evaluated during the excavation process and the stability of the soils determined at that time by the contractors' Competent Person as defined by OSHA. Slope inclinations flatter than the OSHA maximum values may have to be used. The individual contractor(s) should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards. If any excavation, including a utility trench, is extended to a depth of more than 20 feet, it will be necessary to have the side slopes and/or shoring system designed by a professional engineer.

As a safety measure, it is recommended that all vehicles and soil piles be kept a minimum lateral distance from the crest of the slope equal to the slope height. The exposed slope face should be protected against the elements.

## Subgrade Preparation

After site preparation, removal of existing, undocumented fill, and completion of the recommended over-excavation, the top 10 inches of the exposed ground surface should be scarified, moisture conditioned, and compacted to at least 95 percent of the maximum dry unit weight as determined by ASTM D698 before any new fill, foundations, slabs, and other site improvements are placed or constructed.

Large areas of prepared subgrade should be proof rolled prior to new construction. Proof rolling is not required in areas which are inaccessible to proof rolling equipment. Subgrades should be proof rolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. Proof rolling should be performed under the observation of the Geotechnical Engineer or representative. Areas excessively deflecting under the proof roll should be delineated and subsequently addressed by the Geotechnical Engineer. Excessively wet or dry material should either be removed or moisture conditioned and compacted.

After the bottom of the excavation has been prepared as recommended above, engineered fill can be placed to bring the foundation subgrade to the desired grade. Engineered fill should be placed in accordance with the recommendations presented in subsequent sections of this report.

## Subgrade Stabilization

Methods of subgrade stabilization/improvement, as described below, could include scarification, moisture conditioning and compaction, removal of unstable materials and replacement with granular fill (with or without geosynthetics), and chemical treatment. The appropriate method of improvement, if required, would be dependent on factors such as schedule, weather, the size of area to be stabilized, and the nature of the instability. More detailed recommendations can be provided during construction as the need for subgrade stabilization occurs. Performing site grading operations during warm seasons and dry periods would help reduce the amount of subgrade stabilization required.

If the exposed subgrade is unstable during proof rolling operations, it could be stabilized using one of the methods described below.

- **Scarification and Compaction** - It may be feasible to scarify, dry, and compact the exposed soils. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Stable subgrades likely would not be achievable if the thickness of the unstable soil is greater than about 1 foot, if the unstable soil is at or near groundwater levels, or if construction is performed during a period of wet or cool weather when drying is difficult.
- **Crushed Stone** - The use of crushed stone or crushed concrete is a common procedure to improve subgrade stability. Typical undercut depths would be expected to range from about 8 to 12 inches below finished subgrade elevation. Crushed stone and/or concrete can be tracked or "crowded" into the unstable subgrade until a stable working surface is attained. The use of high modulus geosynthetics (i.e., geotextile or geogrid) could also be considered after underground work such as utility construction is completed. Prior to placing the geosynthetic, we recommend all below-grade construction, such as utility line installation, be completed to avoid damaging the geosynthetic. Equipment should

not be operated above the geosynthetic until one full lift of crushed stone fill is placed above it.

- **Chemical Treatment** - Improvement of subgrades with portland cement, lime or fly ash could be considered for improving unstable soils. Chemical treatment should be performed by a pre-qualified contractor having experience with successfully treating subgrades in the project area on similar sized projects with similar soil conditions. Results of chemical analysis of the chemical treatment materials should be provided to the Geotechnical Engineer for review prior to use. The hazards of chemicals blowing across the site or onto adjacent properties should also be considered. Additional testing would be needed to develop specific recommendations to improve subgrade stability by blending chemicals with the site soils. Additional testing could include, but not be limited to, determining the most suitable chemical treating agent, the optimum amounts required, the presence of sulfates in the soil, and freeze-thaw durability of the subgrade.

Further evaluation of the need and recommendations for subgrade stabilization can be provided during construction as the geotechnical conditions are exposed.

## Fill Material Types

Fill for this project should consist of engineered fill. Engineered fill is fill that meets the criteria presented in this report and has been properly documented. On-site soils, included the undocumented fill once excavated, free of deleterious materials or approved granular and low plasticity cohesive imported materials may be used as engineered fill material. The earthwork contractor should expect significant mechanical processing and moisture conditioning of the site soils will be needed to achieve proper compaction.

Imported fill materials (if required) should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

| Gradation | Percent Finer by Weight (ASTM C136) |
|---|---|
| 3″ | 100 |
| 1″ | 70-100 |
| No. 4 Sieve | 30-100 |
| No. 200 Sieve | 50 (max.) |

| Soil Properties | Values |
|---|---|
| Liquid Limit | 35 (max.) |
| Plasticity Index | 15 (max.) |

Other import fill material types may be suitable for use on the site depending upon proposed application and location on the site and could be tested and approved for use on a case-by-case basis.

## Fill Placement and Compaction Requirements

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.

| Item | Description |
|---|---|
| **Maximum Lift Thickness** | 9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used<br>4 to 6 inches in loose thickness when hand-guided equipment (i.e., jumping jack or plate compactor) is used |
| **Minimum Compaction Requirements** [1] | Engineered Fill: At least 95% of the maximum dry unit weight as determined by ASTM D698.<br>Engineered Fill 8 Feet or Greater: At least 98% of the maximum dry unit weight as determined by ASTM D698 for the entire depth of fill in areas receiving 8 feet of fill or greater.<br>Aggregate Base Course: At least 95% of maximum dry unit weight as determined by ASTM D1557 (or AASHTO T180) in pavement areas. |
| **Water Content Range** [2,3] | Cohesive (clay): -1% to +3% of optimum moisture content<br>Granular (sand): -3% to +3% of optimum moisture content |

1. We recommend engineered fill be tested for moisture content and compaction during placement. If the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2. Moisture conditioned clay materials should not be allowed to dry out. A loss of moisture within these materials could result in an increase in the material's expansive potential. Subsequent wetting of these materials could result in undesirable movement.
3. Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the fill material pumping when proof rolled.

## Utility Trench Backfill

Any loose, soft, or unsuitable materials encountered at the bottom of utility trench excavations should be removed and replaced with engineered fill or bedding material in accordance with public works specifications for the utility to be supported. This

recommendation is particularly applicable to utility work where settlement control of the utility is critical. Utility trench excavation should not be conducted below a downward 1:1 projection from existing foundations without engineering review of shoring requirements and geotechnical observation during construction.

On-site materials are considered suitable for backfill of utility and pipe trenches provided the material is free of organic matter and deleterious substances.

Utility trench backfill should be placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Flooding or jetting for placement and compaction of backfill is not recommended. If utility trenches are backfilled with relatively clean granular material, they should be capped with at least 18 inches of cohesive fill in non-pavement areas to reduce the infiltration and conveyance of surface water through the trench backfill.

All underground piping within or near the proposed structures should be designed with flexible couplings, so minor deviations in alignment do not result in breakage or distress. Utility knockouts in foundation walls should be oversized to accommodate differential movements.

We recommend a representative of the Geotechnical Engineer provide full-time observation and compaction testing of trench backfill within structure areas.

## Grading and Drainage

All grades must provide effective drainage away from the structures during and after construction and should be maintained throughout the life of the structures. Water retained next to the structures can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roof should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the buildings.

Exposed ground should be sloped and maintained at a minimum 10% away from the buildings for at least 5 feet beyond the perimeter of the buildings. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structures should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program.

Flatwork will be subject to post-construction movement. Maximum grades practical should be used for flatwork areas where water can pond. In addition, allowances in final grades should take into consideration post-construction movement of flatwork,

particularly if such movement would be critical. Where flatwork abuts the structures, care should be taken that joints are properly sealed and maintained to prevent the infiltration of surface water.

Planters (if any) located adjacent to structures should preferably be self-contained. Sprinkler mains and spray heads should be located a minimum of 5 feet away from the buildings line(s). Low-volume, drip style landscaped irrigation should be used sparingly near the building.

## Exterior Slab Design and Construction

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill or the site soils will likely experience some movement due to the volume change of the material. Subgrade soils below new fill should be scarified to a depth of at least 10 inches, moisture conditioned, and compacted prior to placement/construction of new engineered fill, aggregate base course, or flatwork materials. Potential movement could be reduced by:

- Minimizing moisture increases in subgrade soils and new fill;
- Controlling moisture-density during subgrade preparation and new fill placement;
- Using designs which allow vertical movement between the exterior features and adjoining structural elements; and
- Placing control joints on relatively close centers.

## Earthwork Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of grade-supported improvements such as floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

Excavations or other activities resulting in ground disturbance have the potential to affect adjoining properties and structures. Our scope of services does not include review

of available final grading information or consider potential temporary grading performed by the contractor for potential effects such as ground movement beyond the project limits. A preconstruction/ precondition survey should be conducted to document nearby property/infrastructure prior to any site development activity. Excavation or ground disturbance activities adjacent or near property lines should be monitored or instrumented for potential ground movements that could negatively affect adjoining property and/or structures.

### Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or others under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, and existing pavements, if any), evaluation and remediation of existing fill materials, subgrade stabilization, as well as proof rolling and mitigation of unsuitable areas delineated by the proof roll. Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended by the Geotechnical Engineer prior to placement of additional lifts.

In areas of foundation excavations, the bearing subgrade and exposed conditions at the base of the recommended over-excavation should be evaluated by the Geotechnical Engineer. If unanticipated conditions are observed, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

## Shallow Foundations

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

### Design Recommendations

| Facility Type | Maximum Net Allowable Bearing Pressure [1] | Maximum Foundation Dimension | Assumed Bearing Depth Below Grade |
|---|---|---|---|
| New Anaerobic Basins | 1,500 psf | 20 ft. by 100 ft. | 15 feet |

| Facility Type | Maximum Net Allowable Bearing Pressure [1] | Maximum Foundation Dimension | Assumed Bearing Depth Below Grade |
|---|---|---|---|
| New Clariflocculation Basin and Membrane Reactor | 1,500 psf | 110 ft. by 50 ft. | 14 feet |
| New Biological Nutrient Reactor | 1,500 psf | 60 ft. by 240 ft. | 15 feet |
| New Solids Digester | 2,500 psf | 64 ft. in diameter | 27 feet |
| Solids Building Expansion | 2,000 psf | 5 feet for column footings, 2.5 feet for continuous footings. | At least 2.5 feet |

| Item | Description |
|---|---|
| **Required Bearing Stratum** [2] | 3 feet of moisture conditioned, properly compacted engineered fill and all existing fill has been completely removed below foundations |
| **Minimum Foundation Dimensions** | Columns: 30 inches<br>Continuous: 18 inches |
| **Lateral Earth Pressure Coefficients** [3] | On-site granular soil and engineered fill:<br>Active, $K_a$ = 0.33<br>Passive, $K_p$ = 3.00<br>At-rest, $K_o$ = 0.50 |
| **Sliding Resistance** [4] | On-site granular soil and engineered fill:<br>$\mu$ = 0.46 (ultimate) |
| **Moist Soil Unit Weight** | On-site granular soil and engineered fill:<br>$\gamma$ = 110 pcf |
| **Minimum Embedment Below Finished Grade** [5] | Exterior footings in unheated areas: 30 inches<br>Interior footings and column pads in heated areas: 12 inches |
| **Subgrade Modulus** | $k_1$ = 130 psi/in. |
| **Estimated Total Movement** [6] | About 1 inch or less |

| Item | Description |
|---|---|
| **Estimated Differential Movement** [6] | About ½ to ¾ of total movement |

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Values assume exterior grades are no steeper than 20% within 10 feet of structure. The design bearing pressure applies to a dead load plus design live load condition. The design bearing pressure may be increased by one-third when considering total loads that include wind or seismic conditions.
2. Unsuitable or loose soils should be over-excavated and replaced with engineered fill per the recommendations presented in **Earthwork**.
3. Use of lateral earth pressures require the sides of the excavation for the foundations to be nearly vertical and the concrete placed neat against these vertical faces or the foundation forms be removed and compacted engineered fill be placed against the vertical foundation face. Assumes no hydrostatic pressure. The lateral earth pressure coefficients are ultimate values and do not include a factor of safety. The foundation designer should include the appropriate factors of safety.
4. For fine-grained materials, lateral resistance using cohesion should not exceed ½ the dead load.
5. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
6. The estimated movements presented above assume the maximum foundations dimension presented above with each facility type. Larger foundation footprints will likely require reduced net allowable soil bearing pressures to reduce risk for potential settlement.

Foundations should be proportioned to reduce differential foundation movement. As discussed, total movement resulting from the assumed structural loads is estimated to be on the order of about 1 inch. Additional foundation movements could occur if water from any source infiltrates the foundation soils; therefore, proper drainage should be provided in the final design and during construction and throughout the life of the structure. Failure to maintain the proper drainage as recommended in the **Grading and Drainage** section of the **Earthwork** section of this report will nullify the movement estimates provided above.

Any over-excavation that extends below the bottom of foundation elevation should extend laterally beyond all edges of the foundations at least 8 inches per foot of over-excavation depth below the foundation base elevation. The over-excavation should be backfilled to the foundation base elevation in accordance with the recommendations presented in this report.

### Shallow Foundation Construction Considerations

As noted in **Earthwork**, foundation excavations should be evaluated under the observation of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of foundation excavations should be removed/reconditioned before foundation concrete is placed.

To reduce the potential of "pumping" and softening of the foundation soils at the foundation bearing level and the requirement for corrective work, we suggest the foundation excavation for the buildings and structures be completed remotely with a track-hoe operating outside of the excavation limits.

Foundation elements should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement.

Unstable subgrade conditions encountered in foundation excavations should be observed by Terracon to assess the subgrade and provide suitable alternatives for stabilization. Typical methods of stabilization/improvement are presented in the **Subgrade Stabilization** section of **Earthwork**.

### Construction of Structures with Different Bearing Elevations

Differential settlement between adjacent sections of structures with different bearing elevations is expected to approach the magnitude of the total settlement of the different sections. Expansion joints should be provided between the different sections of the structures to accommodate differential movements between the sections. Underground piping between structures should be designed with flexible couplings and utility knockouts in foundation walls should be oversized, so minor deflections in alignment do not result in breakage or distress.

## Floor Slabs

Existing fill materials and materials described as possible fill were observed at the site to depths of 5½ to 12½ feet below existing grade.

A slab-on-grade may be utilized for the interior floor system for the proposed building(s) provided the undocumented fill is over-excavated to a depth of at least 3 feet, moisture conditioned, and compacted. Clean on-site soils are suitable as over-excavation backfill below floor slabs. If the estimated movement cannot be tolerated, a structurally-

supported floor system, supported independent of the subgrade materials, is recommended.

Subgrade soils beneath interior and exterior slabs and at the base of the over-excavation for removal of existing fill should be scarified to a depth of at least 10 inches, moisture conditioned and compacted. The moisture content and compaction of subgrade soils should be maintained until slab construction.

## Floor System - Design Recommendations

Even when bearing on properly prepared soils, movement of the slab-on-grade floor system is possible should the subgrade soils undergo an increase in moisture content. We estimate movement of about 1 inch is possible. If the owner cannot accept the risk of slab movement, a structural floor should be used. If conventional slab-on-grade is utilized, the subgrade soils should be over-excavated and prepared as presented in the **Earthwork** section of this report.

For structural design of concrete slabs-on-grade subjected to point loadings, a modulus of subgrade reaction of 100 pounds per cubic inch (pci) may be used for floors supported on re-compacted existing soils at the site. A modulus of 200 pci may be used for floors supported on at least 1 foot of non-expansive, imported granular fill.

Additional floor slab design and construction recommendations are as follows:

- Positive separations and/or isolation joints should be provided between slabs and all foundations, columns, or utility lines to allow independent movement.
- Control joints should be saw-cut in slabs in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended) to control the location and extent of cracking.
- Interior utility trench backfill placed beneath slabs should be compacted in accordance with the recommendations presented in the **Earthwork** section of this report.
- Floor slabs should not be constructed on frozen subgrade.
- Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

## Floor Slab Construction Considerations

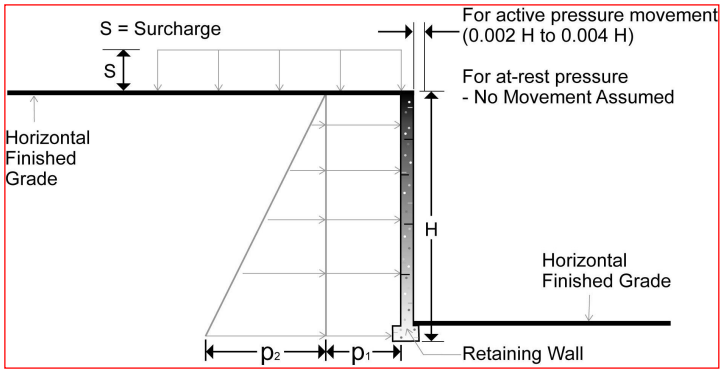
Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should observe the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

# Below-Grade Structures

## Lateral Earth Pressures

Below-grade structures or reinforced concrete walls with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to those indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The "at-rest" condition assumes no wall movement. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls.



**Lateral Earth Pressure Design Parameters**

| Earth Pressure Condition [1] | Coefficient for Backfill Type [2] | Equivalent Fluid Density (pcf) | Surcharge Pressure [3] $p_1$ (psf) | Equivalent Fluid Pressures (psf) [2,4] | |
|---|---|---|---|---|---|
| | | | | Unsaturated [5] | Submerged [5] |
| Active (Ka) | Granular - 0.33 | 40 | (0.33)S | (40)H | (80)H |
| At-Rest (Ko) | Granular - 0.50 | 55 | (0.50)S | (55)H | (85)H |
| Passive (Kp) | Granular - 3.0 | 330 | --- | --- | --- |

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance. Fat clay or other expansive soils should not be used as backfill behind the wall.
2. Uniform, horizontal backfill, with a maximum unit weight of 110 pcf for granular soils.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. To achieve "Unsaturated" conditions, follow guidelines in **Subsurface Drainage for Below-Grade Walls** below. "Submerged" conditions are recommended when drainage behind walls is not incorporated into the design.

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively. To calculate the resistance to sliding, a value of 0.46 should be used as the ultimate coefficient of friction between the foundation and the underlying granular soil.

Foundations, floor slabs or other loads bearing on backfill behind walls may have a significant influence on the lateral earth pressure. Placing footings within wall backfill and in the zone of active soil influence on the wall should be avoided unless structural analyses indicate the wall can safely withstand the increased pressure.

The lateral earth pressure recommendations given in this section are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of modular block - geogrid reinforced backfill walls (also termed MSE walls). Recommendations covering these types of wall systems are beyond the scope of services for this assignment. However, we would be pleased to develop a proposal for evaluation and design of such wall systems upon request.

## Sump Pits

We anticipate sump pits could be included in the interior of some of the new structures. Sump pits will likely consist of reinforced concrete walls with a concrete base slab. Based on our experience with this type of construction, we anticipate the base slabs will be up to about 5 feet below the level of the finished floor slab.

## Sump Pits – Design Recommendations

Subsurface conditions in sump pit excavations are generally anticipated to consist of engineered fill or native sand soils. Groundwater was encountered at depths of about 7 to 21½ feet below existing site grades at the time of the field exploration. However, groundwater levels can and should be expected to fluctuate over time.

Depending upon final site grades and sump pit elevations, groundwater could impact the performance of the pit base slab. If the pit slab is constructed at or within about 3 feet of the level of groundwater, the pit/slab should be designed and constructed to resist hydrostatic pressures and uplift due to the effects of buoyancy or it should be protected by an underdrain system for permanent dewatering. "Water-proofing" of the pit will also be needed if permanent dewatering is not used. Terracon should evaluate the groundwater level within each sump pit area prior to or during construction.

Reinforced concrete pit walls should be designed for lateral earth pressures and/or combined hydrostatic and lateral earth pressures at least equal to those stated previously in the **Lateral Earth Pressure** section for above and below groundwater conditions.

The lateral earth pressures presented above do not include a factor of safety. As such, appropriate factors of safety should be applied to these values. Furthermore, the lateral earth pressures do not include the influence of surcharge, equipment, or floor loading, which should be added.

Any backfill placed against the sum pit walls should be compacted as described in the Fill **Placement and Compaction Requirements** section of this report. On-site soils are suitable as sump pit wall backfill.

# Pavements

## Pavements and Roadway – Subgrade Preparation

On most project sites, the site grading is accomplished relatively early in the construction phase. Fills are typically placed and compacted in a uniform manner.

However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, or rainfall/snow melt. As a result, the pavement subgrade may not be suitable for pavement construction and corrective action will be required. The subgrade should be carefully evaluated at the time of pavement construction for signs of disturbance or instability. We recommend the pavement subgrade be thoroughly proof rolled with a loaded tandem-axle dump truck prior to final grading and paving. All pavement areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to paving.

## Pavements – Design Recommendations

Design of new privately maintained pavements for the project has been based on the procedures described by the National Asphalt Pavement Associations (NAPA) and the American Concrete Institute (ACI).

We assumed the following design parameters for NAPA flexible pavement thickness design:

- Main Drive Lanes
  - Class II – Drive lanes without regular truck traffic, occasional moving vans, trash pickup, delivery trucks, and a maximum of 30 trucks per month with Equivalent Single Axle Load (ESAL) up to 20,000 over 20 years
- Subgrade Soil Characteristics
  - USCS Classification – SW-SM, SP, SM, classified by NAPA as medium to good

We assumed the following design parameters for ACI rigid pavement thickness design based upon the average daily truck traffic (ADTT):

- Main Drive Lanes
  - ACI Category A: Entrance and truck service lanes with an ADTT of up to 1 over 20 years
- Subgrade Soil Characteristics
  - USCS Classification – SW-SM, SP, SM
- Concrete modulus of rupture value of 600 psi

We should be contacted to confirm and/or modify the recommendations contained herein if actual traffic volumes differ from the assumed values shown above.

Recommended alternatives for flexible and rigid pavements are summarized for each traffic area as follows:

| Traffic Area | Alternative | Recommended Pavement Thicknesses (Inches) | | | |
|---|---|---|---|---|---|
| | | Asphaltic Concrete Surface | Aggregate Base Course | Portland Cement Concrete | Total |
| Main Drive Lanes | A | 4½ | 6 | - | 10½ |
| | B | - | 5 | - | 5 |

Aggregate base course should consist of a blend of sand and gravel which meets strict specifications for quality and gradation. Use of materials meeting Colorado Department of Transportation (CDOT) Class 5 or 6 specifications is recommended for aggregate base course. Aggregate base course should be placed in lifts not exceeding 6 inches and compacted to a minimum of 95 percent of the maximum dry unit weight as determined by ASTM D1557.

Asphaltic concrete should be composed of a mixture of aggregate, filler and additives (if required) and approved bituminous material. The asphalt concrete should conform to approved mix designs stating the Superpave properties, optimum asphalt content, job mix formula and recommended mixing and placing temperatures. Aggregate used in asphalt concrete should meet particular gradations. Material meeting CDOT Grading S or SX specifications or equivalent is recommended for asphalt concrete. Mix designs should be submitted prior to construction to verify their adequacy. Asphalt material should be placed in maximum 3-inch lifts and compacted within a range of 92 to 96 percent of the theoretical maximum (Rice) density (ASTM D2041).

Where rigid pavements are used, the concrete should be produced from an approved mix design with the following minimum properties:

| Properties | Value |
|---|---|
| **Compressive strength** | 4,500 psi |
| **Cement type** | Type I or II Portland cement |
| **Entrained air content (%)** | 5 to 8 |
| **Concrete aggregate** | ASTM C33 and CDOT section 703 |

Concrete should be deposited by truck mixers or agitators and placed a maximum of 90 minutes from the time the water is added to the mix. Longitudinal and transverse joints should be provided as needed in concrete pavements for expansion/contraction and isolation per ACI 325. The location and extent of joints should be based upon the final pavement geometry.

For areas subject to concentrated and repetitive loading conditions (if any) such as dumpster pads, truck delivery docks and ingress/egress aprons, we recommend using a

portland cement concrete pavement with a thickness of at least 6 inches underlain by at least 4 inches of granular base. Prior to placement of the granular base, the areas should be thoroughly proof rolled. For dumpster pads, the concrete pavement area should be large enough to support the container and tipping axle of the refuse truck.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Site grades should slope a minimum of 2 percent away from the pavements;
- The subgrade and the pavement surface have a minimum 2 percent slope to promote proper surface drainage;
- Consider appropriate edge drainage and pavement under drain systems;
- Install pavement drainage surrounding areas anticipated for frequent wetting;
- Install joint sealant and seal cracks immediately;
- Seal all landscaped areas in, or adjacent to pavements to reduce moisture migration to subgrade soils; and
- Placing compacted, low permeability backfill against the exterior side of curb and gutter.

## Pavements – Construction Considerations

Openings in pavement, such as landscape islands, are sources for water infiltration into surrounding pavements. Water collects in the islands and migrates into the surrounding subgrade soils thereby degrading support of the pavement. This is especially applicable for islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils. The civil design for the pavements with these conditions should include features to restrict or to collect and discharge excess water from the islands. Examples of features are edge drains connected to the storm water collection system or other suitable outlet and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

## Pavements – Maintenance

Preventative maintenance should be planned and provided for an ongoing pavement management program in order to enhance future pavement performance. Preventive maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

# General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly effect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and

recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

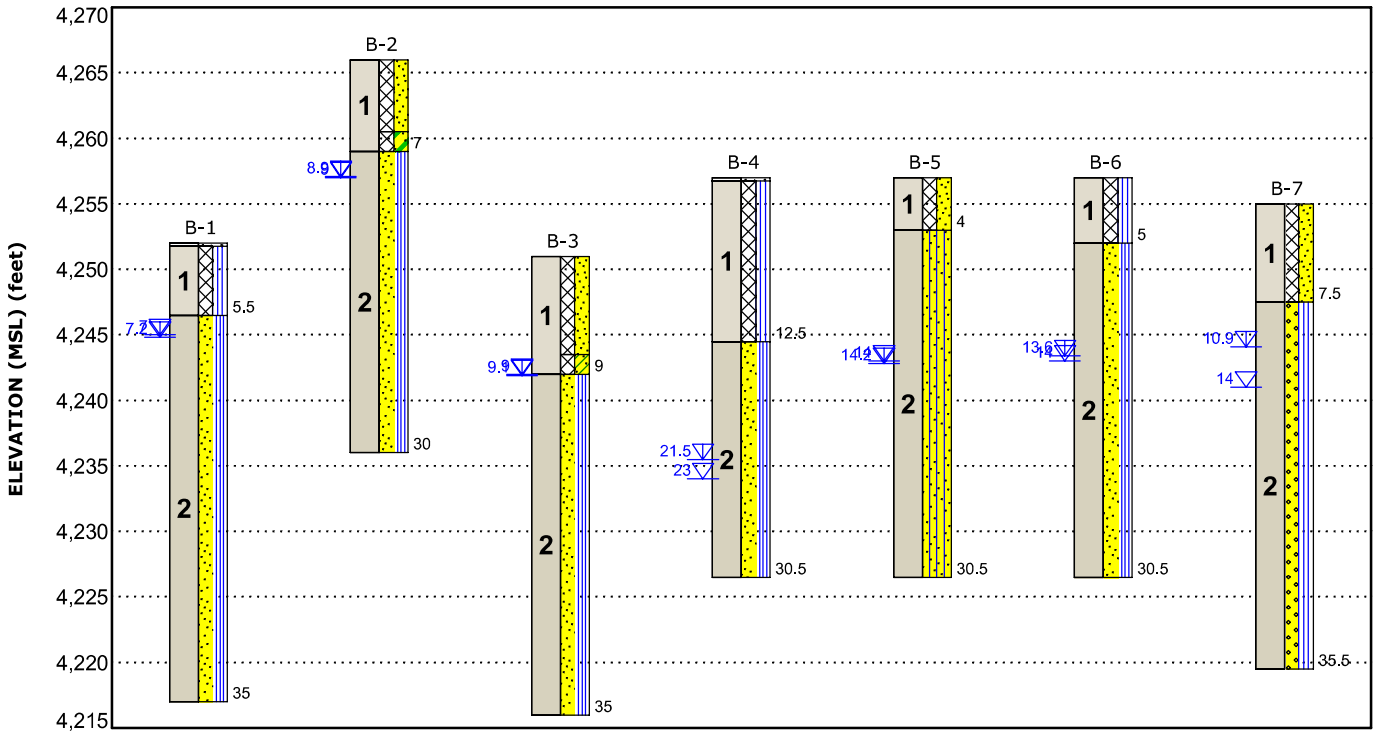
# Figures

**Contents:**

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# GeoModel




This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

| Model Layer | Layer Name | General Description |
|---|---|---|
| 1 | **Undocumented Fill** | Undocumented fill consisting of poorly graded to well graded sand with varying amounts of silt to clayey sand to sandy lean clay, dark brown to gray to tan to orange to pink to red, trace FeOx. |
| 2 | **Sand** | Poorly graded sand to well graded sand with varying amounts of silt, light brown to orange to pink, very loose medium dense, trace FeOx. |

**Legend**

- Vegetative Layer
- Well-graded Sand with Silt
- Poorly-graded Sand with Silt
- Poorly-graded Sand
- Clayey Sand
- Sandy Lean Clay
- Silty Sand

▽ First Water Observation
▽ Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

# Attachments

## Exploration and Testing Procedures
## Site Location and Exploration Plans
## Exploration and Laboratory Test Results
## Supporting Information

# Exploration and Testing Procedures

## Field Exploration

| Number of Borings | Approximate Boring Depth (feet) | Location |
|---|---|---|
| 3 | 35 | Perimeter of existing wastewater treatment facility |
| 4 | 30 | |

**Boring Layout and Elevations:** Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were obtained by interpolation from a USGS topographic map. If precise ground surface elevations and boring location are desired, we recommend borings be surveyed.

**Subsurface Exploration Procedures:** We advanced soil borings with a truck-mounted drill rig using continuous-flight, hollow-stem augers. Four to seven samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. Sampling was performed using modified California barrel and/or standard split-barrel sampling procedures. For the standard split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. For the modified California barrel sampling procedure, a 2½-inch outer diameter split-barrel sampling spoon is used for sampling. Modified California barrel sampling procedures are similar to standard split-barrel sampling procedures; however, blow counts are typically recorded for 6-inch intervals for a total of 12 inches of penetration. For safety purposes, all borings were backfilled with auger cuttings after their completion.

We also observed the boreholes while drilling and at the completion of drilling for the presence of groundwater. The groundwater levels are shown on the attached boring logs.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's

interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

## Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Water content
- Dry unit weight
- Atterberg limits
- Grain size analysis
- Chemical analyses – pH, sulfates, chloride ion, sulfide ion, redox, total salts and electrical resistivity

The laboratory testing program often included examination of soil samples by an engineer and/or geologist. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System. A brief description of this classification system as well as the General Notes can be found in the **Supporting Information** section.

Laboratory test results are indicated on the boring logs and are presented in depth in the **Exploration Results** section. Laboratory tests are performed in general accordance with applicable local standards or other acceptable standards. In some cases, variations to methods are applied as a result of local practice or professional judgement.

# Site Location and Exploration Plans

**Contents:**



Note: All attachments are one page unless noted above.

## Site Location


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

## Exploration Plan (page 1 of 2)


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

## Exploration Plan (page 2 of 2)

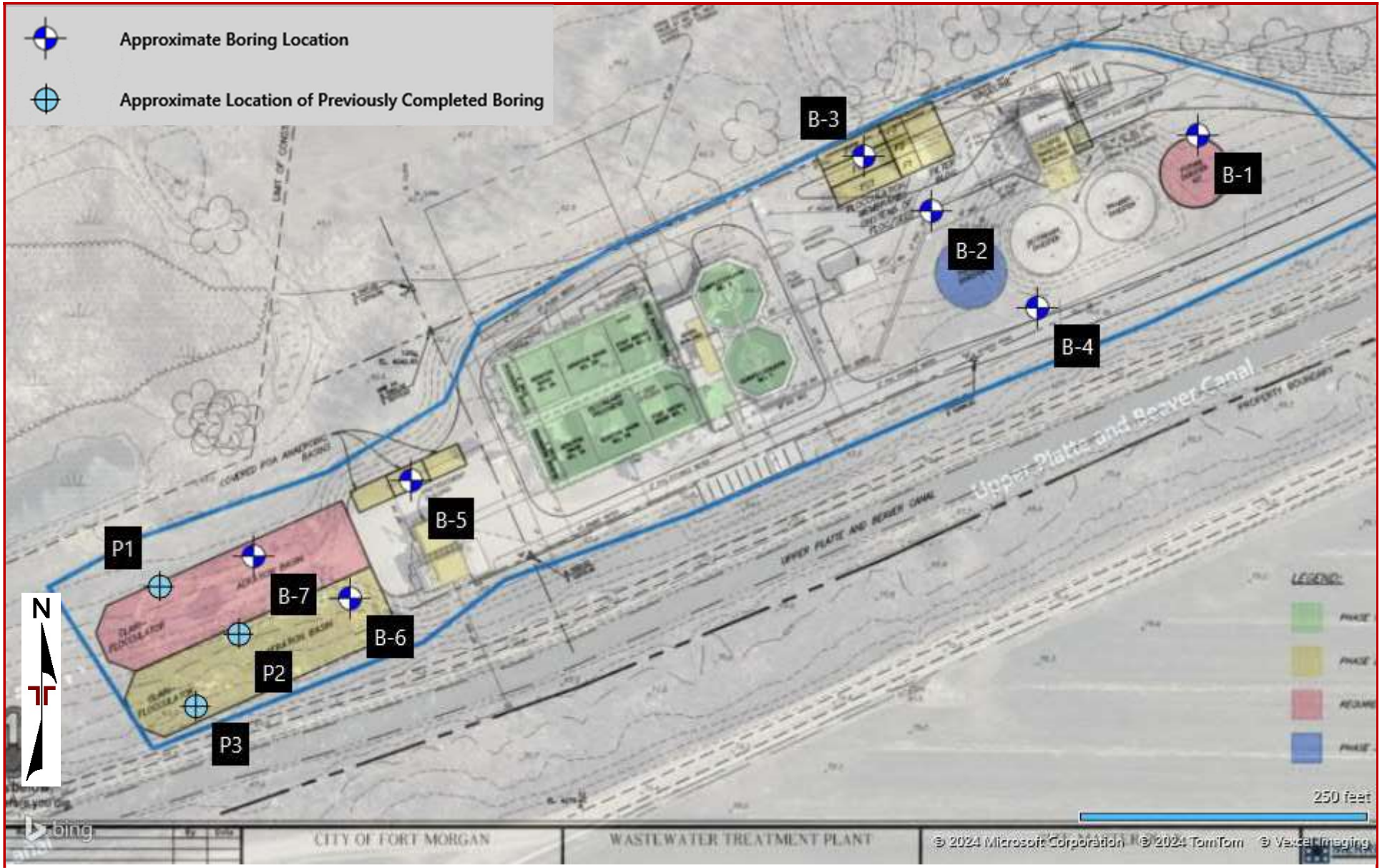



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

# Exploration and Laboratory Results

**Contents:**



Note: All attachments are one page unless noted above.

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Boring Log No. B-1

Location: See Exploration Plan

Latitude: 40.2642° Longitude: -103.7388°

| Model Layer | Depth (Ft.) | Elevation: 4,252 (Ft.) +/- | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 | **VEGETATIVE LAYER**, about 3 inches thick — 4251.75 | | | 4-8-9 N=17 | 6.5 | | | |
| | | **FILL - WELL GRADED SAND WITH SILT (SW-SM)**, brown to dark brown, 2 inch thick sandy lean clay layer | | | 11-15 26/12" | 5.3 | | NP | 10 |
| | | | | | 7-6-3 N=9 | 7.4 | | | |
| | 5.5 | trace FeOx at about 5 feet — 4246.5 | | | 4-2 6/12" | 12.7 | 98 | | |
| 2 | | **POORLY GRADED SAND WITH SILT**, light brown to orange to pink, loose to medium dense | ▽ | | 6-6-5 N=11 | 14.4 | | | |
| | | | | | 3-4-4 N=8 | 14.3 | | | |
| | | trace FeOx at about 14 feet | | | 4-6-7 N=13 | 17.0 | | | |
| | | | | | 6-7-8 N=15 | 15.1 | | | |
| | | | | | 4-6-10 N=16 | 17.6 | | | |
| | | heaving sands in augers, blow counts not representative | | | 7-14-50/0" | 17.2 | | | |
| | 35.0 | heaving sands in augers, blow counts not representative — 4217 | | | 9-13-50/0" no recovery | | | | |
| | | ***Boring Terminated at 35 Feet*** | | | | | | | |

Depth (Ft.) 5 10 15 20 25 30 35

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using https://apps.nationalmap.gov/viewer/

**Water Level Observations**
▽ about 7 feet while drilling
▽ about 7.2 feet at completion of drilling

**Drill Rig**
CME-75

**Hammer Type**
Automatic
Efficiency=71%

**Driller**
Terracon

**Logged by**
AW

**Boring Started**
02-16-2024

**Boring Completed**
02-16-2024

**Notes**

**Advancement Method**
4.25-inch inner diameter, continuous-flight, hollow-stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Boring Log No. B-2

Location: See Exploration Plan

Latitude: 40.2641° Longitude: -103.7396°

Depth (Ft.) Elevation: 4,266 (Ft.) +/-

| Model Layer | Depth (Ft.) | Material Description | Elevation | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | **FILL - POORLY GRADED SAND**, brown | | | | 2-3-5 N=8 | 8.7 | | | |
| | | | | | | 3-3 6/12" | 7.8 | 105 | | |
| | | | | | | 2-2-3 N=5 | 7.5 | | | |
| | 5.5 | | 4260.5 | | | 4-8 12/12" | 8.3 | 111 | | |
| | 7.0 | **FILL - CLAYEY SAND (SC)**, gray to light brown to orange to pink, about 3 inch thick layer of dark gray sandy lean clay with trace FeOx | 4259 | | | 10-8-6 N=14 | 9.5 | | 24-16-8 | 21 |
| 2 | | **POORLY GRADED SAND WITH SILT**, tan to brown, very loose to medium dense | | | | 2-2 4/12" no recovery | | | | |
| | | | | | | 3-5-5 N=10 | 13.9 | | | |
| | | | | | | 4-7-8 N=15 | 13.8 | | | |
| | | | | | | 5-9-12 N=21 | 15.0 | | | |
| | | heaving sands in augers, blow counts not representative | | | | 6-10-50/0" | 14.6 | | | |
| | 30.0 | heaving sands in augers, blow counts not representative | 4236 | | | 5-19-50/0" | 17.3 | | | |
| | | ***Boring Terminated at 30 Feet*** | | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using https://apps.nationalmap.gov/viewer/

**Water Level Observations**
about 9 feet while drilling
about 8.9 feet at completion of drilling

**Drill Rig**
CME-75

**Hammer Type**
Automatic
Efficiency=71%

**Driller**
Terracon

**Logged by**
AW

**Boring Started**
02-16-2024

**Boring Completed**
02-16-2024

**Notes**

**Advancement Method**
4.25-inch inner diameter, continuous-flight, hollow-stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Boring Log No. B-3

Location: See Exploration Plan

Latitude: 40.2642° Longitude: -103.7399°

Depth (Ft.) Elevation: 4,251 (Ft.) +/-

| Model Layer | Depth (Ft.) | Material Description | Elevation | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | **FILL - POORLY GRADED SAND (SP)**, brown to tan to orange to pink | | | | 4-7-9 N=16 | 6.6 | | | |
| | | | | | | 3-5 8/12" | 5.8 | 92 | | |
| | | | | | | 7-7-7 N=14 | 3.0 | | NP | 4 |
| | 7.5 | | 4243.5 | | | | | | | |
| | 9.0 | **FILL - SANDY LEAN CLAY**, dark gray to dark red to brown, trace FeOx | 4242 | | | 2-1 3/12" | 16.3 | 96 | | |
| 2 | | **POORLY GRADED SAND WITH SILT**, light brown to orange to pink, very loose to medium dense | | ▽ | | 2-2 4/12" | 15.6 | 98 | | |
| | | | | | | 6-7-10 N=17 | 14.1 | | | |
| | | | | | | 6-6-9 N=15 | 14.4 | | | |
| | | | | | | 2-4-6 N=10 | 19.2 | | | |
| | | | | | | 6-10-15 N=25 | 15.3 | | | |
| | 35.0 | heaving sands in augers, blow counts not representative | 4216 | | | 8-17-50/0" | 18.0 | | | |
| | | ***Boring Terminated at 35 Feet*** | | | | | | | | |

Depth (Ft.): 5, 10, 15, 20, 25, 30, 35

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using https://apps.nationalmap.gov/viewer/

**Water Level Observations**
▽ about 9 feet while drilling
▽ about 9.1 feet at completion of drilling

**Drill Rig**
CME-75

**Hammer Type**
Automatic
Efficiency=71%

**Driller**
Terracon

**Logged by**
AW

**Boring Started**
02-15-2024

**Boring Completed**
02-15-2024

**Notes**

**Advancement Method**
4.25-inch inner diameter, continuous-flight, hollow-stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Boring Log No. B-4

Location: See Exploration Plan

Latitude: 40.2638° Longitude: -103.7393°

Depth (Ft.) Elevation: 4,257 (Ft.) +/-

| Model Layer | Depth (Ft.) | Material Description | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 (4256.75) | **VEGETATIVE LAYER**, about 3 inches thick | | | | | | | |
| | | **FILL - WELL GRADED SAND WITH SILT (SW-SM)**, brown | | | 2-3 5/12" | 7.1 | 93 | | |
| | | | | | 4-3-2 N=5 | 3.8 | | | |
| | | | | | 4-4 8/12" | 3.4 | 101 | | |
| | | | | | 3-3-3 N=6 | 3.7 | | | |
| | 5 | | | | 2-3 5/12" | 3.6 | 107 | | |
| | | | | | 1-2-2 N=4 | 4.0 | | NP | 11 |
| | 10 | | | | 2-1-2 N=3 | 4.5 | | | |
| | | | | | 2-3-4 N=7 | 4.2 | | | |
| 2 | 12.5 (4244.5) | **POORLY GRADED SAND WITH SILT (SP-SM)**, fine to coarse grained, tan to light brown with orange and pink, loose to medium dense | | | | | | | |
| | 15 | | | | 2-3-4 N=7 | 6.6 | | NP | 11 |
| | | trace FeOx at about 19 feet | | | 5-6-9 N=15 | 4.1 | | | |
| | 20 | | ▽ | | | | | | |
| | | | ▽ | | | | | | |
| | 25 | | | | 2-2-2 N=4 | 18.5 | | | |
| | 30 | | | | 3-7-9 N=16 | 15.1 | | | |
| | 30.5 (4226.5) | ***Boring Terminated at 30.5 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using https://apps.nationalmap.gov/viewer/

**Water Level Observations**
▽ about 23 feet while drilling
▽ about 21.5 feet at completion of drilling

**Drill Rig**
CME-75

**Hammer Type**
Automatic
Efficiency=71%

**Driller**
Terracon

**Logged by**
AW

**Boring Started**
02-16-2024

**Boring Completed**
02-16-2024

**Notes**

**Advancement Method**
4.25-inch inner diameter, continuous-flight, hollow-stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Boring Log No. B-5

Location: See Exploration Plan

Latitude: 40.2634° Longitude: -103.7413°

Depth (Ft.) Elevation: 4,257 (Ft.) +/-

| Model Layer | Graphic Log | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | **FILL - POORLY GRADED SAND**, brown | | | | | | | |
| | | 4.0 4253 | | | 5-7-9 N=16 | 5.8 | | | |
| | | | | | 9-15 24/12" | 3.8 | 90 | | |
| | | 5 | | | 10-15-15 N=30 | 6.0 | | NP | 14 |
| | | | | | 10-16 26/12" | 2.4 | 99 | | |
| | | 10 | | | | | | | |
| 2 | | **SILTY SAND (SM)**, fine to coarse grained, tan to light brown with orange and light pink, loose to medium dense | | | | | | | |
| | | dark brown to black | | | 1-2-3 N=5 | 19.8 | | | |
| | | 15 | | | | | | | |
| | | | | | 3-4-6 N=10 | 18.9 | | | |
| | | 20 | | | | | | | |
| | | trace FeOx at about 24 feet | | | 4-6-9 N=15 | 16.9 | | | |
| | | 25 | | | | | | | |
| | | 30.5 4226.5 | | | 6-9-12 N=21 | 15.1 | | | |
| | | ***Boring Terminated at 30.5 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using https://apps.nationalmap.gov/viewer/

**Water Level Observations**
about 14 feet while drilling
about 14.2 feet at completion of drilling

**Drill Rig**
CME-75

**Hammer Type**
Automatic
Efficiency=71%

**Driller**
Terracon

**Logged by**
AW

**Boring Started**
02-15-2024

**Boring Completed**
02-15-2024

**Notes**

**Advancement Method**
4.25-inch inner diameter, continuous-flight, hollow-stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Boring Log No. B-6

Location: See Exploration Plan

Latitude: 40.2631° Longitude: -103.7415°

Depth (Ft.) Elevation: 4,257 (Ft.) +/-

| Model Layer | Graphic Log | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | **FILL - WELL GRADED SAND WITH SILT (SW-SM)**, brown, trace roots | | | 3-3-5 N=8 | 2.8 | | | |
| | | | | | 7-9 16/12" | 4.0 | 105 | NP | 8 |
| | | 5.0 4252 | | | 2-1-2 N=3 | 6.7 | | | |
| 2 | | **POORLY GRADED SAND WITH SILT**, fine to coarse grained, tan to light brown to orange to light pink, very loose to medium dense | | | 3-2 5/12" | 2.0 | 81 | | |
| | | | | | 2-4-6 N=10 | 2.6 | | | |
| | | | | | 3-3-5 N=8 | 17.7 | | | |
| | | | | | 4-7-10 N=17 | 14.1 | | | |
| | | | | | 4-3-6 N=9 | 19.0 | | | |
| | | 30.5 4226.5 | | | 3-6-9 N=15 | 14.3 | | | |
| | | ***Boring Terminated at 30.5 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using https://apps.nationalmap.gov/viewer/

**Water Level Observations**
about 14 feet while drilling
about 13.6 feet at completion of drilling

**Drill Rig**
CME-75

**Hammer Type**
Automatic
Efficiency=71%

**Driller**
Terracon

**Logged by**
AW

**Boring Started**
02-15-2024

**Boring Completed**
02-15-2024

**Notes**

**Advancement Method**
4.25-inch inner diameter, continuous-flight, hollow-stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Boring Log No. B-7

Location: See Exploration Plan

Latitude: 40.2632° Longitude: -103.7418°

Depth (Ft.) Elevation: 4,255 (Ft.) +/-

| Model Layer | Graphic Log | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | **FILL - POORLY GRADED SAND**, brown, appears to contain wastewater treatment facility debris | | | | | | | |
| | | | | | 0-1-1 N=2 | 4.5 | | | |
| | | | | | 5-4-2 N=6 | 3.8 | | | |
| | | | | | 3-2-4 N=6 | 4.5 | | | |
| | | 7.5 4247.5 | | | | | | | |
| 2 | | **WELL GRADED SAND WITH SILT (SW-SM)**, tan with orange and light pink, loose to medium dense | | | | | | | |
| | | 5 | | | 5-5-4 N=9 | 2.4 | | | |
| | | 10 | | | 5-5-4 N=9 | 4.1 | | NP | 7 |
| | | | | | 3-2-3 N=5 | 18.3 | | | |
| | | fine to coarse grained, trace black sand | | | | | | | |
| | | 20 | | | 3-5-6 N=11 | 13.3 | | | |
| | | 25 | | | 4-10-11 N=21 | 16.9 | | | |
| | | 30 | | | 6-11-13 N=24 | 15.6 | | | |
| | | 35 | | | 4-6-10 N=16 | 16.4 | | | |
| | | 35.5 4219.5 | | | | | | | |
| | | ***Boring Terminated at 35.5 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using https://apps.nationalmap.gov/viewer/

**Water Level Observations**
▽ about 14 feet while drilling
▽ about 10.9 feet at completion of drilling

**Drill Rig**
CME-75

**Hammer Type**
Automatic
Efficiency=71%

**Driller**
Terracon

**Logged by**
AW

**Boring Started**
02-15-2024

**Boring Completed**
02-15-2024

**Notes**

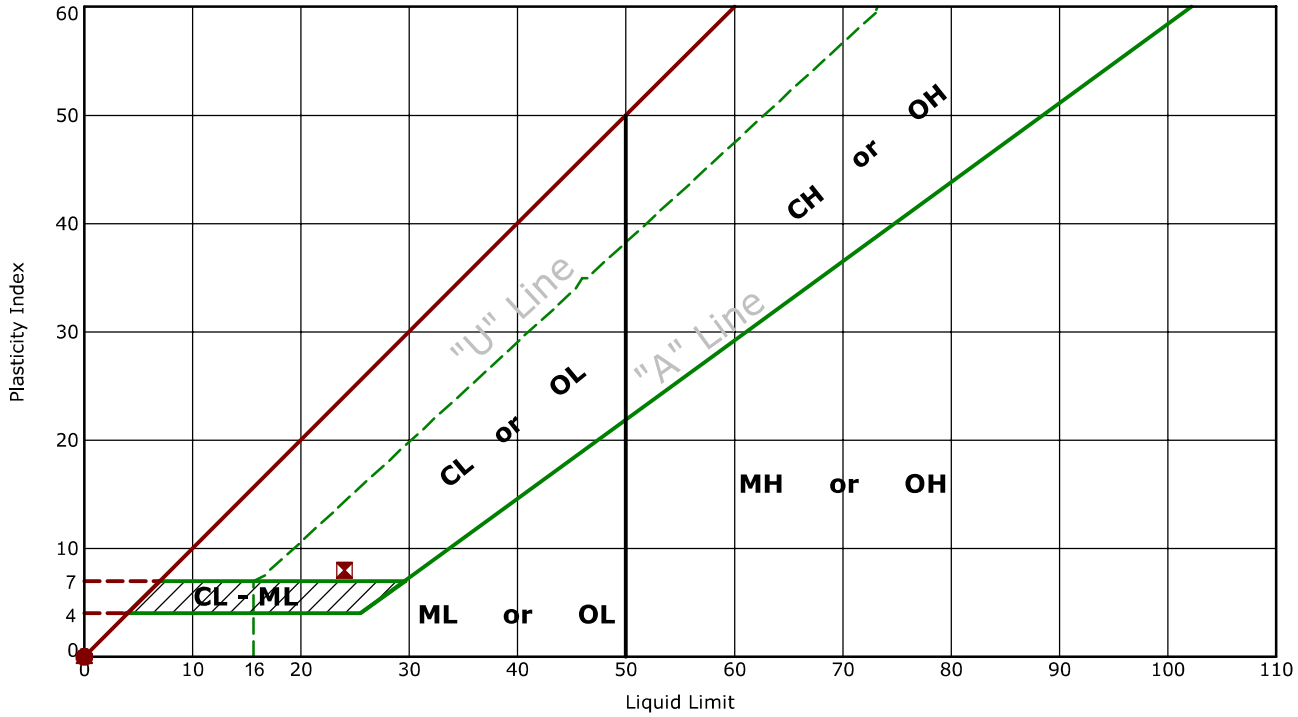
**Advancement Method**
4.25-inch inner diameter, continuous-flight, hollow-stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Terracon
1510 44th St Unit 1
Evans, CO

# Atterberg Limit Results

## ASTM D4318



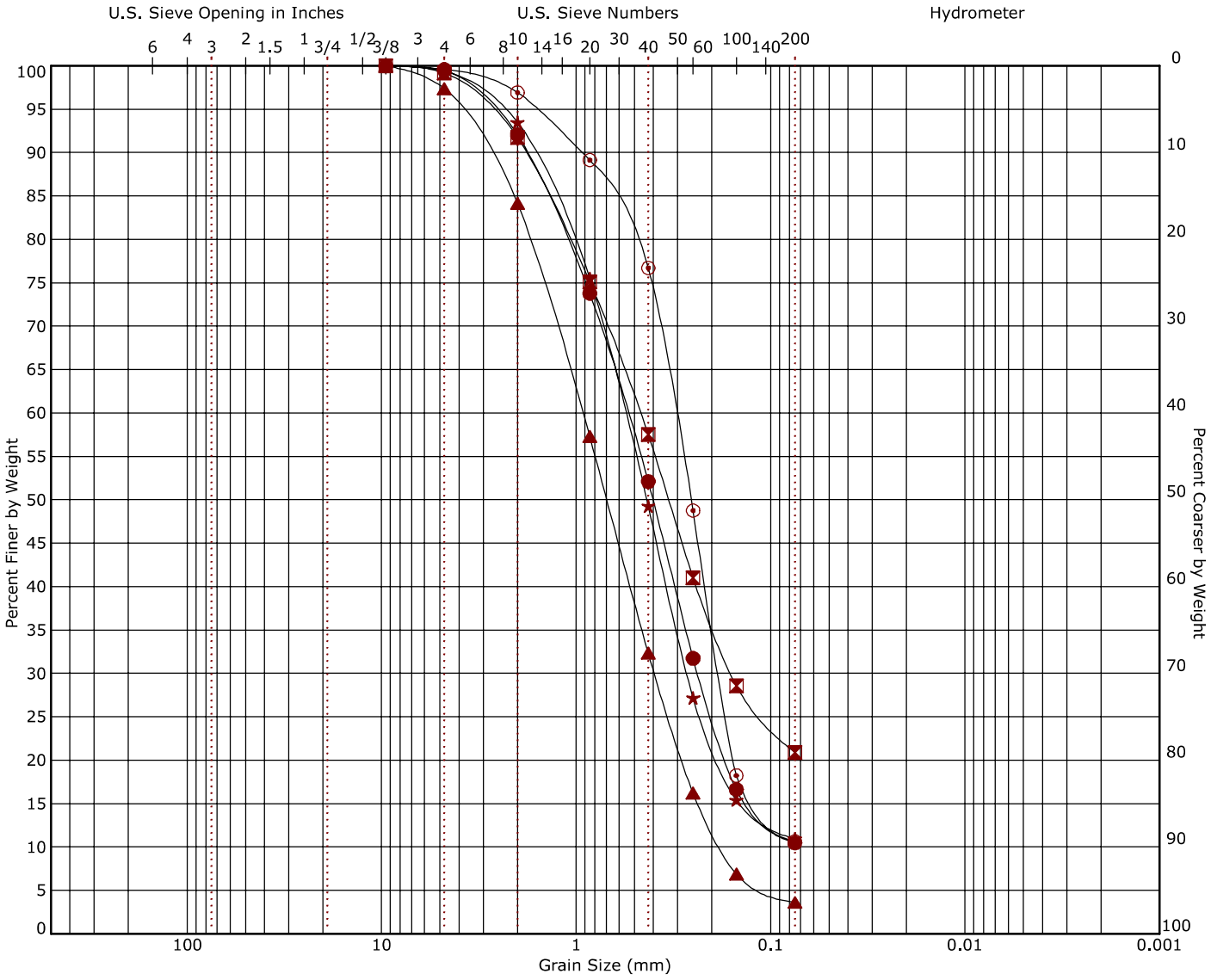

| | Boring ID | Depth (Ft) | LL | PL | PI | Fines | USCS | Description |
|---|---|---|---|---|---|---|---|---|
| ● | B-1 | 2 - 3 | NP | NP | NP | 10.5 | SW-SM | WELL-GRADED SAND with SILT |
| ⊠ | B-2 | 5.5 - 7 | 24 | 16 | 8 | 20.9 | SC | CLAYEY SAND |
| ▲ | B-3 | 4 - 5.5 | NP | NP | NP | 3.6 | SP | POORLY GRADED SAND |
| ★ | B-4 | 7 - 8.5 | NP | NP | NP | 11.0 | SW-SM | WELL-GRADED SAND with SILT |
| ⊙ | B-4 | 14 - 15.5 | NP | NP | NP | 10.7 | SP-SM | POORLY GRADED SAND with SILT |
| ✿ | B-5 | 7 - 8.5 | NP | NP | NP | 14.1 | SM | SILTY SAND |
| ○ | B-6 | 2 - 3 | NP | NP | NP | 7.7 | SW-SM | WELL-GRADED SAND with SILT |
| △ | B-7 | 9 - 10.5 | NP | NP | NP | 7.1 | SW-SM | WELL-GRADED SAND with SILT |

Fort Morgan Wastewater Treatment Facility Improvements
18169 County Road 22 | Morgan County, CO
Terracon Project No. 21235021

Terracon
1510 44th St Unit 1
Evans, CO

# Grain Size Distribution

## ASTM D422 / ASTM C136




| Cobbles | Gravel | | Sand | | | Silt or Clay |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

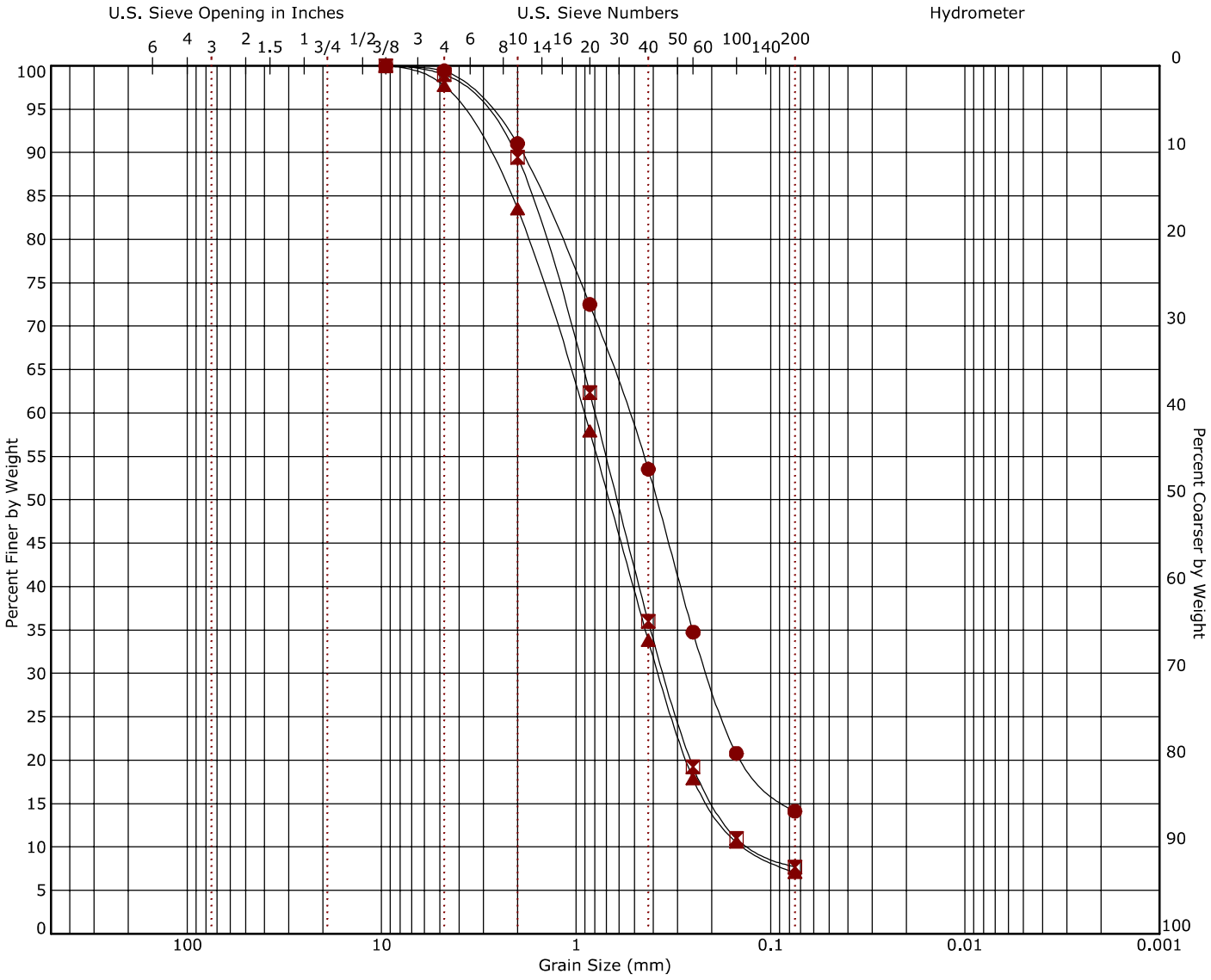
| Boring ID | | Depth (Ft) | USCS Classification | USCS | AASHTO | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | B-1 | 2 - 3 | WELL-GRADED SAND with SILT | SW-SM | A-3 (0) | NP | NP | NP | 1.43 | 7.69 |
| ⊠ | B-2 | 5.5 - 7 | CLAYEY SAND | SC | A-2-4 (0) | 24 | 16 | 8 | | |
| ▲ | B-3 | 4 - 5.5 | POORLY GRADED SAND | SP | A-1-b (0) | NP | NP | NP | 0.94 | 5.21 |
| ★ | B-4 | 7 - 8.5 | WELL-GRADED SAND with SILT | SW-SM | A-1-b (0) | NP | NP | NP | 1.96 | 8.72 |
| ⊙ | B-4 | 14 - 15.5 | POORLY GRADED SAND with SILT | SP-SM | A-2-4 (0) | NP | NP | NP | 1.53 | 4.38 |

| Boring ID | | Depth (Ft) | $D_{100}$ | $D_{60}$ | $D_{30}$ | $D_{10}$ | %Cobbles | %Gravel | %Sand | %Fines | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● | B-1 | 2 - 3 | 9.5 | 0.547 | 0.236 | | 0.0 | 0.5 | 89.0 | 10.5 | | |
| ⊠ | B-2 | 5.5 - 7 | 9.5 | 0.469 | 0.159 | | 0.0 | 0.8 | 78.3 | 20.9 | | |
| ▲ | B-3 | 4 - 5.5 | 9.5 | 0.926 | 0.394 | 0.178 | 0.0 | 2.6 | 93.8 | 3.6 | | |
| ★ | B-4 | 7 - 8.5 | 9.5 | 0.564 | 0.268 | | 0.0 | 0.6 | 88.4 | 11.0 | | |
| ⊙ | B-4 | 14 - 15.5 | 9.5 | 0.309 | 0.183 | | 0.0 | 0.4 | 89.0 | 10.7 | | |

Terracon
1510 44th St Unit 1
Evans, CO

# Grain Size Distribution

## ASTM D422 / ASTM C136




| Cobbles | Gravel | | Sand | | | Silt or Clay |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| Boring ID | | Depth (Ft) | USCS Classification | USCS | AASHTO | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | B-5 | 7 - 8.5 | SILTY SAND | SM | A-2-4 (0) | NP | NP | NP | | |
| ⊠ | B-6 | 2 - 3 | WELL-GRADED SAND with SILT | SW-SM | A-1-b (0) | NP | NP | NP | 1.27 | 6.58 |
| ▲ | B-7 | 9 - 10.5 | WELL-GRADED SAND with SILT | SW-SM | A-1-b (0) | NP | NP | NP | 1.15 | 6.79 |

| Boring ID | | Depth (Ft) | $D_{100}$ | $D_{60}$ | $D_{30}$ | $D_{10}$ | %Cobbles | %Gravel | %Sand | %Fines | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● | B-5 | 7 - 8.5 | 9.5 | 0.538 | 0.21 | | 0.0 | 0.6 | 85.3 | 14.1 | | |
| ⊠ | B-6 | 2 - 3 | 9.5 | 0.799 | 0.351 | 0.121 | 0.0 | 1.0 | 91.3 | 7.7 | | |
| ▲ | B-7 | 9 - 10.5 | 9.5 | 0.911 | 0.374 | 0.134 | 0.0 | 2.3 | 90.6 | 7.1 | | |

**Client**
Merrick & Company
Denver, CO

**Project**
Fort Morgan Wastewater Treatment Facility Improvements
21235021

**Date Received:** 3/1/2024

## Results from Corrosion Testing

| Sample Location | B-1 | B-3 | B-4 | B-5 |
|---|---|---|---|---|
| **Sample Depth (ft.)** | 1.0'-5.0' | 1.0'-5.0' | 1.0'-5.0' | 1.0'-5.0' |
| pH Analysis, ASTM G51 | -- | -- | 7.67 | -- |
| Water Soluble Sulfate, ASTM C1580 (%) | 0.00027 | 0.00026 | 0.00043 | 0.00027 |
| Sulfides, AWWA 4500-S D, (mg/kg) | -- | -- | Nil | -- |
| Chlorides, APHA 4500-$Cl^-$ E, (mg/kg) | -- | -- | 5 | -- |
| Red-Ox, ASTM G200, (mV) | -- | -- | +271 | -- |
| Total Salts, AWWA 2520 B, (mg/kg) | -- | -- | 218 | -- |
| Resistivity (Saturated), ASTM G57, (ohm-cm) | -- | -- | 12000 | -- |

**Analyzed By:** ChrisAnne Ross
Field Geologist

**Client**
Merrick & Company
Denver, CO

**Project**
Fort Morgan Wastewater Treatment Facility Improvements
21235021

**Date Received:** 3/1/2024

## Results from Corrosion Testing

| | |
|---|---|
| **Sample Location** | B-6 |
| **Sample Depth (ft.)** | 1.0'-5.0' |
| pH Analysis, ASTM G51 | 7.58 |
| Water Soluble Sulfate, ASTM C1580 (%) | 0.00044 |
| Sulfides, AWWA 4500-S D, (mg/kg) | Nil |
| Chlorides, APHA 4500-$Cl^-$ E, (mg/kg) | 4 |
| Red-Ox, ASTM G200, (mV) | +249 |
| Total Salts, AWWA 2520 B, (mg/kg) | 815 |
| Resistivity (Saturated), ASTM G57, (ohm-cm) | 3000 |

**Analyzed By:** ChrisAnne Ross
Field Geologist

# LOG OF BORING No. P-1



| CLIENT | ARCHITECT/ENGINEER |
|---|---|
| Black & Veatch | Black & Veatch |
| **SITE** | **PROJECT** |
| Fort Morgan, Colorado | Proposed Wastewater Treatment Plant |

| GRAPHIC LOG | DESCRIPTION | DEPTH (FT.) | USCS SYMBOL | SAMPLES NUMBER | SAMPLES TYPE | SAMPLES RECOVERY | SAMPLES SPT - N BLOWS / FT. | TESTS MOISTURE, % | TESTS DRY DENSITY PCF | TESTS UNCONFINED STRENGTH PSF |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Approx. Surface Elev.: 4247.0 ft.** | | | | | | | | | |
| | 0.5 6" TOPSOIL 4246.5 | | | 1 | SS | 12" | 6 | 4 | | |
| | | | SM | 2 | ST | 12" | | 3 | 108 | |
| | | 5 | | 3 | SS | 12" | 7 | 26 | | |
| | SILTY SAND<br>Brown, dry to wet<br>Loose to medium dense | | | 4 | SS | 12" | 9 | 19 | | |
| | | 10 | | 5 | SS | 12" | 11 | 15 | | |
| | | 15 | | 6 | SS | 12" | 15 | 24 | | |
| | | 20 | | 7 | SS | 12" | 20 | 24 | | |
| | | 25 | | | | | | | | |

**Continued Next Page**

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

| WATER LEVEL OBSERVATIONS | | | |
|---|---|---|---|
| WL | ▽ | W.D. | ▼ |
| WL | 5.1' | W.C.I. | |
| WL | Hole filled in A.B. | | |

**Empire Laboratories Incorporated**
Division of Terracon

| | | | |
|---|---|---|---|
| BORING STARTED | 11-16-94 | | |
| BORING COMPLETED | 11-16-94 | | |
| RIG | CME-55 | FOREMAN | DML |
| APPROVED | NRS | JOB # | 20945184 |

# LOG OF BORING No. P-1



| CLIENT | ARCHITECT/ENGINEER |
|---|---|
| Black & Veatch | Black & Veatch |
| **SITE** | **PROJECT** |
| Fort Morgan, Colorado | Proposed Wastewater Treatment Plant |

| GRAPHIC LOG | DESCRIPTION | DEPTH (FT.) | USCS SYMBOL | SAMPLES NUMBER | SAMPLES TYPE | SAMPLES RECOVERY | SAMPLES SPT - N BLOWS / FT. | TESTS MOISTURE, % | TESTS DRY DENSITY PCF | TESTS UNCONFINED STRENGTH PSF |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | 30.0 4217.0 | 30 | | 8 | SS | 12" | 22 | 11 | | |
| | BOTTOM OF BORING | | | | | | | | | |

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

| WATER LEVEL OBSERVATIONS | | | |
|---|---|---|---|
| WL | ▽ | W.D. | ▼ |
| WL | 5.1' | W.C.I. | |
| WL | Hole filled in A.B. | | |

**Empire Laboratories Incorporated**
Division of Terracon

| | | | |
|---|---|---|---|
| BORING STARTED | 11-16-94 | | |
| BORING COMPLETED | 11-16-94 | | |
| RIG | CME-55 | FOREMAN | DML |
| APPROVED | NRS | JOB # | 20945184 |

# LOG OF BORING No. P-2



CLIENT: **Black & Veatch**

ARCHITECT/ENGINEER: **Black & Veatch**

SITE: **Fort Morgan, Colorado**

PROJECT: **Proposed Wastewater Treatment Plant**

**Approx. Surface Elev.: 4253.1 ft.**

| GRAPHIC LOG | DESCRIPTION | DEPTH (FT.) | USCS SYMBOL | SAMPLES NUMBER | SAMPLES TYPE | SAMPLES RECOVERY | SAMPLES SPT - N BLOWS / FT. | TESTS MOISTURE, % | TESTS DRY DENSITY PCF | TESTS UNCONFINED STRENGTH PSF |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.5 6" TOPSOIL 4252.6 | | | 1 | SS | 12" | 5 | 6 | | |
| | SILTY SAND<br>Brown, moist, loose | | | | | | | | | |
| | | | SM | 2 | SS | 12" | 4 | 8 | | |
| | 7.0 4246.1 | 5 | | | | | | | | |
| | | | | 3 | ST | 12" | | 1 | 110 | |
| | | 10 | SW SM | 4 | SS | 12" | 14 | 1 | | |
| | WELL GRADED SAND WITH SILT<br>Tan, dry to wet<br>Loose to medium dense | | | 5 | SS | 12" | 7 | 22 | | |
| | | 15 | | | | | | | | |
| | | | | 6 | SS | 12" | 16 | 16 | | |
| | | 20 | | | | | | | | |
| | | | | 7 | SS | 12" | 20 | 16 | | |
| | | 25 | | | | | | | | |

**Continued Next Page**

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

| WATER LEVEL OBSERVATIONS | | | |
|---|---|---|---|
| WL | ▽ 12.3' | W.D. | ▼ |
| WL | | | |
| WL | Hole filled in A.B. | | |

**Empire Laboratories Incorporated**
Division of Terracon

| | | | |
|---|---|---|---|
| BORING STARTED | 11-16-94 | | |
| BORING COMPLETED | 11-16-94 | | |
| RIG | CME-55 | FOREMAN | DML |
| APPROVED | NRS | JOB # | 20945184 |

# LOG OF BORING No. P-2



| CLIENT | ARCHITECT/ENGINEER |
|---|---|
| Black & Veatch | Black & Veatch |
| **SITE** | **PROJECT** |
| Fort Morgan, Colorado | Proposed Wastewater Treatment Plant |

| GRAPHIC LOG | DESCRIPTION | DEPTH (FT.) | USCS SYMBOL | SAMPLES NUMBER | SAMPLES TYPE | SAMPLES RECOVERY | SAMPLES SPT - N BLOWS / FT. | TESTS MOISTURE, % | TESTS DRY DENSITY PCF | TESTS UNCONFINED STRENGTH PSF |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | 30.0 4223.1 | 30 | | 8 | SS | 12" | 25 | 11 | | |
| | BOTTOM OF BORING | | | | | | | | | |

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

| WATER LEVEL OBSERVATIONS | | | |
|---|---|---|---|
| WL | ▽ 12.3' | W.D. | ▼ |
| WL | | | |
| WL | Hole filled in A.B. | | |

**Empire Laboratories Incorporated**
Division of Terracon

| | | | |
|---|---|---|---|
| BORING STARTED | 11-16-94 | | |
| BORING COMPLETED | 11-16-94 | | |
| RIG | CME-55 | FOREMAN | DML |
| APPROVED | NRS | JOB # | 20945184 |

# LOG OF BORING No. P-3



CLIENT: **Black & Veatch**

ARCHITECT/ENGINEER: **Black & Veatch**

SITE: **Fort Morgan, Colorado**

PROJECT: **Proposed Wastewater Treatment Plant**

**Approx. Surface Elev.: 4263.3 ft.**

| GRAPHIC LOG | DESCRIPTION | DEPTH (FT.) | USCS SYMBOL | SAMPLES NUMBER | SAMPLES TYPE | SAMPLES RECOVERY | SAMPLES SPT - N BLOWS / FT. | TESTS MOISTURE, % | TESTS DRY DENSITY PCF | TESTS UNCONFINED STRENGTH PSF | TESTS ATTERBERG LIMITS LL/PL/PI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.5 6" TOPSOIL 4262.8 | | | 1 | SS | 12" | 14 | 4 | | | |
| | SILTY SAND<br>Brown, dry, medium dense | | SM | 2 | SS | 12" | 10 | 4 | | | |
| | 10.0 4253.3 | 5 | | 3 | SS | 12" | 11 | 2 | | | |
| | WELL GRADED SAND WITH SILT<br>Tan, dry to wet, medium dense | 10 | SW SM | 4 | BS | | | | | | 14/NP/NP |
| | | 15 | | 5 | ST | 12" | | 1 | 116 | | |
| | | | | 6 | SS | 12" | 15 | 1 | | | |
| | Composite sample @ 10 to 20 ft. ▽ | 20 | | 7 | SS | 12" | 20 | 1 | | | |
| | | 25 | | 8 | SS | 12" | 17 | 18 | | | |

**Continued Next Page**

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

| WATER LEVEL OBSERVATIONS | | | |
|---|---|---|---|
| WL | ▽ 21.0' | W.D. | ▼ |
| WL | | | |
| WL | Hole filled in A.B. | | |

**Empire Laboratories Incorporated**
Division of Terracon

| | | | |
|---|---|---|---|
| BORING STARTED | 11-17-94 | | |
| BORING COMPLETED | 11-17-94 | | |
| RIG | CME-55 | FOREMAN | DML |
| APPROVED | NRS | JOB # | 20945184 |

# LOG OF BORING No. P-3



| CLIENT | ARCHITECT/ENGINEER |
|---|---|
| Black & Veatch | Black & Veatch |
| **SITE** | **PROJECT** |
| Fort Morgan, Colorado | Proposed Wastewater Treatment Plant |

| GRAPHIC LOG | DESCRIPTION | DEPTH (FT.) | USCS SYMBOL | SAMPLES NUMBER | SAMPLES TYPE | SAMPLES RECOVERY | SAMPLES SPT - N BLOWS / FT. | TESTS MOISTURE, % | TESTS DRY DENSITY PCF | TESTS UNCONFINED STRENGTH PSF | TESTS ATTERBERG LIMITS LL/PL/PI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | 30.0 4233.3 | 30 | | 9 | SS | 12" | 25 | 19 | | | |
| | BOTTOM OF BORING | | | | | | | | | | |

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

| WATER LEVEL OBSERVATIONS | | | |
|---|---|---|---|
| WL | ▽ 21.0' | W.D. | ▼ |
| WL | | | |
| WL | Hole filled in A.B. | | |

**Empire Laboratories Incorporated**
Division of Terracon

| | | | |
|---|---|---|---|
| BORING STARTED | 11-17-94 | | |
| BORING COMPLETED | 11-17-94 | | |
| RIG | CME-55 | FOREMAN | DML |
| APPROVED | NRS | JOB # | 20945184 |

# Supporting Information

**Contents:**

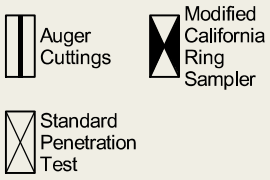


Note: All attachments are one page unless noted above.

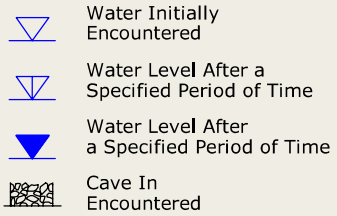
Terracon
1510 44th St Unit 1
Evans, CO

# General Notes

## Sampling




## Water Level




Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

## Field Tests

| | |
|---|---|
| N | Standard Penetration Test Resistance (Blows/Ft.) |
| (HP) | Hand Penetrometer |
| (T) | Torvane |
| (DCP) | Dynamic Cone Penetrometer |
| UC | Unconfined Compressive Strength |
| (PID) | Photo-Ionization Detector |
| (OVA) | Organic Vapor Analyzer |

## Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

## Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

## Strength Terms

**Relative Density of Coarse-Grained Soils**
(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

| Relative Density | Standard Penetration or N-Value (Blows/Ft.) | Ring Sampler (Blows/Ft.) |
|---|---|---|
| Very Loose | 0 - 3 | 0 - 5 |
| Loose | 4 - 9 | 6 - 14 |
| Medium Dense | 10 - 29 | 15 - 46 |
| Dense | 30 - 50 | 47 - 79 |
| Very Dense | > 50 | ≥ 80 |

**Consistency of Fine-Grained Soils**
(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

| Consistency | Unconfined Compressive Strength Qu (psf) | Standard Penetration or N-Value (Blows/Ft.) | Ring Sampler (Blows/Ft.) |
|---|---|---|---|
| Very Soft | less than 500 | 0 - 1 | < 3 |
| Soft | 500 to 1,000 | 2 - 4 | 3 - 5 |
| Medium Stiff | 1,000 to 2,000 | 4 - 8 | 6 - 10 |
| Stiff | 2,000 to 4,000 | 8 - 15 | 11 - 18 |
| Very Stiff | 4,000 to 8,000 | 15 - 30 | 19 - 36 |
| Hard | > 8,000 | > 30 | > 37 |

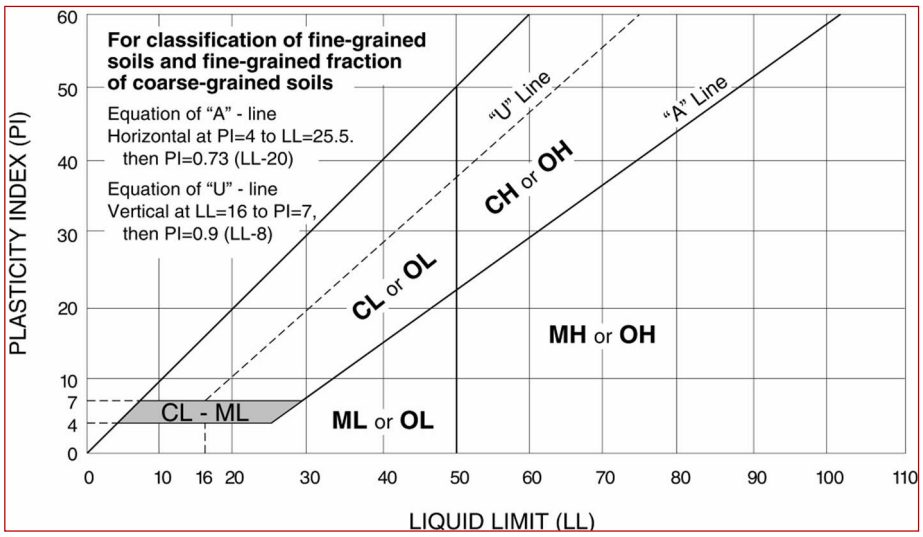
## Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

# Unified Soil Classification System

| Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A] | | | | Soil Classification | |
|---|---|---|---|---|---|
| | | | | Group Symbol | Group Name [B] |
| **Coarse-Grained Soils:** More than 50% retained on No. 200 sieve | **Gravels:** More than 50% of coarse fraction retained on No. 4 sieve | **Clean Gravels:** Less than 5% fines [C] | Cu≥4 and 1≤Cc≤3 [E] | GW | Well-graded gravel [F] |
| | | | Cu<4 and/or [Cc<1 or Cc>3.0] [E] | GP | Poorly graded gravel [F] |
| | | **Gravels with Fines:** More than 12% fines [C] | Fines classify as ML or MH | GM | Silty gravel [F, G, H] |
| | | | Fines classify as CL or CH | GC | Clayey gravel [F, G, H] |
| | **Sands:** 50% or more of coarse fraction passes No. 4 sieve | **Clean Sands:** Less than 5% fines [D] | Cu≥6 and 1≤Cc≤3 [E] | SW | Well-graded sand [I] |
| | | | Cu<6 and/or [Cc<1 or Cc>3.0] [E] | SP | Poorly graded sand [I] |
| | | **Sands with Fines:** More than 12% fines [D] | Fines classify as ML or MH | SM | Silty sand [G, H, I] |
| | | | Fines classify as CL or CH | SC | Clayey sand [G, H, I] |
| **Fine-Grained Soils:** 50% or more passes the No. 200 sieve | **Silts and Clays:** Liquid limit less than 50 | **Inorganic:** | PI > 7 and plots above "A" line [J] | CL | Lean clay [K, L, M] |
| | | | PI < 4 or plots below "A" line [J] | ML | Silt [K, L, M] |
| | | **Organic:** | $\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$ | OL | Organic clay [K, L, M, N] |
| | | | | | Organic silt [K, L, M, O] |
| | **Silts and Clays:** Liquid limit 50 or more | **Inorganic:** | PI plots on or above "A" line | CH | Fat clay [K, L, M] |
| | | | PI plots below "A" line | MH | Elastic silt [K, L, M] |
| | | **Organic:** | $\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$ | OH | Organic clay [K, L, M, P] |
| | | | | | Organic silt [K, L, M, Q] |
| **Highly organic soils:** | Primarily organic matter, dark in color, and organic odor | | | PT | Peat |

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



# SECTION 01 57 13
# TEMPORARY EROSION AND SEDIMENT CONTROL

## PART 1 GENERAL

### 1.01. SUMMARY

A. The work of this section consists of temporary measures for the control of erosion, sedimentation, and other pollutants during construction. Work includes installation in accordance with the Drawings; obtaining permits; maintenance to assure proper function; and removal of temporary measures in coordination with installation of permanent erosion control measures.

### 1.02. REFERENCES

A. Erosion control details and practices are from the Mile High Flood District "Urban Storm Drainage Criteria Manual Volume 3 - Best Management Practices".

### 1.03. SUBMITTALS

A. Details, sketches, and descriptions of soil erosion and sediment control measures proposed.

B. Samples and product data of materials demonstrating materials meet requirements.

C. Stormwater Management Plan (SWMP). Adjustments to the plan may be required based on actual construction operations. Submit changes/updates to the SWMP as completed.

## PART 2 PRODUCTS

### 2.01. CHANNEL SLOPES AND OTHER DISTURBED AREAS

A. Materials for use as temporary measures include straw bales, loose mulch, mulch blankets, silt fence, sod buffer strips and other stabilization materials.

### 2.02. ACTIVE FLOWING STREAM OR DIVERSION

A. Materials for use as temporary measures to stabilize the invert or toe of slope zone of a live stream or diversion channel include pipe, concrete rubble, riprap, plastic sheeting, synthetic erosion control matting, or other functional material that is not hazardous to water quality.

### 2.03. STORM SEWER OUTFALLS / POINT DISCHARGES

A. Materials for temporary erosion control on slopes downstream of storm sewer or swale outfalls including pipe, concrete rubble, riprap, cast-in-place concrete, plastic sheeting, synthetic erosion control matting, or other functional material that is not hazardous to water quality.

## PART 3 EXECUTION

### 3.01. GENERAL

A. Conform to the Mile High Flood District guidelines and procedures for installation, maintenance, and removal of temporary erosion control measures.

B. Provide and maintain adequate erosion control measures during construction to protect surface waters from run-off transporting eroded materials. Inspect the erosion control measures during and after each run-off event and repair measures and remove excess sediment as required. Prevent sediment from traveling off-site and/or to nearby water sources.

C. Stormwater runoff from disturbed areas and soil storage areas, where permanent or interim stabilization is not implemented, shall flow to a minimum of one control measure to minimize sediment in the discharge. Accomplish through filtering, settling, and/or straining. Contain or filter flow to prevent the bypass of flow without treatment. Design for the stormwater runoff from disturbed areas and for the expected flow rate, duration, and flow conditions (i.e., sheet or concentrated flow).

D. Develop the necessary sedimentation and erosion control plans and secure associated permits necessary to execute the work from the agencies having jurisdiction. Coordinate and pay associated fees.

### 3.02. CONSTRUCTION IN WATERWAYS

A. Periodic Flooding: The site may be subject to periodic flooding as a result of rainfall and snowmelt, reservoir or pond releases, flow from adjacent developed areas, stormwater pipes, and groundwater flows from saturated soils or other groundwater sources.

B. Minimize movement of construction equipment within the flowing portion of channels or waterways. Avoid frequent fording of the stream. Isolate or divert stream flow so construction equipment, materials, and earthwork are not exposed to flow.

C. Rebuild, repair, and restore portions of the work damaged by high water and flooding.

D. Furnish; transport; and install materials and equipment, well points, pumping, channelization, diversion, damming, or other means of controlling surface water, groundwater, runoff from other drainage tributaries, and pipe effluent as necessary to complete all of the work.

### 3.03. TEMPORARY CONTROLS DURING SITE WORK

A. Comply with the “Colorado Water Quality Control Act”, the “Protection of Fishing Streams”, the “Clean Water Act”, regulations promulgated, and certifications issued.

B. Stormwater Management Plan (SWMP)

1. Develop and implement a SWMP.

2. The SWMP may include measures for the control of erosion and sedimentation, and measures for stormwater quality management.

3. Take necessary steps to comply with the intent of Owner's SWMP guidance, if provided, and other applicable standards, permit conditions, and regulations of appropriate agencies.

C. Conduct in such a manner to prevent contamination of adjacent watercourses, wetlands, and/or water impoundment areas.

D. Protect properties and roadways adjacent to the site from sediment deposition. This may be accomplished by leaving a sod buffer strip around the lower perimeter of the land disturbance, by installing perimeter controls such as sediment barriers, filters, or dikes, or by a combination of such measures.

E. Diversion or Bypass around Erosion Control Facilities

1. Diversions from or bypass of water around facilities necessary to maintain compliance with the SWMP is prohibited, except:

a. Where unavoidable to prevent loss of life or severe property damage.

b. Where excessive storm drainage or runoff would damage the facilities.

2. Immediately notify Owner of the occurrence of a diversion or bypass of water around the facilities.

3. Repair the breached or bypassed facilities and restore the site drainage to conform to the requirements of the SWMP.

F. Provide design and implementation methods for site stormwater quality management to prevent contaminated surface runoff from entering the waters of the State and of erosion and sediment control measures for the purpose of correcting conditions and for emergency situations.

1. Sediment basins and traps, perimeter dikes, sediment barriers (such as silt fencing), and other measures intended to trap sediment on-site, shall be constructed as a first step in grading and shall be functional before upslope land disturbance takes place. Sediment basins or traps shall be monitored and maintained no less than weekly (including removal of sediment and/or repair of basin dike or filter material) or whenever the basin fills with sediment to 50 percent of capacity.

2. Diversion channels shall be stabilized against erosion by use of riprap, or other measures.

3. Roughened soil surfaces are preferred to smooth surfaces on slopes during initial grading operations. Diversion dikes or ditches shall be constructed at the top of long or steep slopes which have significant drainage areas above the slope. Diversions or terraces shall also be used to reduce slope length.

4. Concentrated storm water shall not be allowed to flow down cut or fill slopes unless contained within a stabilized temporary or permanent channel, flume or slope drain structure.

5. Provide drainage or protection wherever a slope face crosses a water seepage plane which endangers the stability of the slope.

6. Protect storm drain inlets within and/or near the site that are operable during construction with filter fabric to remove sediment from stormwater runoff prior to entering the storm drain system.

G. Include temporary erosion and sediment control features for construction work outside the rights-of-way that are necessary for borrow pits, haul roads, and equipment and material storage sites.

H. Dewatering flow that carry sediment or other deleterious material shall not be directly introduced to the stream. Such flow shall be routed to a sediment basin(s) or trap(s) for treatment prior to discharge to the stream. The intent is to trap material disturbed by construction activities and prevent the discharge of this material into the stream.

I. Remove and dispose of accumulated sediment.

J. Construction waste or salvageable material, excavation excess material, fill material, construction equipment, toxins, fuels, lubricants, and other petroleum distillates shall not be stored or stockpiled within fifty (50) feet of the ordinary high-water line of any watercourse, wetland, or water impoundment area or other sensitive areas as identified by the Engineer.

K. Equipment servicing shall occur within designated areas.

L. Spill prevention and containment measures shall be used at all storage sites.

3.04. DUST ABATEMENT

A. Furnish labor, equipment, materials and means, and proper and efficient measures to reduce the dust nuisance and to prevent dust which has originated from operations from damaging dwellings or causing a nuisance to persons.

3.05. DISPOSITION OF TEMPORARY MEASURES

A. Remove temporary erosion and sediment control measures and dispose of as permanent measures are installed. Both operations shall be coordinated to prevent erosion or damage to the channel or finished grading. Permanently stabilize trapped sediment and disturbed soil areas to prevent further erosion and sedimentation.

END OF SECTION

City Of Fort Morgan

# Wastewater Treatment Facility

# EMERGENCY RESPONSE PLAN

Original December 1996
(Revised) January 2018

# WASTEWATER FACILITY

# EMERGENCY OPERATION AND RESPONSE

## INTRODUCTION

"The permittee is liable at all times for meeting the conditions of his permit and the law requires some regulatory action against any permit violation. In the case of emergencies so severe as to cause unavoidable permit violations, prosecutor discretion will be likely exercised in proceeding with any regulatory action. The prior contingency planning by the municipality, as well as the actions taken to implement this, will be of prime importance in any such decision."[1]

It is imperative, therefore, that all equipment be properly maintained and repaired or replaced as necessary. Standby equipment has been provided only where necessary. If equipment is not kept in proper operating order and an emergency develops, IPA will not consider the City of Fort Morgan to have met its obligation in good faith. Therefore, all equipment, regardless of its assumed importance in the overall scheme, must be properly maintained in accordance with the principles developed for equipment maintenance.

The response to situations is presented herein on "EMERGENCY RESPONES CARDS." The first page of each card contains the response personnel and staff must take: subsequent pages contain a short description of probable causes, effects, and if necessary, a general outline of the response.

The plan outlined herein considers the more likely situations that will require initiation of an emergency response. Those situations are:

1. Power Failure,
2. Equipment Failure,
3. Loss of Operating personnel
4. Spill of Volatile Petroleum Product, and
5. High Plant Flows

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[1] "EPA Views on Emergency Action Planning"

## PURPOSE

To protect first, people then public safety and the environment, after which property will be considered and protected.

## EMPLOYEE RESPONSIBILITY

It is the responsibility of each wastewater employee to act safely, promptly and effectively in an emergency situation, while assessing the situation and contact the appropriate personnel and/or agencies. The Employee-In-Control shall perform only those functions and make those decisions, which are required by the nature of the emergency to protect people and public safety. At the earliest opportunity, the "employee-in-control" shall seek and obtain the "supervisor-in-charge."

Supervisor-In-Charge: The highest ranking company employee available to perform the required functions.

Employee-In-Control: The highest ranking company employee who is physically present and able to perform the required functions.

## NOTIFICATION

Normal Working Hours:

Wastewater facility is continuously monitored by SCADA (Supervisory Control and Date Acquisition) system. This monitors equipment operation and facility operating parameters. In the event of an equipment failure or change in operating parameter, a programmable auto dialer will initiate a call down procedure to contact the plant personnel. Alarm condition will be acknowledged and corrected or dial out sequence will start over. Other notification not associated with facility SCADA system may come from Morgan County Communications Center or City Hall.

After Normal Working Hours:

Facility SCADA system operates the same as during normal working hours. Personnel able to respond to an emergency situation rotate on-call duty. On-call cell phone number, qualified responding personnel home/cell phone numbers and Morgan County Communication Center are listed on the after-hours call down list.

## COMMUNICATION

### Communication Equipment

Vehicles are equipped with two-way radios. Portables are also available if necessary.

Personnel:

The superintendent, his assistant or the supervisor will take all individual job assignments on duty.

Coordination between departments will be by the department heads or the supervisor-in-charge.

If the emergency is beyond the City's capability, appropriate help will be called in as needed at the direction of the supervisor-in-charge. Every situation in excess of the City's capability must be reported to the appropriate public agencies.

All information and coordination with news media will be handled through designated information person who will release statements to the media only when all available facts are known.

All City personnel need to be aware of the possible implications of their actions, especially in the situations, which are unusual, or emergencies, which are likely to attract more than casual attention from the news media. As to these kinds of emergencies or situations, the designated information person should be notified immediately. The employee in control of the situation or emergency shall make this notification.

## RECORDS

Adequate record keeping during emergency situations is imperative. Note all pertinent data in the Daily Operating Log, including the specific response steps taken and why.

## EMERGENCY TYPES, RESPONSE

## *FACILITY INFORMATION*
## EMERGENCY RESPONSE CARD

| | |
|---|---|
| Facility Name | Fort Morgan Wastewater Plant |
| NPDES Permit Number | CO-0044849 |
| Permittee | City of Fort Morgan |
| Discharge Point | South Platte River |
| Facility Address | 18169 MC Road 22, Ft. Morgan CO 80701 |
| Mailing Address | P.O. Box 100, Ft. Morgan, CO 80701 |
| Treatment Facility Phone Number | (970) 542-0726 or 542-0727 |
| Principle Executive Office | Jeff Wells, City Manager |
| Wastewater Superintendent | Skip Kaiser |
| EPA Denver Office (Region VIII) | (303) 293-1668 |
| Colorado Department of Public Health | (303) 692-3564- or 877-518-5608 |
| Merrick Water Engineers | (303) 964-3333 |
| Colorado Plains Medical Center | (970) 867-3391 |
| Morgan County Communication Center | (970) 867-8531 |

### EMERGENCY MEETING POINT

In the event of a plant emergency that would require the possible evacuation of the plant, the designated point for coordination of possible responses shall be the front gate of the plant security fence. The onsite person in control shall direct personnel from this point to the appropriate course of action according to the type of emergency.

## EMERGENCY PHONE NUMBER LIST

Emergency: (Police, Fire, ambulance, Sheriff, CSP.....911
FM Police Department.....Non-emergency.....867-5678
Morgan County Sheriff.....Non-emergency.....867-2461
Colorado State Patrol.....FM Area.....867-6844
Sterling Area.....522-4693
Fire Department.....Non-emergency.....867-2815

### Medical

Colorado Plains Medical Center.....867-3391
Fort Morgan Medical Group.....867-5681
Banner Health.....542-4700
Morgan County Emergency Management.....867-8506
Northeastern Colorado Health Department.....867-4918
Colorado Dept. Public Health & Environment.....877-518-5608
Environmental Protection Agency Region VIII.....800-227-8917
Environmental Protection Agency Denver Office Region VIII.....303-293-1668

### City of Fort Morgan

Electric Department.....867-4350
Doug Linton, Electric Superintendent.....Home.....867-7715.....Cell.....768-2012
On Call Contact..... Cell.....768-1080

Gas Department.....867-4350
Tony Behrends, Gas Superintendent.....Home.....867-7726.....Cell.....768-1079
On Call Contact.....Cell.....768-4756

Water Department (Distribution).....867-4350
Eric Sagal, Collection/Distribution Superintendent.....Cell.....768-1990
On Call Contact.....Cell.....768-7167

Street & Sanitation Department.....542-3985

### Other

Morgan County Quality Water.....867-3054
Merrick Water Engineers.....303-964-3333

### WWTP Department Phone Numbers

Skip Kaiser, Superintendent.....Cell.....380-8434
Ed Romero, Plant Foreman.....Cell.....380-9049
Ryan Probasco, Operator.....Cell.....380-3335
Victor Perez, Operator.....Cell.....380-5019
David Temple, Operator.....Cell.....370-4116
Jason Riggs, Lab Tech.....Home..... 542-0013
Treatment Plant – Line 1.....542-0726
Line 2.....542-0727
Fax Machine.....542-0730
On Call Cell Phone.....768-3281
Brent Nation, Water Resources & Utilities Director.....370-6558

# *POWER FAILURE*
# EMERGENCY RESPONSE CARD

The Fort Morgan Wastewater Facility has a standby power system that can be manually switched on-line whenever the normal power system fails (see Generator Startup). For more details on the electrical system refer to WWTP O&M manual Volume 1, Electrical Distribution system and alarms, Chapter VI.

In addition all of the SCADA system components have some type of battery backup power system. These backup systems maintain the memory during momentary or prolonged power outages. The IRTUs have a battery backup that will sustain power of the memory for 168 hours. The RTUs have a battery backup of 8 hours.

**POWER FAILURE RESONSE ACTIONS**

1. Call Fort Morgan Electric Department.
- Request assistance
- Determine expected length of outage. If power will be off more than one hour proceed to **Generator Startup.**
- If power will be off one hour or less initiate response procedure (see below).

2. When power is restored to treatment facility, the motors will start if they are part of an automatic control system.

3. Manual start is required for any equipment that did not start up automatically.

4. If power quality deteriorates to the point of dropping out the three-phase motors by the power phase protection relay, operator should act as follows:

   A. Notify Fort Morgan Electric Department.
   B. Manual restart is required for any equipment started with a push button station.

5. If discharge of raw or partially treated sewage occurs, notify regulatory agencies. Refer to Notification Card.

**CAUSES**

Lack of power at the plant indicates the failure of Fort Morgan Electric supply network.

**EFFECTS**

When the normal power system fails, the operator needs to determine the length of the outage. If the outage is relatively short, i.e. one hour or less, the plant should be operated in the normal operating mode, with no changes. All outages longer than one hour require the startup of the generator.

The plant should be able to operate normally for an extended period of time using the onsite generator. Check and ensure an adequate supply of fuel is available to operate the generator.

# GENERATOR STARTUP & POWER TRANSFER

**The following procedure is to be followed in the event that both sources of power from the city have failed and will be off for several hours. At least two people are required for this procedure.**

1. Turn off main power supply breaker in MCC room of Secondary Building.

2. Turn off power Supply breakers to MCC # 1, 2, 3 and Disinfection Building. Turn individual switches for major pieces of equipment (blowers & pumps) into the off position.

3. Turn outside transfer switch from Normal to Emergency.

4. Open doors and windows in the Generator Building and start Generator.

5. Place breaker on Generator in the on position. **Do Not Stand** in front of breaker while turning on.

6. Check voltage on Generator and in MCC power monitor. This voltage should be between 470 and 490 Volts.

7. If the voltage is within the above range engage the breakers for MCC 1, 2, 3 and UV Disinfection Building.

8. Turn the delay control in the Phase Monitor to maximum delay. Be sure to note where the current setting is so the delay can be returned to the correct setting.

9. Turn the Lag Blower to hand operation. This puts a load on the generator to allow for the equipment on VFD's to start correctly.

10. Start the equipment in Pretreatment in hand operation. Run for several minutes to ensure proper operation before putting in automatic.

11. Place other blowers in automatic start.

12. Start equipment that operates on VFD's such as the east digester blower and RAS pumps.

13. Monitor Generator and equipment. Call Electric Department for information and have them notify WWTP when power will be restored. You will not be able to determine when power has been restored and must be notified.

# GENERATOR SHUTDOWN AND POWER TRANSFER

**The following procedure is to be implemented after power has been restored for the normal operation and the generator can be taken out or service.**

**Service Generator**

1. Turn off all major pieces of equipment. The same procedure as generator startup.
2. Turn off main breaker on Generator.
3. Turn off MCC # 1, 2, 3 and UV Disinfection Building Breakers. Again the same as startup.
4. Turn outside transfer switch from emergency to normal.
5. Turn on main power supply breaker in MCC room.
6. Check voltage on MCC power monitor. Voltage should be between 470 and 490 volts on all three points.
7. Turn breakers on for MCC # 1, 2, 3 and UV Disinfection Building. Lights and smaller pieces of equipment should come on.
8. Start large pieces of equipment and place into normal operation.
9. Make sure the delay control in the Phase Monitor is set back to its normal setting.

# *TREATMENT EQUIPMENT FAILURE*
# EMERENCY RESPONSE CARD

| COMPONENT | RESPONSE |
|---|---|
| 1. Automatic Bar Screen | 1.1 Continue to operate the plant by bypassing the flow to the second bar screen. |
| | 1.2 Replace or repair unit as quickly as possible. Parts, a spare or even a new unit should be ordered from the supplier and shipped via the quickest carrier. |
| 2. Grit Pump | 2.1 Utilize backup pump. |
| | 2.2 Same as 1.2 above. |
| 3. Grit Chamber Blower | 3.1 Utilize backup blower. |
| | 3.2 Same as 1.2 above. |
| 4. Aeration Basin Diffusers | 4.1 Increase airflow to other diffusers that are operational. |
| | 4.2 Same as 1.2 above. |
| | Notify regulatory agency if any permit violations result. |
| 5. Turbo Blowers | 5.1 Check for error codes on units and if there are any present clear accordingly. |

**NORTHERN COLORADO TITLE SERVICES CO., INC.**
**205 W. KIOWA AVENUE**
**FORT MORGAN, CO 80701**
**TELEPHONE (970)867-0233 *** FAX (970)867-7750**

DATE: January 14, 2025
ORDER NO.: NCT25326
PROPERTY ADDRESS: VACANT, Fort Morgan, CO 80701

OWNER/PURCHASER: **CITY OF FORT MORGAN, COLORADO**

## PLEASE DELIVER TO THE FOLLOWING CUSTOMERS:

_____ To: CITY OF FORT MORGAN, COLORADO [redacted] **ATTN:** TINA SWAYNE

**Fax No.:**

ATTACHED PLEASE FIND THE FOLLOWING ITEM(S) IN CONNECTION WITH THE ABOVE CAPTIONED ORDER. SHOULD YOU HAVE ANY QUESTIONS REGARDING THE ATTACHED DOCUMENTATION, PLEASE CONTACT LINDA, AUBREY, LISA OR SHERYL. FOR CLOSING ASSISTANCE, PLEASE CONTACT LINDA OR LISA. WE APPRECIATE YOUR BUSINESS VERY MUCH AND LOOK FORWARD TO SERVING YOU IN THIS TRANSACTION.

***E-MAIL ADDRESS FOR CLOSING DOCUMENTS: closing@ncts.com***
**HAVE A WONDERFUL DAY!!!**

| | | | |
|---|---|---|---|
| X | **COMMITMENT**<br>**TO BE DETERMINED**<br>**AMT DUE IS ON SCHEDULE A (INVOICE)** | _____ | OWNERS TITLE POLICY |
| _____ | PROPERTY REPORT<br>AMT DUE IS ON PROPERTY REPORT (INVOICE) | _____ | MORTGAGEES TITLE POLICY |
| _____ | MORTGAGE/FORECOSURE GUARANTY | _____ | DOCUMENTS |
| _____ | SURVEY / ILC | _____ | OTHER / INVOICE |

stewart

# ALTA COMMITMENT FOR TITLE INSURANCE (07-01-2021)

ISSUED BY
STEWART TITLE GUARANTY COMPANY

## NOTICE

**IMPORTANT - READ CAREFULLY:** THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

## COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I - Requirements; Schedule B, Part II - Exceptions; and the Commitment Conditions, STEWART TITLE GUARANTY COMPANY, a Texas corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Amount of Insurance and the name of the Proposed Insured.

If all of the Schedule B, Part I - Requirements have not been met within six months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

Northern Colorado Title Services Co., Inc.

Linda L. Reding, Authorized Signatory

STEWART TITLE GUARANTY COMPANY INCORPORATED 1908 TEXAS

Frederick H. Eppinger
President and CEO

David Hisey
Secretary

*This page is only a part of a 2021 ALTA® Commitment for Title Insurance. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I - Requirements; and Schedule B, Part II - Exceptions; and a countersignature by the Company or its issuing agent that may be in electronic form.*

## COMMITMENT CONDITIONS

1. **DEFINITIONS**
   a. "Discriminatory Covenant": Any covenant, condition, restriction, or limitation that is unenforceable under applicable law because it illegally discriminates against a class of individuals based on personal characteristics such as race, color, religion, sex, sexual orientation, gender identity, familial status, disability, national origin, or other legally protected class.
   b. "Knowledge" or "Known": Actual knowledge or actual notice, but not constructive notice imparted by the Public Records.
   c. "Land": The land described in Item 5 of Schedule A and improvements located on that land that by State law constitute real property. The term "Land" does not include any property beyond that described in Schedule A, nor any right, title, interest, estate, or easement in any abutting street, road, avenue, alley, lane, right-of-way, body of water, or waterway, but does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
   d. "Mortgage": A mortgage, deed of trust, trust deed, security deed, or other real property security instrument, including one evidenced by electronic means authorized by law.
   e. "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
   f. "Proposed Amount of Insurance": Each dollar amount specified in Schedule A as the Proposed Amount of Insurance of each Policy to be issued pursuant to this Commitment.
   g. "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
   h. "Public Records": The recording or filing system established under State statutes in effect at the Commitment Date under which a document must be recorded or filed to impart constructive notice of matters relating to the Title to a purchaser for value without Knowledge. The term "Public Records" does not include any other recording or filing system, including any pertaining to environmental remediation or protection, planning, permitting, zoning, licensing, building, health, public safety, or national security matters.
   i. "State": The state or commonwealth of the United States within whose exterior boundaries the Land is located. The term "State" also includes the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, and Guam.
   j. "Title": The estate or interest in the Land identified in Item 3 of Schedule A.

2. If all of the Schedule B, Part I - Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:
   a. the Notice;
   b. the Commitment to Issue Policy;
   c. the Commitment Conditions;
   d. Schedule A;
   e. Schedule B, Part I - Requirements;
   f. Schedule B, Part II - Exceptions; and
   g. a countersignature by the Company or its issuing agent that may be in electronic form.

4. **COMPANY'S RIGHT TO AMEND**
   The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company is not liable for any other amendment to this Commitment.

## 5. LIMITATIONS OF LIABILITY

a. The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
   i. comply with the Schedule B, Part I - Requirements;
   ii. eliminate, with the Company's written consent, any Schedule B, Part II - Exceptions; or
   iii. acquire the Title or create the Mortgage covered by this Commitment.

b. The Company is not liable under Commitment Condition 5.a. if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.

c. The Company is only liable under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.

d. The Company's liability does not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Condition 5.a. or the Proposed Amount of Insurance.

e. The Company is not liable for the content of the Transaction Identification Data, if any.

f. The Company is not obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I - Requirements have been met to the satisfaction of the Company.

g. The Company's liability is further limited by the terms and provisions of the Policy to be issued to the Proposed Insured.

## 6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT; CHOICE OF LAW AND CHOICE OF FORUM

a. Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.

b. Any claim must be based in contract under the State law of the State where the Land is located and is restricted to the terms and provisions of this Commitment. Any litigation or other proceeding brought by the Proposed Insured against the Company must be filed only in a State or federal court having jurisdiction.

c. This Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.

d. The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.

e. Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.

f. When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

## 7. IF THIS COMMITMENT IS ISSUED BY AN ISSUING AGENT

The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for closing, settlement, escrow, or any other purpose.

## 8. PRO-FORMA POLICY

The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

**9. CLAIMS PROCEDURES**

This Commitment incorporates by reference all Conditions for making a claim in the Policy to be issued to the Proposed Insured. Commitment Condition 9 does not modify the limitations of liability in Commitment Conditions 5 and 6.

**10. CLASS ACTION**

ALL CLAIMS AND DISPUTES ARISING OUT OF OR RELATING TO THIS COMMITMENT, INCLUDING ANY SERVICE OR OTHER MATTER IN CONNECTION WITH ISSUING THIS COMMITMENT, ANY BREACH OF A COMMITMENT PROVISION, OR ANY OTHER CLAIM OR DISPUTE ARISING OUT OF OR RELATING TO THE TRANSACTION GIVING RISE TO THIS COMMITMENT, MUST BE BROUGHT IN AN INDIVIDUAL CAPACITY. NO PARTY MAY SERVE AS PLAINTIFF, CLASS MEMBER, OR PARTICIPANT IN ANY CLASS OR REPRESENTATIVE PROCEEDING. ANY POLICY ISSUED PURSUANT TO THIS COMMITMENT WILL CONTAIN A CLASS ACTION CONDITION.

**11. ARBITRATION (INTENTIONALLY DELETED)**

**STEWART TITLE GUARANTY COMPANY**

All notices required to be given the Company and any statement in writing required to be furnished the Company shall be addressed to it at: Stewart Title Guaranty Company, P.O. Box 2029, Mail Code: Policies 187, Houston, TX 77036.

## ALTA COMMITMENT FOR TITLE INSURANCE (07-01-2021)
## SCHEDULE A

ISSUED BY
STEWART TITLE GUARANTY COMPANY

**Transaction Identification Data, for which the Company assumes no liability as set forth in Commitment Condition 5.e.:**

**Issuing Agent:** Northern Colorado Title Services Co., Inc.
**Issuing Office:** 205 W. Kiowa Avenue, Fort Morgan, CO 80701
**Issuing Office's ALTA® Registry ID:** 0044474
**Commitment No.:** NCT25326
**Issuing Office File No.:** NCT25326
**Property Address:** VACANT, Fort Morgan, CO 80701

1. Commitment Date: **January 7, 2025 at 08:00 AM**

2. Policy or Polices to be issued:

| | AMOUNT: | PREMIUM: |
|---|---|---|
| ALTA Owners Policy (07/01/21) | **$TBD** | **$400.00** |

**Proposed Insured: TO BE DETERMINED**

Other Charges:

**TOTAL DUE: $400.00**

**NOTE: A Minimum Fee of $115.00 will be charged if file is cancelled.**

3. The estate or interest in the Land at the Commitment Date is:

**Fee Simple**

4. The Title is, at the Commitment Date, vested in:

**CITY OF FORT MORGAN, COLORADO, a municipal corporation**

# SCHEDULE A
(Continued)

5. The Land is described as follows:

**A parcel of land in the SE1/4 of Section 34, Township 4 North, Range 57 West of the 6th P.M., Morgan County, Colorado, described as Commencing at a point on the East side of said SE1/4 of Section 34, and 1305.1 feet North of the SE corner thereof, said point also being 16 feet South of the NE corner of the S1/2SE1/4 of said Section 34 and considering the East side of said SE1/4 of Section 34 as bearing S00°23'13"W with all other bearings relative thereto; thence N89°27'58"W 16 feet South of and parallel to the North side of said S1/2SE1/4 of Section 34, 296.3 feet to a point 16 feet South of the South bank of the Upper Platte and Beaver Canal as currently used and fenced; thence following said line along the south bank of the canal the following: S65°00'57"W 442.4 feet; thence S61°33'12"W 140.3 feet; thence S63°40'12"W 81 feet; thence S66°35'01"W 284.8 feet; thence S65°31'08"W 238.5 feet; thence S67°12'43"W 284.2 feet; thence S70°29'28"W 730.6 feet; thence S72°41'21"W 127.1 feet; thence S74°16'23"W 228.9 feet to the West line of said SE1/4 of said Section 34 and 327.3 feet North of the South quarter corner of said Section 34; thence along the West line of said SE1/4 of said Section 34, N00°12'00"E 807.1 feet to the South right-of-way line of Interstate Highway Number 76; thence N74°44'24"E 2762.6 feet along said South right-of-way line of said Highway to the East side of said SE1/4 of said Section 34; thence S00°23'13"W along the East line of said SE1/4 of said Section 34, 581.5 feet to the point of the beginning.**
**County of Morgan, State of Colorado.**

**NOTE: Any conveyance or encumbrance of the above described should include:**

**"Together with all applicable easements and right of ways as conveyed in EASEMENT AGREEMENT from JACK J. DEGENHART and SHIRLEY L. DEHENHART to THE CITY OF FORT MORGAN, COLORADO, recorded NOVEMBER 28, 1995 in Book 987 at page 982"**
**This is for informational purposes only and said easements will not be insured on the final policy.**

**AND**

**"Together with an easement and right-of-way to locate, construct, operate, maintain, repair, inspect, service, rebuild and remove an outfall sewer pipeline as conveyed on EASEMENT AGREEMENT by SOUTH PLATTE SPORTSMAN'S GROUP, INC. to CITY OF FORT MORGAN, COLORADO recorded SEPTEMBER 3, 1996 in Book 999 at page 734."**
**This is for informational purposes only and said easement will not be insured on the final policy.**

**AND**

**"Together with an easement for sewer lines, water and gas lines, and electrical lines for the purpose of constructing, using, replacing, repairing and maintaining said lines to serve its Waste Water Treatment Plant located in the SE1/4 of Section 34, Township 4 North, Range 57 West of the 6th P.M, Morgan County, Colorado, as conveyed in CONTRACT AND GRANT OF EASEMENT by UPPER PLATTE AND BEAVER CANAL COMPANY to THE CITY OF FORT MORGAN recorded DECEMBER 8, 2003 in Book 1165 at page 241."**
**This is for informational purposes only and said easement will not be insured on the final policy.**

and commonly known as (for informational purposes only): **VACANT, FORT MORGAN, CO 80701**

## SCHEDULE A
(Continued)

stewart
title guaranty company

Northern Colorado Title Services Co., Inc.

Linda L. Reding, Authorized Signatory


Frederick H. Eppinger
President and CEO

Denise Carraux
Secretary

*This page is only a part of a 2021 ALTA® Commitment for Title Insurance. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I - Requirements; and Schedule B, Part II - Exceptions; and a countersignature by the Company or its issuing agent that may be in electronic form.*

## ALTA COMMITMENT FOR TITLE INSURANCE (07-01-2021)
## SCHEDULE B PART I

ISSUED BY
STEWART TITLE GUARANTY COMPANY

### Requirements

File No.: NCT25326

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.

2. Pay the agreed amount for the estate or interest to be insured.

3. Pay the premiums, fees, and charges for the Policy to the Company.

4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

    a. Proper Deed from CITY OF FORT MORGAN, COLORADO to TO BE DETERMINED, conveying the land described herein.

    b. Certifiifed copy of Resolution of the governing Board of CITY OF FORT MORGAN, COLORADO, authorizing the sale of subject property and execution of all necessary documents, and reciting that the Board has been duly authorized in the premises. Said resolution must be property certified by an officer of the corporation with the corporate seal affixed. Said resolution must be submitted to and approved by Northern Colorado Title Services Co., Inc., but need not to be recorded.

    c. Dollar amount of Policy coverage must be provided to the Company.

    d. The Company reserves the right to assert additional requirements or exceptions regarding the Grantee(s) when they are designated.

Valid as a Commitment for an ALTA Policy only if attached to a countersigned Commitment for Title Insurance, a Schedule A, a Schedule B - Section II and a Schedule C (if applicable) with matching Commitment Numbers.

## ALTA COMMITMENT FOR TITLE INSURANCE (07-01-2021)
## SCHEDULE B PART II

ISSUED BY
STEWART TITLE GUARANTY COMPANY

### Exceptions

**File No.: NCT25326**

**Some historical land records contain Discriminatory Covenants that are illegal and unenforceable by law. This Commitment and the Policy treat any Discriminatory Covenant in a document referenced in Schedule B as if each Discriminatory Covenant is redacted, repudiated, removed, and not republished or recirculated. Only the remaining provisions of the document will be excepted from coverage.**

The Policy will not insure against loss or damage resulting from the terms and conditions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I - Requirements are met.

2. Any facts, rights, interests or claims which are not shown by the Public Records, but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.

3. Easements, or claims of easements, not shown by the Public Records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

5. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown in the Public Records.

6. Taxes or special assessments which are a lien or due and payable; or which are not shown as existing liens by the public records; and any tax, special assessments, or charges or liens imposed for water or sewer service, or any other special taxing district, and any unredeemed tax sales.

7. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water; (d) Minerals of whatsoever kind, subsurface and surface substances, in, on, under and that may be produced from the Land, together with all rights, privileges, and immunities relating thereto, whether or not the matters excepted under (a), (b), (c) or (d) are shown by the Public Records or listed in Schedule B.

8. Right of way for road purposes as specified in that road petition recorded July 3, 1922 in Book 73 at page 164, said road to be not less than 60 feet in width.

## SCHEDULE B PART II
(Continued)

9. Right of way for ROAD PURPOSES as shown on the FORT MORGAN MASTER STREET PLAN, recorded SEPTEMBER 1, 1981 in Book 5 at page 93.

10. Reservation of right of way for ditches or canals constructed by the authority of the United States, in U.S. Patent recorded APRIL 4, 1892 in Book 32 at page 238.

11. Reservation of right of the proprietor of any penetrating vein or lode to extract his ore, in U.S. Patent recorded APRIL 4, 1892 in Book 32 at page 238.

12. The PLATTE AND BEAVER IMPROVEMENT COMPANY and rights of way therefor as evidenced in Sworn Statement filed OCTOBER 4, 1882 in Book 4 at page 91.

13. The EDWARDS-GILL DRAINAGE SYSTEM and rights of way therefor, as evidenced by Map and Sworn Statement filed AUGUST 20, 1907 in Map Book 1 at page 31.

14. Easement and right of way for the right, privilege and easement to construct, operate and maintain an electric transmission line, as granted to THE UNITED STATES OF AMERICA by ROBERT M. GLASSEY in instrument recorded APRIL 12, 1940 in Book 382 at page 450, said easement to be through, over and across the SE1/4 of Section 34, Township 4 North, Range 57 West of the 6th P.M.

15. Undivided 1/2 interest in all oil, gas and other mineral rights, as reserved by OSCAR R. PREEDY and HELEN MUSA PREEDY in DEED to RAYMOND I. MILLER and GLORIA M. MILLER, recorded JANUARY 7, 1965 in Book 687 at page 567, and any and all assignments thereof or interests therein.

16. Each and every right or right of access of the Grantor or Grantors to and from any part of the right of way for COLORADO STATE HIGHWAY NO. 2 By-Pass, along or across a line described as follows: Project No. I 003-1 (7), Parcel No. 55 Rev., Southerly Line; beginning at a point on the East line of Section 34 bears N00°23'E, a distance of 760.7 feet; thence S74°45'30"W a distance of 2762.6 feet to a point on the West line of the SE1/4 of said Section 34, Project No. I003-1 (7), Parcel No. 55 Rev., Northerly Line; beginning at a point on the East line of Section 34, Township 4 North, Range 57 West of the 6th P.M. from which point the NE corner of the SE1/4 of said Section 34 bears N00°23'E., a distance of 449.2 feet; thence S74°45'30"W., a distance of 10.0 feet to the center of a 20 foot non-commercial opening on the Frontage Road; thence S74°45'30"W., a distance of 1091.1 feet to the center of a 20 foot non-commercial opening onto the Frontage Road; thence S74°45'30"W., a distance of 1662.2 feet to a point on the W. line of the SE1/4 of said Section 34 by reason of grant or relinquishment of said access right by Deed from OSCAR R. PREEDY and HELEN MUSA PREEDY to the DEPARTMENT OF HIGHWAYS, STATE OF COLORADO, recorded SEPTEMBER 23, 1957 in Book 589 at page 188.

17. Undivided 1/2 interest in all oil, gas and other mineral rights, now owned by Grantors as reserved by RAYMOND I. MILLER and GLORIA M. MILLER in Deed to VERNON H. DALLUGE, recorded JULY 29, 1994 in Book 970 at page 973, and any and all assignments thereof or interests therein.

18. Terms, conditions, provisions, agreements, burdens and obligations as contained in EASEMENT between JACK J. DEGENHART and SHIRLEY L. DEGENHART and CITY OF FORT MORGAN, COLORADO recorded NOVEMBER 28, 1995 in Book 987 at page 982.

## SCHEDULE B PART II
(Continued)

19. Subject to a 30 foot public road easement along the East side of the SE1/4 of Section 34, Township 4 North, Range 56 W of the 6th P.M., as reserved by BERT W. JACKSON and GEORGE C. BELL in Warranty Deed to ELLEN SMITH, recorded APRIL 6, 1907 in Book 65 at page 134.

20. Terms, conditions, provisions, agreements, burdens and obligations as contained in EASEMENT between SOUTH PLATTE SPORTSMAN'S GROUP, INC. and CITY OF FORT MORGAN, COLORADO recorded SEPTEMBER 3, 1996 in Book 999 at page 734.

21. Terms, conditions, provisions, agreements, burdens and obligations as contained in CONTRACT AND GRANT OF EASEMENT between UPPER PLATTE AND BEAVER CANAL COMPANY and CITY OF FORT MORGAN recorded DECEMBER 8, 2003 in Book 1165 at page 241.

22. Right of way and rights incidental thereto for County Roads 30 feet on either side of Section and Township lines as established by the Board of County Commissioners of Morgan County, Colorado, in instrument recorded May 6, 1907 in Book 62 at page 109.

23. NOTE: The following notices pursuant to CRS 9-1.5 103 concerning underground facilities have been filed with the Clerk and Recorder. These statements are general and do not necessarily give notice of underground facilities within the subject property: (A) MOUNTAIN BELL TELEPHONE COMPANY RECORDED OCTOBER 2, 1981 IN BOOK 821 AT PAGE 502; (B) PUBLIC SERVICE COMPANY OF COLORADO RECORDED OCTOBER 2, 1981 IN BOOK 821 AT PAGE 514; (C) MORGAN COUNTY RURAL ELECTRIC ASSOCIATION RECORDED JANUARY 22, 1982 IN BOOK 825 AT PAGE 656; AND (D) CITY OF FORT MORGAN, COLORADO RECORDED NOVEMBER 22, 1989 IN BOOK 917 AT PAGE 513.

# STEWART TITLE GUARANTY COMPANY
# PRIVACY NOTICE

This Stewart Title Guaranty Company Privacy Notice ("Notice") explains how Stewart Title Guaranty Company and its subsidiary title insurance companies (collectively, "Stewart") collect, use, and protect personal information, when and to whom we disclose such information, and the choices you have about the use and disclosure of your information. Pursuant to Title V of the Gramm-Leach Bliley Act ("GLBA") and other Federal and state laws and regulations applicable to financial institutions, consumers have the right to limit some, but not all sharing of their personal information. Please read this Notice carefully to understand how Stewart uses your personal information.

The types of personal information Stewart collects, and shares depends on the product or service you have requested.

**Stewart may collect the following categories of personal and financial information from you throughout your transaction:**

1. Identifiers: Real name, alias, online IP address if accessing company websites, email address, account name, unique online identifier, social security number, driver's license number, passport number, or other similar identifiers;
2. Demographic Information: Marital status, gender, date of birth.
3. Personal Information and Personal Financial Information: Name, signature, social security number, physical characteristics or description, address, telephone number, insurance policy number, education, employment, employment history, bank account number, credit card number, debit card number, credit reports, or any other information necessary to complete the transaction.

**Stewart may collect personal information about you from:**

1. Publicly available information from government records.
2. Information we receive directly from you or your agent(s), such as your lender or real estate broker;
3. Information about your transactions with Stewart, our affiliates, or others; and
4. Information we receive from consumer reporting agencies and/or governmental entities, either directly from these entities or through others.

**Stewart may use your personal information for the following purposes:**

1. To provide products and services to you or in connection with a transaction.
2. To improve our products and services.
3. To communicate with you about our, our affiliates', and others' products and services, jointly or independently.

**Stewart may use or disclose the personal information we collect for one or more of the following purposes:**

a. To fulfill or meet the reason for which the information is provided.
b. To provide, support, personalize, and develop our website, products, and services.
c. To create, maintain, customize, and secure your account with Stewart.
d. To process your requests, purchases, transactions, and payments and prevent transactional fraud.
e. To prevent and/or process claims.
f. To assist third party vendors/service providers who complete transactions or perform services on Stewart's behalf pursuant to valid service provider agreements.
g. As necessary or appropriate to protect the rights, property or safety of Stewart, our customers or others.
h. To provide you with support and to respond to your inquiries, including to investigate and address your concerns and monitor and improve our responses.
i. To help maintain the safety, security, and integrity of our website, products and services, databases and other technology-based assets, and business.
j. To respond to law enforcement or regulator requests as required by applicable law, court order, or governmental regulations.
k. Auditing for compliance with federal and state laws, rules and regulations.
l. Performing services including maintaining or servicing accounts, providing customer service, processing or fulfilling orders and transactions, verifying customer information, processing payments.
m. To evaluate or conduct a merger, divestiture, restructuring, reorganization, dissolution, or other sale or transfer of some or all of our assets, whether as a going concern or as part of bankruptcy, liquidation, or similar proceeding, in which personal information held by us is among the assets transferred.

Stewart will not collect additional categories of personal information or use the personal information we collected for materially different, unrelated, or incompatible purposes without providing you notice.

**<u>Disclosure of Personal Information to Affiliated Companies and Nonaffiliated Third Parties</u>**

Stewart does not sell your personal information to nonaffiliated third parties. Stewart may share your information with those you have designated as your agent throughout the course of your transaction (for example, a realtor, broker, or a lender). Stewart may disclose your personal information to a non-affiliated third party for a business purpose. Typically, when we disclose personal information for a business purpose, we enter in a contract that describes the purpose and requires the recipient to both keep that personal information confidential and not use it for any purpose except performing the contract.

We share your personal information with the following categories of third parties:

a. Non-affiliated service providers and vendors we contract with to render specific services (For example, search companies, mobile notaries, and companies providing credit/debit card processing, billing, shipping, repair, customer service, auditing, marketing, etc.)
b. To enable Stewart to prevent criminal activity, fraud, material misrepresentation, or nondisclosure.
c. Stewart's affiliated and subsidiary companies.
d. Non-affiliated third-party service providers with whom we perform joint marketing, pursuant to an agreement with them to jointly market financial products or services to you.
e. Parties involved in litigation and attorneys, as required by law.
f. Financial rating organizations, rating bureaus and trade associations.
g. Federal and State Regulators, law enforcement and other government entities to law enforcement or authorities in connection with an investigation, or in response to a subpoena or court order.

The law does not require your prior authorization or consent and does not allow you to restrict the disclosures described above. Additionally, we may disclose your information to third parties for whom you have given us authorization or consent to make such disclosure. We do not otherwise share your Personal Information or Browsing Information with non-affiliated third parties, except as required or permitted by law.

**Right to Limit Use of Your Personal Information**

You have the right to opt-out of sharing of your personal information among our affiliates to directly market to you. To opt-out of sharing to our affiliates for direct marketing, you may send an "opt out" request to Privacyrequest@stewart.com, or contact us through other available methods provided under "Contact Information" in this Notice. We do not share your Personal Information with nonaffiliates for their use to direct market to you without your consent.

**How Stewart Protects Your Personal Information**

Stewart maintains physical, technical and administrative safeguards and policies to protect your personal information.

**Contact Information**

If you have questions or comments about this Notice, the ways in which Stewart collects and uses your information described herein, your choices and rights regarding such use, or wish to exercise your rights under law, please do not hesitate to contact us at:

**Phone:** Toll Free at 1-866-571-9270

**Email:** Privacyrequest@stewart.com

**Postal Address:** Stewart Information Services Corporation
Attn: Mary Thomas, Chief Compliance and Regulatory Officer
1360 Post Oak Blvd., Ste. 100, MC #14-1
Houston, TX 77056

Effective Date: January 1, 2020
Updated: January 1, 2023

**Privacy Notice at Collection for California Residents**

Pursuant to the California Consumer Privacy Act of 2018 ("CCPA") and the California Privacy Rights Act of 2020, effective January 1, 2023 ("CPRA"), Stewart Information Services Corporation and its subsidiary companies (collectively, "Stewart") are providing this **Privacy Notice at Collection for California Residents** ("CCPA and CPRA Notice"). This CCPA and CPRA Notice supplements the information contained in Stewart's existing privacy notice and applies solely to all visitors, users, and consumers and others who reside in the State of California or are considered California Residents as defined in the CCPA and CPRA ("consumers" or "you"). All terms defined in the CCPA and CPRA have the same meaning when used in this Notice.

**Personal and Sensitive Personal Information Stewart Collects**

- Publicly available information from government records.
- Deidentified or aggregated consumer information.
- Certain personal information protected by other sector-specific federal or California laws, including but not limited to the Fair Credit Reporting Act (FCRA), Gramm Leach Bliley Act (GLBA) and California Financial Information Privacy Act (FIPA).

Specifically, Stewart has collected the following categories of **personal and sensitive personal information** from consumers within the last twelve (12) months:

| Category | Examples | Collected |
|---|---|---|
| A. Identifiers | A real name, alias, postal address, unique personal identifier, online identifier, Internet Protocol address, email address, account name, Social Security number, driver's license number, passport number, or other similar identifiers. | YES |
| B. Personal information categories listed in the California Customer Records statute (Cal. Civ. Code § 1798.80(e)). | A name, signature, Social Security number, physical characteristics or description, address, telephone number, passport number, driver's license or state identification card number, insurance policy number, education, employment, employment history, bank account number, credit card number, debit card number, or any other financial information, medical information, or health insurance information. Some personal information included in this category may overlap with other categories. | YES |
| C. Protected classification characteristics under California or federal law. | Age (40 years or older), race, color, ancestry, national origin, citizenship, religion or creed, marital status, medical condition, physical or mental disability, sex (including gender, gender identity, gender expression, pregnancy or childbirth and related medical conditions), sexual orientation, veteran or military status, genetic information (including familial genetic information). | YES |
| D. Commercial information. | Records of personal property, products or services purchased, obtained, or considered, or other purchasing or consuming histories or tendencies. | YES |
| E. Biometric information. | Genetic, physiological, behavioral, and biological characteristics, or activity patterns used to extract a template or other identifier or identifying information, such as, fingerprints, faceprints, and voiceprints, iris or retina scans, keystroke, gait, or other physical patterns, and sleep, health, or exercise data. | YES |
| F. Internet or other similar network activity. | Browsing history, search history, information on a consumer's interaction with a website, application, or advertisement. | YES |
| G. Geolocation data. | Physical location or movements. | YES |
| H. Sensory data. | Audio, electronic, visual, thermal, olfactory, or similar information. | YES |
| I. Professional or employment related information. | Current or past job history or performance evaluations. | YES |
| J. Non-public education information (per the Family Educational Rights and Privacy Act(20 U.S.C. Section 1232g, 34 C.F.R. Part 99)). | Education records directly related to a student maintained by an educational institution or party acting on its behalf, such as grades, transcripts, class lists, student schedules, student identification codes, student financial information, or student disciplinary records. | YES |
| K. Inferences drawn from other personal information. | Profile reflecting a person's preferences, characteristics, psychological trends, predispositions, behavior, attitudes, intelligence, abilities, and aptitudes. | YES |

Stewart obtains the categories of personal and sensitive information listed above from the following categories of sources:

- Directly and indirectly from customers, their designees, or their agents (For example, realtors, lenders, attorneys, brokers, etc.)
- Directly and indirectly from activity on Stewart's website or other applications.
- From third-parties that interact with Stewart in connection with the services we provide.

**Use of Personal and Sensitive Personal Information**

Stewart may use or disclose the personal or sensitive information we collect for one or more of the following purposes:

a. To fulfill or meet the reason for which the information is provided.
b. To provide, support, personalize, and develop our website, products, and services.
c. To create, maintain, customize, and secure your account with Stewart.
d. To process your requests, purchases, transactions, and payments and prevent transactional fraud.
e. To prevent and/or process claims.
f. To assist third party vendors/service providers who complete transactions or perform services on Stewart's behalf pursuant to valid service provider agreements.
g. As necessary or appropriate to protect the rights, property or safety of Stewart, our customers or others.
h. To provide you with support and to respond to your inquiries, including to investigate and address your concerns and monitor and improve our responses.
i. To personalize your website experience and to deliver content and product and service offerings relevant to your interests, including targeted offers and ads through our website, third-party sites, and via email or text message (with your consent, where required by law).
j. To help maintain the safety, security, and integrity of our website, products and services, databases and other technology-based assets, and business.
k. To respond to law enforcement or regulator requests as required by applicable law, court order, or governmental regulations.
l. Auditing for compliance with federal and state laws, rules and regulations.
m. Performing services including maintaining or servicing accounts, providing customer service, processing or fulfilling orders and transactions, verifying customer information, processing payments, providing advertising or marketing services or other similar services.
n. To evaluate or conduct a merger, divestiture, restructuring, reorganization, dissolution, or other sale or transfer of some or all of our assets, whether as a going concern or as part of bankruptcy, liquidation, or similar proceeding, in which personal information held by us is among the assets transferred.

Stewart will not collect additional categories of personal or sensitive information or use the personal or sensitive information we collected for materially different, unrelated, or incompatible purposes without providing you notice.

**Disclosure of Personal Information to Affiliated Companies and Nonaffiliated Third Parties**

Stewart does not sell your personal information to nonaffiliated third parties. Stewart may share your information with those you have designated as your agent throughout the course of your transaction (for example, a realtor, broker, or a lender). Stewart may disclose your personal information to a third party for a business purpose. Typically, when we disclose personal information for a business purpose, we enter into a contract that describes the purpose and requires the recipient to both keep that personal information confidential and not use it for any purpose except performing the contract.

We share your personal information with the following categories of third parties:

a. Service providers and vendors we contract with to render specific services (For example, search companies, mobile notaries, and companies providing credit/debit card processing, billing, shipping, repair, customer service, auditing, marketing, etc.)
b. Affiliated Companies.
c. Parties involved in litigation and attorneys, as required by law.
d. Financial rating organizations, rating bureaus and trade associations.
e. Federal and State Regulators, law enforcement and other government entities

In the preceding twelve (12) months, Stewart has disclosed the following categories of personal information for a business purpose:

Category A: Identifiers
Category B: California Customer Records personal information categories
Category C: Protected classification characteristics under California or federal law
Category D: Commercial Information
Category E: Biometric Information
Category F: Internet or other similar network activity
Category G: Geolocation data
Category H: Sensory data
Category I: Professional or employment-related information
Category J: Non-public education information
Category K: Inferences

**Your Consumer Rights and Choices Under CPPA and CPRA**

## Your Rights Under CCPA

The CCPA provides consumers (California residents as defined in the CCPA) with specific rights regarding their personal information. This section describes your CCPA rights and explains how to exercise those rights.

### Access to Specific Information and Data Portability Rights

You have the right to request that Stewart disclose certain information to you about our collection and use of your personal information over the past 12 months. Once we receive and confirm your verifiable consumer request, Stewart will disclose to you:

- The categories of personal information Stewart collected about you.
- The categories of sources for the personal information Stewart collected about you.
- Stewart's business or commercial purpose for collecting that personal information.
- The categories of third parties with whom Stewart shares that personal information.
- The specific pieces of personal information Stewart collected about you (also called a data portability request).
- If Stewart disclosed your personal data for a business purpose, a listing identifying the personal information categories that each category of recipient obtained.

### Deletion Request Rights

You have the right to request that Stewart delete any of your personal information we collected from you and retained, subject to certain exceptions. Once we receive and confirm your verifiable consumer request, Stewart will delete (and direct our service providers to delete) your personal information from our records, unless an exception applies.

Stewart may deny your deletion request if retaining the information is necessary for us or our service providers to:

1. Complete the transaction for which we collected the personal information, provide a good or service that you requested, take actions reasonably anticipated within the context of our ongoing business relationship with you, or otherwise perform our contract with you.
2. Detect security incidents, protect against malicious, deceptive, fraudulent, or illegal activity, or prosecute those responsible for such activities.
3. Debug products to identify and repair errors that impair existing intended functionality.
4. Exercise free speech, ensure the right of another consumer to exercise their free speech rights, or exercise another right provided for by law.
5. Comply with the California Electronic Communications Privacy Act (Cal. Penal Code § 1546 seq.).
6. Engage in public or peer-reviewed scientific, historical, or statistical research in the public interest that adheres to all other applicable ethics and privacy laws, when the information's deletion may likely render impossible or seriously impair the research's achievement, if you previously provided informed consent.
7. Enable solely internal uses that are reasonably aligned with consumer expectations based on your relationship with us.
8. Comply with a legal obligation.
9. Make other internal and lawful uses of that information that are compatible with the context in which you provided it.

## Your Rights Under CPRA

CPRA expands upon your consumer rights and protections offered by the CCPA. This section describes your CPRA rights and explains how to exercise those rights.

### Opt-Out of Information Sharing and Selling

Stewart does not share or sell information to third parties, as the terms are defined under the CCPA and CPRA. Stewart only shares your personal information as commercially necessary and in accordance with this CCPA and CPRA Notice.

### Correction of Inaccurate Information

You have the right to request that Stewart correct any inaccurate information maintained about.

### Limit the Use of Sensitive Personal Information

You have the right to limit how your sensitive personal information, as defined in the CCPA and CPRA is disclosed or shared with third parties.

### Exercising Your Rights Under CCPA and CPRA

To exercise the access, data portability, deletion, opt-out, correction, or limitation rights described above, please submit a verifiable consumer request to us by the available means provided below:

1. Calling us Toll Free at 1-866-571-9270; or

2. Emailing us at Privacyrequest@stewart.com; or

3. Visiting http://stewart.com/ccpa.

Only you, or someone legally authorized to act on your behalf, may make a verifiable consumer request related to your personal information. You may also make a verifiable consumer request on behalf of your minor child, if applicable.

To designate an authorized agent, please contact Stewart through one of the methods mentioned above.

You may only make a verifiable consumer request for access or data portability twice within a 12-month period. The verifiable consumer request must:

- Provide sufficient information that allows us to reasonably verify you are the person about whom we collected personal information or an authorized representative.

- Describe your request with sufficient detail that allows us to properly understand, evaluate, and respond to it.

Stewart cannot respond to your request or provide you with personal information if we cannot verify your identity or authority to make the request and confirm the personal information relates to you.

Making a verifiable consumer request does not require you to create an account with Stewart.

**Response Timing and Format**

We endeavor to respond to a verifiable consumer request within forty-five (45) days of its receipt. If we require more time (up to an additional 45 days), we will inform you of the reason and extension period in writing.

A written response will be delivered by mail or electronically, at your option.

Any disclosures we provide will only cover the 12-month period preceding the verifiable consumer request's receipt. The response we provide will also explain the reasons we cannot comply with a request, if applicable. For data portability requests, we will select a format to provide your personal information that is readily useable and should allow you to transmit the information from one entity to another entity without hindrance.

Stewart does not charge a fee to process or respond to your verifiable consumer request unless it is excessive, repetitive, or manifestly unfounded. If we determine that the request warrants a fee, we will tell you why we made that decision and provide you with a cost estimate before completing your request.

**Non-Discrimination**

Stewart will not discriminate against you for exercising any of your CCPA and CPRA rights. Unless permitted by the CCPA or CPRA, we will not:

- Deny you goods or services.
- Charge you a different prices or rates for goods or services, including through granting discounts or other benefits, or imposing penalties.
- Provide you a different level or quality of goods or services.
- Suggest that you may receive a different price or rate for goods or services or a different level or quality of goods or services.

**Record Retention**

Your personal information will not be kept for longer than is necessary for the business purpose for which it is collected and processed. We will retain your personal information and records based on established record retention policies pursuant to California law and in compliance with all federal and state retention obligations. Additionally, we will retain your personal information to comply with applicable laws, regulations, and legal processes (such as responding to subpoenas or court orders), and to respond to legal claims, resolve disputes, and comply with legal or regulatory recordkeeping requirements

**Changes to This CCPRA and CPRA Notice**

Stewart reserves the right to amend this CCPA and CPRA Notice at our discretion and at any time. When we make changes to this CCPA and CPRA Notice, we will post the updated Notice on Stewart's website and update the Notice's effective date.

**Link to Privacy Notice**

Stewarts Privacy Notice can be found on our website at https://www.stewart.com/en/privacy.html.

**Contact Information**

If you have questions or comments about this notice, the ways in which Stewart collects and uses your information described herein, your choices and rights regarding such use, or wish to exercise your rights under California law, please do not hesitate to contact us at:

**Phone:** Toll Free at 1-866-571-9270

**Website:** http://stewart.com/ccpa

**Email:** Privacyrequest@stewart.com

**Postal Address:** Stewart Information Services Corporation
Attn: Mary Thomas, Chief Compliance and Regulatory Officer
1360 Post Oak Blvd., Ste. 100, MC #14-1
Houston, TX 77056

Morgan County Quality Water District
17586 CR 20
PO Box 1218
Fort Morgan CO 80701
(970) 867-3054

City of Fort Morgan WWTP
PO BOX 100
Fort Morgan CO 80701-0100

| SERVICE ADDRESS | |
|---|---|
| Missing Service Address 2 | |
| DUE DATE: | TOTAL AMOUNT DUE |
| 04/10/25 | 134.99 |

**RECEIVED**
*By Carrie Carlson at 11:00 am, Apr 02, 2025*

| Service from | Service to | Account Number | Service Address |
|---|---|---|---|
| 02/24/25 | 03/25/25 | 3319.00 | Missing Service Address 2 |

| METER READINGS | | | DESCRIPTION | AMOUNT |
|---|---|---|---|---|
| Previous | Current | Total Consumption | | |
| 2141 | 2150 | 9,000 | PREVIOUS BALANCE | 160.20 |
| | | | PAYMENTS | 160.20 CR |
| | | | ADJUSTMENTS | .00 |
| | | | Water | 134.99 |
| | | | | PAY THIS AMOUNT |
| | | | | 134.99 |

**AUTO PAY - This will be automatically deducted from your account.**

Happy Easter
You can view or pay your bill at www.mcqwd.org

***PLEASE DETACH AND RETURN BOTTOM PORTION WITH YOUR PAYMENT***

Morgan County Quality Water District
17586 CR 20
PO Box 1218
Fort Morgan CO 80701
(970) 867-3054

| | |
|---|---|
| **ACCOUNT #** | **3319.00** |
| **DUE DATE** | **04/10/25** |
| **AMOUNT DUE** | **134.99** |
| ***AMOUNT PAID*** | |

3319.00
City of Fort Morgan WWTP
PO BOX 100
Fort Morgan CO 80701-0100

SERVICE ADDRESS:
Missing Service Address 2

# CITY OF FORT MORGAN

**710 E Railroad**
**Fort Morgan, CO 80701**
**(970) 867-4350**
**cityoffortmorgan.com**

CITY OF FORT MORGAN
PO BOX 100
FORT MORGAN CO 80701-0100

| Account Number | AMOUNT DUE |
|---|---|
| 492403-000 | 8,918.49 |
| **Due Date** | **After Due Date Pay** |
| 4/10/25 | 8,918.49 |
| **SERVICE ADDRESS** | |
| 18169 CO RD 22 (WEST METER AT WWTP) | |

**This account is on Direct Pay**

| Name | Service Address | | | Customer Number |
|---|---|---|---|---|
| CITY OF FORT MORGAN | 18169 CO RD 22 (WEST METER AT WWTP) | | | 492403-000 |
| **Billing Period** | **Number of Days** | **Bill Date** | **Penalty Date** | **Due Date** |
| 3/01/25 to 3/31/25 | 31 | 3/31/25 | 4/16/25 | 4/10/25 |
| **Demand** / **kVAR** | **Multiplier** 80 | | | |

**CUSTOMER SERVICE TYPE:** Municipal

| | CURRENT | | PREVIOUS | | |
|---|---|---|---|---|---|
| | DATE | READING | DATE | READING | USAGE |
| ELU | 3/20/25 | 24943 | 2/20/25 | 23430 | 121040 |

| | |
|---|---|
| PREVIOUS BAL. | 5,650.65 |
| PAYMENTS | 5,650.65 CR |
| ADJUSTMENTS | .00 |
| **PAST DUE AMOUNT** | **.00** |

| **DESCRIPTION** | **AMOUNT** |
|---|---|
| Electric Base/Consumer Charge | 9.95 |
| Electric Usage/Delv-Energy Rate | 8,908.54 |
| | .00 |

**CITY OF FORT MORGAN**
**710 E Railroad**
**Fort Morgan, CO 80701**
**(970) 867-4350**
**cityoffortmorgan.com**

| | |
|---|---|
| | .00 |
| | .00 |
| | .00 |
| **CURRENT BILL** | **8,918.49** |
| **AMOUNT DUE** | **8,918.49** |

**This account is on Direct Pay**

**MESSAGE:**
**NOTICE OF WATER AND WASTEWATER INCREASE- EFFECTIVE 01/01/2025! The City of Fort Morgan is facing cost increase due to infastructure reinvestment, regulatory and expansion related needs. Water Rates will increase 8% and Wastewater Rates will increase 15%. Visit the link below for more information. https://www.cityoffortmorgan.com/Archive.aspx?ADID=3017**

# Approved Driveway Access Permit

## Morgan County, Colorado

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Driveway Access Code:** | **DRV22-0.777-W-SH34** | | | | **Date:** | **6-9-25** | |
| | | | | | | | |
| **Property Owner (Permittee):** | | | | | | | |
| | **Name:** | **City of Fort Morgan** | | | | | |
| | **Address:** | **710 E. Railroad Ave.** | | | | | |
| | **Address:** | | | | | | |
| | **City:** | **Fort Morgan** | **State:** | **CO** | **Zip Code:** | **80701** | |
| | **Phone:** | [redacted] | **Email:** | | | | |
| **Agent of Property Owner (If Applicable)** | | | | | | | |
| | **Name:** | | | | | | |
| | **Address:** | | | | | | |
| | **Address:** | | | | | | |
| | **City:** | | **State:** | | **Zip Code:** | | |
| | **Phone:** | | **Email:** | | | | |
| **Parcel Number:** | **103934000900** | | | | | | |
| **Legal Description:** | **18169 Morgan County Road 22. S:34 T:4 R:57 SE ¼** | | | | | | |
| **GPS Coordinates at the Centerline of Driveway:** | | | | **Latitude:** | **40.265200** | | |
| | | | | **Longitude:** | **-103.734847** | | |
| **Access onto County Road:** | **MCR 22** | | | | | | |
| **Driveway Type:** | | **New** | **X** | **Existing** | | | |
| **Maximum Width of Approved Driveway is:** | **40** | **FEET** | | | | | |
| **Culvert Required:** | **X** | **No** | | **Yes** | ***If Yes, Required Size is:*** | | **Inch** |

*If a culvert is not required at the time of permit issuance but future conditions deem one necessary, the cost of said culvert may be at the property owner's expense.*

The above identified driveway has been approved by Morgan County Road and Bridge Department pursuant to all terms and conditions outlined in the Application for Driveway Access Permit are adhered to. Failure to comply with these term and conditions may result in this permit being revoked and/or the driveway being removed at permittee's expense. This permit is valid only for the one driveway access identified above. Construction of said driveway may proceed.

Morgan County, Colorado
Public Works Department

James Rehn — *Authorized Morgan County Agent Signature*

6-9-25
Date

**Application for Driveway Access Permit**
Morgan County, Colorado

**Instructions for Completing and Submitting Application**

1. Property Owner (Permittee): Please provide the full name, mailing address, telephone number and email address *(if available)* of the legal property owner. The provided telephone number should be one where the Permittee can be reached during business hours Monday through Friday, 8:00 a.m. to 4:00 p.m. MDT.

2. Agent of Permittee: If the applicant *(person or company completing this application)* is different from the legal property owner *(Permittee)*, provide entity name *(if applicable)*, the full name of the person serving as the agent, mailing address, telephone number, and email address *(if available)*. The provided telephone number should be one where the Agent can be reached during business hours Monday through Friday, 8:00 a.m. to 4:00 p.m. MDT. *Please provide documentation you are an agent of property owner.*

3. Legal Description of property: Provide the legal description to the full extent that applies for the property to be accessed by the requested driveway. Include the Assessor parcel number. This information is available through the County Assessor or Clerk and Recorders office or on your property deed(s).

4. Road Access: Complete the information on the County Road that will be accessed by this proposed driveway.

5. New or Existing Driveway: Complete the information for the driveway type.
   New Driveways:
   - In determining location for the proposed driveway, take into account: line of site distances, relationship to road intersections, and relationship to crests of hills.
   - Please indicate the desired width of the new requested driveway.
   - If possible, provide a map showing the desired location of the proposed driveway.
   - ***The proposed area for the new driveway must be clearly marked with flagged stakes on each side of the proposed area.*** ***Please have the location marked as indicated prior to submitting application.***

6. Initial the bottom of page two (2) in the provided location indicating that you have read and understand the terms and conditions.

7. Signature Section must be signed and dated by the property owner or agent. *Applications will not be processed until they are fully completed, initialed, signed and submitted, along with any additional required documents.*

8. Submittal of Application: Please submit application and all corresponding paperwork to:
   By mail or in person: Morgan County Road and Bridge Department
   P.O. Box 516
   17303 County Road S
   Fort Morgan, CO 80701
   By Email to: rbmorganc@co.morgan.co.us

## Application for Driveway Access Permit
Morgan County, Colorado

### Terms and Conditions

1. The granting of this permit application is for one (1) property access across the county right of way onto a county road. The access must not exceed the approved width defined on the approved permit. Additional accesses crossing the right of way must be applied for separately.
2. If this access is to be onto an access/travelling easement, then a copy of the easement, recorded plat or use agreement must accompany this application.
3. The granting of a driveway access permit by Morgan County is only for the purpose of crossing the right of way under the counties jurisdiction. It is the permittee's responsibility to identify and obtain permissions to cross any other easements, covenants, right of ways or private agreements that may exist.
4. If the access request is onto any Federal or State lands, you must provide the names and contact information for the relevant agencies and attach a copy of the authorization for the property use.
5. All property owners/agents are responsible for any damages that may occur to the county road or right of way during installation of said driveway.
6. The construction and all costs associated with the construction of the driveway are the responsibility of the property owner/agent. The construction cannot exceed the defined width and must include any specified culverts required as defined in the approved permit. Culverts may be purchased from anywhere, however they must be approved by the county prior to installation. Culverts may also be purchased from Morgan County Road and Bridge.
7. If a culvert is required, it is for use by Morgan County to protect the road and right of way. Morgan County retains the right to utilize the culvert in any way it deems necessary.
8. If a culvert is not required at the time of permit issuance, however, in the future a culvert is deemed necessary, the cost of said culvert may be at the property owner's expense.
9. Inside the county right of way, the driveway may only consist of the travelling surface to access the property. No other structures or appurtenances may be placed in the right of way *(examples: columns, walls, fencing, large rocks, etc.)*. The only exception to this requirement is mailboxes.
10. During the construction of an approved driveway, it is the responsibility of the property owner/agent and/or their contractor to insure safety to the travelling public. This could include the use of signs, cones and/or traffic control as necessary.
11. All repairs, maintenance and costs associated with said driveway are the responsibility of the property owner/agent.
12. Morgan County is not responsible for any damages to the driveway caused by normal maintenance operations, including but not limited to mowing, grading, and snowplowing.
13. The property owner/agent agrees to hold harmless, indemnify, and defend Morgan County from any claim of any person arising from the installation, use, maintenance, or removal of the driveway in the county right of way.
14. The terms, conditions and requirements defined in this application and subsequent approved permit will remain valid through any future sales, transfer of ownership or assignments of the property defined in this driveway application.

BN *Please Initial that you have read and understand the terms and conditions outlined on this page.*

## Application for Driveway Access Permit
Morgan County, Colorado

1. **Property Owner** *(Permittee)*:
   Name: City of Fort Morgan
   Address: 710 E. Railroad Ave
   City/State/Zip Code: Fort Morgan, CO 80701
   Phone ( ) [redacted] Email: _____
2. **Agent of Property Owner** *(If Applicable)*
   Company/Individual Name _____
   Contact Name *(If Applicable)* _____
   Address: _____
   City/State/Zip Code: _____
   Phone ( ) _____ Email: _____
3. **Legal Description:**
   18169 Morgan County Rd 22, Fort Morgan CO, 80701
   Section 34, Township 4, Range 57, SE1/2;
   Parcel Number: 1039-340-00-900
4. **Road Access:**
   Access onto County Road R *(Circle Direction)* North / South / East / (West) of County Road MCR 22
5. **Driveway Type:** *(Check One)* **New Driveway _____ Existing Driveway X
   Desired width of New Driveway _____ Feet.
   **If this is a new driveway location, please place flagged stake marker on each side of the requested driveway location.

I have read the instructions, terms and conditions outlined in this Driveway Access Permit Application, and agree to all terms and conditions outlined therein, furthermore, I understand no liability is assumed by the County of Morgan, Colorado or its agents by issuance of a permit for this application and all costs, present and future, associated with the access provided by an Approved Driveway Access Permit are the responsibility of the property owner/agent and or any future assignees. The applicant declares the information provided are true and complete to the best of their knowledge.

Brent M. Nation — *Property Owner/Agent Signature*

3-11-25 — *Date*

**Submit Completed Application and All Supporting Documents to:**
Morgan County Road and Bridge Department
P.O. Box 516
17303 County Road S
Fort Morgan, CO 80701
Or by Email to: rbmorganc@co.morgan.co.us
Phone: (970) 542-3560 Fax: (970) 542-3569

**For Office Use only below this line**

Determination: X Approved _____ Denied *(Reason for Denial)*: _____
GPS Coordinates, Centerline of Driveway in relation to road: Latitude: 40.265200
Maximum Width of Driveway: 40 Feet Longitude: -103.734847
Culvert Required: *YES* / (NO) *If Yes, Size:* _____
Closest Intersecting Road SH34 Measurement from Closest Intersecting Road 4098 Feet
Driveway Access Code: DRV22-0.777-W-SH34
Completed By: _____ Date: 6-9-25

# CERTIFICATION OF NOTIFICATION OF MINERAL ESTATE OWNER

The applicant must check one of the three following statements, sign and date the form, and attach a list of mineral owners and lessees to whom notice was sent (if applicable).

---

I/We, City of Fort Morgan

_____, (the "Applicant" or authorized representative of the Applicant), by signing below, hereby declare and certify as follows:

With respect to the property located at:

Physical Address: 18169 County Road 22, Fort Morgan, CO 80701

Legal Description (attach as applicable): _____

SE1/4,Section 34,Township 4N,Range 57W

Permit #: _____

__X__ I /We have searched the records of the Morgan County Tax Assessor and the Morgan County Clerk and Recorder for the above identified parcel and have found that no mineral estate owner is identified therein pursuant to C.R.S. § 24-65.5-103(1).

_____ I/We certify that, not less than thirty (30) days before the initial public hearing, notice of application for surface development was provided to mineral estate owners pursuant to C.R.S. § 24-65.5-103(1) of the Colorado Revised Statutes. A copy of the letter and list of addressee are included with this certification.

_____ The mineral estate has been severed from the surface estate, and each mineral estate owner and lessee has waived the right to notice as per C.R.S. § 24-65.5-103(5).

I hereby further certify that I am the Applicant, or I am authorized by the Applicant to make the representations contained herein and to act as the Applicant's agent for purposes of this Certification of Notification and bind the Applicant to these representations by my signature below.

_____ 6/5/2025

Applicant or Authorized Representative Date

Outlook

## Re: [External] Re: Fort Morgan WWTF - Upcoming Construction

**From** Jessica May <upbccompany@gmail.com>
**Date** Wed 3/12/2025 12:27 PM
**To** Andrew Stewart [redacted]

Our address is 623 Edison St, Brush, CO 80723. Across the street from 7-11.

If you have any maps that may be useful you could bring those. Otherwise we will let you know at the meeting if there is anything else we may need from you or that you may need from us.

If you have any questions in the mean time or need help finding us or number is 970.842.2552 or you can respond to this email.

Thank you,
Jessica May

On Wed, Mar 12, 2025, 10:58 AM Andrew Stewart [redacted] wrote:

> Jessica – Would you please send information on where and anything else I might need.
>
> Thank you,
>
> **Andrew Stewart** | Project Manager | Merrick & Company
>
> **T:** [redacted] | **C:** [redacted] | www.merrick.com
>
> MERRICK®
>
> ---
>
> **From:** Jessica May <upbccompany@gmail.com>
> **Sent:** Wednesday, March 12, 2025 10:53 AM
> **To:** Andrew Stewart [redacted]
> **Subject:** Re: [External] Re: Fort Morgan WWTF - Upcoming Construction

Great! I will put it on the agenda. We will see you then!

Jessica May

On Wed, Mar 12, 2025, 10:49 AM Andrew Stewart [redacted] wrote:

> Yes, I am able to make that work.
>
> **Andrew Stewart** | Project Manager | Merrick & Company
>
> **T:** +[redacted] | **C:** +[redacted] www.merrick.com
>
> MERRICK®
>
> ---
>
> **From:** Jessica May <upbccompany@gmail.com>
> **Sent:** Wednesday, March 12, 2025 10:04 AM
> **To:** Andrew Stewart <[redacted]
> **Subject:** Re: [External] Re: Fort Morgan WWTF - Upcoming Construction
>
> Hi Andrew,
>
> The board asked if you could come to our next board meeting on April 8th at 6:00PM? If you would like to meet before then, a couple of our board members said they are willing to do so, you just let me know a date and time that works for you and I will relay the message.
>
> Thank you,
> Jessica May
>
> On Mon, Mar 10, 2025, 7:38 AM Andrew Stewart [redacted] wrote:
>
> > Jessica May – Thank you for letting me know. I appreciate it. No issues with the timeline.
> >
> > **Andrew Stewart** | Project Manager | Merrick & Company
> >
> > **T:** +[redacted] **C:** +[redacted] | www.merrick.com

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**From:** Jessica May <upbccompany@gmail.com>
**Sent:** Friday, March 7, 2025 5:24 PM
**To:** Andrew Stewart [redacted]
**Subject:** [External] Re: Fort Morgan WWTF - Upcoming Construction

> **Caution:** This email originated from outside of the Merrick organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Andrew,

We received your email and it was forwarded to the board. We meet Tuesday night for our next board meeting and will discuss who and when we can meeting with you.

I apologize for not getting back with you sooner. Heather is in the process of retiring from UP&B and I'm her replacement, Jessica May. I look forward to visiting with you more in the future!

Thank you,

Jessica May

On Fri, Mar 7, 2025, 1:42 PM Andrew Stewart [redacted] wrote:

> Good afternoon Heather –
>
> I reached out last month to try and start a conversation on a project I am managing on behalf of the City of Fort Morgan. As a part of this project we need to have a discussion with you on some various activities given the proximity of the project to the Ditch along the property line. I would like to set up a meeting if possible. Please let me know your upcoming availability.
>
> Thank you,
>
> **Andrew Stewart** | Project Manager | Merrick & Company

Gmail Jenafer Santos <jsantos@co.morgan.co.us>

# Statement of Authority - Special Use Permit

**Nicole Hay** <nhay@co.morgan.co.us> Wed, Aug 6, 2025 at 8:25 AM To: Andrew Stewart [redacted]
Cc: Brent Nation [redacted], Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Victor Perez [redacted] Jenafer Santos <jsantos@co.morgan.co.us>, Doug Linton [redacted]

Andrew and Brent,

I am wondering if you have worked out an agreement with Upper Platte and Beaver Canal regarding improvements to
mitigate groundwater impact?

---

**Andrew Stewart** [redacted] Wed, Aug 6, 2025 at 8:50 AM To: Nicole Hay <nhay@co.morgan.co.us>
Cc: Brent Nation [redacted] Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Victor Perez [redacted], Jenafer Santos <jsantos@co.morgan.co.us>, Doug Linton [redacted]

We do not have an agreement in place but I was given permission this week by the state of Colorado to add a HDPE liner along the property. I need to pursue this discussion again with upper Platte and Beaver Canal but previous discussions indicated that if the State of Colorado approved it they would be on board as well.

**Andrew Stewart** (he/him) | Project Manager | Merrick & Company

**T:** +[redacted] | **C:** +[redacted] | www.merrick.com

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# MEMORANDUM

**DATE:** MAY 8, 2025

**TO:** MORGAN COUNTY

**FROM:** ANDREW STEWART
PROJECT MANAGER
MERRICK & COMPANY

**CC:** FILE – MERRICK PROJECT NO. 100541

**RE:** TRAFFIC IMPACT ANALYSIS SUMMARY

This memorandum summarizes the estimated project duration and associated vehicle traffic expected during the construction phase of the City of Fort Morgan Water/Wastewater Treatment Facility Expansion project.

## PROJECT DURATION

- Total estimated duration: 2 years.
- Working days: Approximately 526 days.

## TRAFFIC ESTIMATES

1. **Crew Vehicles:**
    - Estimated 20 crew vehicles onsite at any given time.
    - Each vehicle making 2 trips per day (arrival and departure).
2. **Contractor Equipment Transportation:**
    - Estimated 20 total loads at the start and end of the project.
    - Estimated 106 loads throughout construction for contractor equipment.
3. **Material Deliveries:**
    - Estimated 46 loads at project start.
    - Estimated 72 additional loads throughout the duration.

4. **Construction Materials:**
    - **Concrete:** Estimated 53 loads.
    - **Aggregate:** Estimated 202 loads.
5. **Additional Project-Related Traffic:**
    - Estimated 10% increase in additional traffic during the project duration due to survey crews, engineers, owner representatives, county inspectors, etc.

Please direct any questions, comments, and concerns to Andrew Stewart at [redacted] or [redacted]

Sincerely,
Andrew Stewart, P.E.
Merrick & Company

| | |
|---|---|
| **Project** | **Fort Morgan WWTF Expansion** |
| **Project No.** | **100541** |
| **Date** | **5/8/2025** |
| **Item of Work** | **Traffic Impact Analysis** |

| Station ID | Route | Start | Finish | Description | Annual Average Daily Traffic (AADT) | Single Unit | Combo Trucks | % Trucks |
|---|---|---|---|---|---|---|---|---|
| 101473 | 034B | 168.469 | 171.015 | SH 34 E/O CR24 | 5600 | 160 | 440 | 10.6 |

| 20 Year Factor | Design Hour Volume (DHV) | Daily Vehicle Mileage Traveled (DVMT) | Design Direction |
|---|---|---|---|
| 1.15 | 12 | 14588 | 57 |

| Project Duration | Total Days | Working Days | Overall Construction Traffic | AADT Increase - Construction | Single Unit Total | Single Unit AADT Increase - Construction | Combo Trucks Total | Combo Trucks AADT Increase - Construction |
|---|---|---|---|---|---|---|---|---|
| 2 Years | 730 | 526 | 24180 | 66.25 | 342 | 1 | 694 | 2 |

| Crew Traffic (Pickup or Smaller Vehicle) | Vehicles | Daily Trips | Total/Day | Months | Working Days | Overall Total | Notes |
|---|---|---|---|---|---|---|---|
| | 20 | 2 | 40 | 0 to 24 | 526 | 21040 | Estimated Crew Size of Approx. 20 Vehicles for Project Duration |

| Mobilization (Combo Trucks) - Equipment | Vehicles | Daily Trips | Total/Day | Months | Working Days | Overall Total | Notes |
|---|---|---|---|---|---|---|---|
| | 2 | 2 | 4 | 0 to .5 | 10 | 40 | Estimated 20 Loads for Initial Contractor Mobilization |
| | 0.1 | 2 | 0.2 | 0 to 24 | 526 | 105 | Estimated 53 Loads for Contractor Equipment Mobilization Throughout Project |

| Demobilization (Combo Trucks) - Equipment | Vehicles | Daily Trips | Total | Months | Working Days | Overall Total | Notes |
|---|---|---|---|---|---|---|---|
| | 2 | 2 | 4 | 23.5 to 24 | 10 | 40 | Estimated 20 Loads for Contractor Demobilization |
| | 0.1 | 2 | 0.2 | 0 to 24 | 526 | 105 | Estimated 53 Loads for Contractor Equipment Demobilization Throughout Project |

| Deliveries (Single Unit) - Materials/Concrete Deliveries | Vehicles | Daily Trips | Total | Months | Working Days | Overall Total | Notes |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 2 | 0 to 2 | 46 | 92 | Estimated 46 Loads for Initial Material Deliveries |
| | 0.15 | 2 | 0.3 | 2 to 24 | 481 | 144 | Estimated 72 Loads for Material Deliveries Throughout Project |
| | 0.1 | 2 | 0.2 | 0 to 24 | 526 | 105 | Estimated 53 Loads for Concrete Deliveries Throughout Project |

| Deliveries (Combo Trucks) - Aggregate Deliveries | Vehicles | Daily Trips | Total | Months | Working Days | Overal Total | Notes |
|---|---|---|---|---|---|---|---|
| | 2 | 2 | 4 | 0 to 5 | 101 | 404 | Estimated 202 Loads of Earthwork Aggregate Deliveries |

| Other Misc. Traffic (Pickup or Smaller Vehicle) | Vehicles | Daily Trips | Total | Months | Working Days | Overal Total | Notes |
|---|---|---|---|---|---|---|---|
| | | | | 0 to 24 | | 2104 | Estimated 10% Other Traffic During Project Duration. Surveying, Enginner Staff, Owner Staff, County Inspection, etc. |

# ADDITIONAL APPLICATION INFORMATION

Statement of Taxes

CDPHE Permit Update

# Morgan County Treasurer
# Statement of Taxes Due

Account Number R801001

Parcel 103934000900

Assessed To

CITY OF FORT MORGAN
P O BOX 100
FORT MORGAN, CO 80701

**Legal Description**

S: 34 T: 4 R: 57 SE1/4 PARC N OF P & B CANAL EX B589 P186, B883 P476

**Situs Address**

| Year | Tax | Interest | Fees | Payments | Balance |
|---|---|---|---|---|---|
| **Grand Total Due as of 08/06/2025** | | | | | **$0.00** |

Tax Billed at 2024 Rates for Tax Area 248 - 248 - RE 3

| Authority | Mill Levy | Amount |
|---|---|---|
| COUNTY GENERAL FUND | 19.5360000 | $0.00 |
| ROAD AND BRIDGE FUND | 7.5000000 | $0.00 |
| SOCIAL SERVICES FUND | 2.0000000 | $0.00 |
| FT MORGAN RURAL FIRE DIST | 2.9960000* | $0.00 |
| FT MORGAN PEST CONTROL | 0.2930000* | $0.00 |
| LOWER S PLATTE WATER CD | 0.5000000 | $0.00 |
| MORGAN CO QUALITY WATER | 0.8240000 | $0.00 |
| NORTHERN COLO WATER CD | 1.0000000 | $0.00 |
| RE 3 F M GENERAL FD | 27.0790000 | $0.00 |
| RE 3 F M M/L OVRD | 1.5370000 | $0.00 |
| RE 3 F M BOND RED | 7.6620000 | $0.00 |
| Taxes Billed 2024 | 70.9270000 | $0.00 |

* Credit Levy

| Values | Actual | Assessed |
|---|---|---|
| POLITICAL SUBDIV - LAND | $352,800 | $102,310 |
| POLITICAL SUBD - IMPS | $8,276,580 | $2,400,210 |
| Total | $8,629,380 | $2,502,520 |

**********TAX LIEN SALE REDEMPTIONS MUST BE PAID BY CASH OR CASHIER'S CHECK**********

Special taxing districts and the boundaries of such districts may be on file with the County Commissioners, County Clerk, or County Assessor. Unless specifically mentioned, this statement does not include land or improvements assessed under a separate account number, personal property taxes, transfer tax or miscellaneous tax collected on behalf of other entities, special or local improvement district assessments, or manufactured homes.

ROBERT A SAGEL, MORGAN COUNTY TREASURER
231 Ensign St, PO Box 593, Fort Morgan, CO 80701
Phone: 970-542-3518, Email: esale@co.morgan.co.us
Website: morgancounty.colorado.gov

Gmail

**Nicole Hay <nhay@co.morgan.co.us>**

# Statement of Authority - Special Use Permit

**Andrew Stewart** [redacted] Tue, Jul 15, 2025 at 11:20 AM
To: Nicole Hay <nhay@co.morgan.co.us>, Brent Nation [redacted] Victor Perez [redacted]
Cc: Cheryl Brindisi <cbrindisi@co.morgan.co.us>, Jenafer Santos <jsantos@co.morgan.co.us>

Nicole –

We are working on updating the CDPHE Permit, the City has been in administrative extension since 2013. We anticipate a new permit with this project with the most recent nutrient regulation in effect. We have submitted preliminary information to CDPHE and will submit our process design report by the end of the month. With that we will submit the request for a new permit (this was previously submitted but has not been issued, the statute I believe is up on it so it is appropriate to resubmit).

The pre-treatment building was built with the current plant in 1995. I am not sure on the building permit nor why it was built within the 150-ft setback. We are including equipment exchanges in the building but not modifying the building with this project. I assume this setback was somewhat relaxed due to the ditch and high berm on the south side of the property disallowing contamination in that direction if there was ever an issue. However, this is my assumption based on the timeline and the building placement. I am happy to discuss further.

[Quoted text hidden]
[Quoted text hidden]

# LANDOWNER LETTERS, REFERRALS & RESPONSES

Landowner Letters Sent & Responses Received

Referrals Sent & Responses Received

Notification

Sign Posting Pictures & Affidavit

# MORGAN COUNTY
# PLANNING AND ZONING DEPARTMENT

July 23, 2025

Dear Neighboring Landowners:

Victor Perez and Brent Nation as applicants and City of Fort Morgan as landowner, have submitted an application to our office to amend the existing Special Use Permit to update and expand the City of Fort Morgan Waste Water Treatment Facility.

**Legal Description:** A parcel of land in the SE¼ Section 34 Township 4 North, Range 57 West of the 6th P.M., Morgan County, Colorado aka 18169 County Road 22, Fort Morgan, CO 80701.

This application is scheduled to be heard by the Planning Commission on **Monday, August 11, 2025 at 6:00 P.M.** in the Assembly Room of the Morgan County Administration Building, 231 Ensign St., (Basement Level) Fort Morgan, Colorado. Landowners within 1,320 feet of the subject property are notified of the application and hearing date.

Documents pertaining to the above identified matters are on file in the Planning Administrator's Office located at 231 Ensign St., Fort Morgan, Colorado. If you have any questions pertaining to this application or if you would like to review the file, either contact us at (970) 542-3526 or stop by our office prior to the hearing. You may attend the public hearing and provide comments on the application, or alternatively, if you are not able to attend you may submit written comments to our office no later than **August 6, 2025.**

Sincerely,
Nicole Hay
Nicole Hay
Planning Administrator

***For special assistance for the mentioned hearing, please notify us at least 48 hours before the scheduled agenda item. Please call (970) 542-3526 to request any ADA accommodations***

Morgan County Government ~ 231 Ensign St ~ PO Box 596 ~ Fort Morgan, CO 80701
Telephone (970) 542-3526 ~ nhay@co.morgan.co.us

CITY OF FORT MORGAN

P O BOX 100
FORT MORGAN, CO 80701

FUR, FIN & FEATHER INC

P O BOX 597
FORT MORGAN, CO 80701

CLARK, NICOLAS A & RYAN H TRUST

22789 N I-76 FRONTAGE RD
FORT MORGAN, CO 80701

DEGENHART, JOEL M

21255 HWY 34
FORT MORGAN, CO 80701

FOOS, GARY D & CAROL C

18172 CO RD 22
FORT MORGAN, CO 80701

LAUCK, WILLIAM E & NANCY L

21801 HWY 34
FORT MORGAN, CO 80701

STUMP, ANDREA K &
BURTON, CORY
17912 CO RD 22
FORT MORGAN, CO 80701

DPG FARMS LLC

3300 S PARKER RD - STE 300
AURORA, CO 80014

DEGENHART, AMANDA & KLAYTON

18019 CO RD 22
FORT MORGAN, CO 80701

# MORGAN COUNTY
# PLANNING AND ZONING DEPARTMENT

TO REFERRAL AGENCIES:

CDPHE
Century Link
Colorado Department of Natural Resources
Colorado Parks and Wildlife
Colorado State Land Board
Division of Water Resources
Fort Morgan Fire Department
Morgan County Assessor
Morgan County Communications Center
Morgan County Emergency Management
Morgan Conservation District
Morgan County Quality Water
Morgan County Road and Bridge
Morgan County Rural Electric Association
Morgan County Sheriff Department
Morgan County Weed & Pest Advisory Board
Northeast Colorado Health Department
Northeast Colorado Water Conservancy
Upper Platte and Beaver Canal
Xcel Energy

FROM: Cheryl Brindisi, Morgan County Planning & Zoning Administrative Assistant
231 Ensign St, PO Box 596, Fort Morgan, CO 80701
970-542-3526 / 970-542-3509 fax / cbrindisi@co.morgan.co.us
DATE: July 23, 2025
RE: Land Use Application–Special Use Permit

The following Special Use Permit application is submitted to you for review and comments. The application is scheduled to be heard by the Planning Commission on **Monday, August 11, 2025 at 6:00 P.M.** in the Assembly Room of the Morgan County Administrative Building, 231 Ensign Street, Fort Morgan, CO 80701 (Basement level; use elevator entrance in SW corner). **You are encouraged to provide comments to this application by August 6, 2025.** Failure to comment will be viewed as a favorable review. Please contact the Planning and Zoning Department if you would like to attend these public meetings.

**Applicants:** Victor Perez and Brent Nation
**Landowner:** City of Fort Morgan
**Legal Description:** A parcel of land in the SE¼ Section 34 Township 4 North, Range 57 West of the 6th P.M., Morgan County, Colorado aka 18169 County Road 22, Fort Morgan, CO 80701.
**Request:** To amend the existing Special Use Permit to update and expand the City of Fort Morgan Waste Water Treatment Facility.

Sincerely,

*Cheryl Brindisi,*

Cheryl Brindisi
Morgan County Planning & Zoning Administrative Assistant

| REFERRAL AGENCIES | RESPONSES RECEIVED |
|---|---|
| CDPHE | |
| Century Link | |
| Colorado Department of Natural Resources | |
| Colorado Parks and Wildlife | |
| Colorado State Land Board | |
| Division of Water Resources | |
| Fort Morgan Fire Department | |
| Morgan Conservation District | |
| Morgan County Assessor | |
| Morgan County Communications Center | |
| Morgan County Emergency Mgmt. | |
| Morgan County Quality Water | |
| Morgan County Road & Bridge | |
| Morgan County Rural Electric Assoc. | |
| Morgan County Sheriff Dept. | |
| Morgan County Weed & Pest Advisory | |
| Northeast Colorado Health Dept. | |
| Northeast Colorado Water Conservancy | |
| Upper Platte and Beaver Canal | |
| Xcel Energy | See attached letter |

**Right of Way & Permits**

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: [redacted]

July 31, 2025

Morgan County Planning and Building Department
231 Ensign / PO Box 596
Fort Morgan, CO 80701

Attn: Cheryl Brindisi, Nicole Hay, Jenafer Santos

**Re: City of Fort Morgan Waste Water Treatment Facility**

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the plans for the above-mentioned Special Use Permit Application and currently has **no apparent conflict**.

Violeta Ciocanu (Chokanu)
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: [redacted] – Email: [redacted]

**NOTICE OF PUBLIC HEARING**
**MORGAN COUNTY PLANNING COMMISSION**
**AUGUST 11, 2025 AT 6:00 P.M.**
**VIRTUAL AND IN PERSON IN THE ASSEMBLY ROOM, MORGAN COUNTY ADMINISTRATIVE BUILDING, 231 ENSIGN, FORT MORGAN, COLORADO**

Notice is hereby given that on the date and time above (or as soon as possible following the scheduled time) and at the location above, or at such time and place as this hearing may be adjourned, the Morgan County Planning Commission will conduct a public hearing on the following proposed **Land Use Application:**

1.) **Applicant and Landowner:** City of Fort Morgan
**Legal Description:** A parcel of land in the SE¼ Section 34, Township 4 North, Range 57 West of the 6th P.M., Morgan County, Colorado aka 18169 County Road 22, Fort Morgan, CO 80701.
**Request:** Amended Use by Special Review to modify the existing Special Use Permit to update and expand the City of Fort Morgan Waste Water Treatment Facility.
**Date of Application:** July 21, 2025

**THE COUNTY WILL CONTINUE TO OFFER THE OPTION TO ATTEND MEETINGS REMOTELY. IF YOU HAVE ANY QUESTIONS REGARDING ATTENDING THE MEETING, PLEASE CONTACT THE PLANNING OFFICES AT 970-542-3526.**

To participate remotely you may connect via Zoom at:
https://us02web.zoom.us/j/84366537535
Join via audio:
+1 719 359 4580 US
Webinar ID: 843 6653 7535

Documents pertaining to the above identified matters are on file in the Planning Administrator's Office, 231 Ensign St., Fort Morgan, Colorado. Documents will also be available on the Morgan County Website https://morgancounty.colorado.gov

At time of the meeting an opportunity will be given for presentation of evidence in support of or in opposition to the application and zoning amendments.

Nicole Hay
Nicole Hay
Morgan County Planning Administrator

Posted to the Website: August 1, 2025

***For special assistance for the mentioned hearing, please notify us at least 48 hours before the scheduled agenda item. Please call (970) 542-3526 to request any ADA accommodations.***

The above sign was posted on (date) 7/29/25, pursuant to the Morgan County Zoning Resolution by (name of applicant) Victor Perez-Vargas.

Project name and number: ASU 2025-0001

Signature of Applicant/Representative:

STATE OF COLORADO )
) ss.
COUNTY OF MORGAN )

LILIANA LOPEZ LOPEZ
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20244009382
MY COMMISSION EXPIRES 03/05/2028

Signed before me this date: July 30, 2025

My Commission expires: 03/05/2028

NOTARIZED BY:


N
RESS
ER
ACILITY
NOTICE OF PUBLIC HEARING ON LAND USE
APPLICATION BEFORE THE PLANNING COMMISSION
Applicants: Victor Perez and Brent Nation
Landowner: City of Fort Morgan
Reason: To amend the existing Special Use Permit
to update and expand the City of Fort Morgan
Waste Water Treatment Facility.
Location of Hearing: 231 Ensign Street,
Fort Morgan, CO 80701
Date of Hearing: Monday, August 11, 2025 at 6:00 P.M.


FORT MORGAN
WASTEWATER
TREATMENT FACILITY


FORT MORGAN
PEOPLE • PARTNERSHIP • PROGRESS
WASTEWATER
TREATMENT FACILITY