



Gunnison County, CO
Community Development Office
221 N. Wisconsin St. Ste. D, Gunnison, CO 81230
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To: Environmental Health Board Committee Members

From: Shannon Frias, Administrative Assistant III

Date: September 3, 2021

**Included in your packet for the Wildlife Conservation Strategic
Committee Meeting:**

September 9, 2021 Agenda

Draft of August 12, 2021 Minutes

Hayes Public Hearing Packet OWTS-21-00034

Gunnison County Environmental Health Board Agenda
September 9, 2021
Planning Commission Meeting Room, Blackstock Government Center OR
Zoom meeting (see Teleconference Information below)

- 1:15 p.m.** Call to order; determine quorum
Approval of Minutes from 8-12-2021 meeting
Unscheduled citizens
- 1:30 p.m.** Douglas Hayes, Public Hearing for an OWTS on a parcel less than one acre at 60 Miners Camp Road, Lot 89 Marble Ski Area Filing No. 3, OWTS-21-00034

Adjourn

Join Zoom Meeting

<https://us06web.zoom.us/j/84039389616?pwd=OW1XT0N5b05MUm53WkZLQ1dScWJtQT09>

Meeting ID: 840 3938 9616

Passcode: 638380

One tap mobile

+17207072699,,84039389616#,,,,*638380# US (Denver)

+12532158782,,84039389616#,,,,*638380# US (Tacoma)

Dial by your location

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+1 312 626 6799 US (Chicago)

+1 646 558 8656 US (New York)

Meeting ID: 840 3938 9616

Passcode: 638380

Find your local number: <https://us06web.zoom.us/j/84039389616?pwd=OW1XT0N5b05MUm53WkZLQ1dScWJtQT09>

ADA ACCOMMODATIONS: Anyone needing special accommodations as determined by the *American Disabilities Act* may contact the Community Development Department prior to the day of the hearing.

**Gunnison County Environmental Health Board
Agenda: August 12, 2021**

1:15 p.m. Call to order; determine quorum
Approval of Minutes from 3-11-2021 meeting
Organizational business-election of officers, meeting times
Unscheduled citizens

1:30 p.m. Chandra and Jeremiah Proffitt, Public Hearing, for a second OWTS on a single undivided parcel at 14752 Highway 50. OWTS-21-00133

Adjourn

Join Zoom Meeting

<https://us06web.zoom.us/j/89509458216?pwd=aUFqUEIzWXphbWRHaWNBUETzajVuQT09>

Meeting ID: 895 0945 8216

Passcode: 324062

One tap mobile

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+12532158782,,89509458216#,,,,*324062# US (Tacoma)

Dial by your location

+1 720 707 2699 US (Denver)

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+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

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Meeting ID: 895 0945 8216

Passcode: 324062

Find your local number: <https://us06web.zoom.us/j/89509458216?pwd=aUFqUEIzWXphbWRHaWNBUETzajVuQT09>

ADA ACCOMMODATIONS: Anyone needing special accommodations as determined by the *American Disabilities Act* may contact the Community Development Department prior to the day of the hearing.

**GUNNISON COUNTY ENVIRONMENTAL HEALTH BOARD
August 12, 2021**

The August 12, 2021 Gunnison County Environmental Health Board meeting was conducted by Zoom virtual online meeting, Gunnison, CO 81230.

Present Were:

Lucinda Lull, EH Board Member
Ashley Bembenek, EH Board Member
Eddy Balch, EH Board Member
Bill Barvitski, EH Board Member
Lynn Cudlip, EH Board Member, Alternate

Staff Present:

Crystal Lambert, Building and EH Official
Rachel Sabbato, Senior Planner
Rebecca Ricord, Administrative Assistant III

Other attendees as listed in text.

Call to order: A quorum was determined by Lull at 1:20 pm.

Approval of Agenda: Agenda amended.

Approval of Minutes: **Moved by:** Balch, **seconded by** Bembenek to approve the March 11, 2021 meeting minutes as amended. The motion passed unanimously with Board members Bembenek, Barvitski, Balch and Lull voting yes.

Moved by Barvitski to keep officers the same, seconded by Balch to keep chair and vice-chair until the end of the year. The motion passed unanimously with Board members Bembenek, Barvitski, Balch and Lull voting yes.

Unscheduled citizens: None

Lambert went over the Gunnison County Environmental Health Zoom meeting protocol, more specifically about when to close a public hearing.

Lambert stated that the Board of County Commissioners passed the revisions to the OWTS Regulations in June. A quorum for the EH Board is three members. The Board is also the going to be reviewing any licensed installer violations.

Chandra and Jeremiah Proffitt, OWTS-21-00133: The Gunnison County Environmental Health Board conducted a Public Hearing. Request to install a second OWTS on a parcel at 4752 Highway 50.

The members introduced themselves.

Voting members: Board members Lull was seated as the chair. Balch, Barvitski and Bembenek.

Lull confirmed a quorum and opened the public hearing.

Environmental Health Official Crystal Lambert confirmed adequate public notice. The notice was published in the Gunnison Country Times. It was posted at the new posting location on the Gunnison County Community Development website. The applicant submitted the certified mailing receipts, photo and affidavit of posting on the parcel.

Engineer Sarah Bergstrom, representing applicant, was present in person. Chandra and Jeremiah Proffitt, applicants, were present.

Audience members presented in text.

Application Presentation:

J. Proffitt stated that in the future they will be letting the neighbors know what is going on ahead of time. Their home is remotely located on 180 miles+ with a private driveway. They have a large, unheated barn storage on the parcel. They are trying to build a 52X60 foot garage that will be heated. They will have a lean to, 12X20 for storage. It is 500 feet from the current OWTS. They want to have a wash basin, half bath, in the structure. There will not be anything commercial. They are under contract with NRCS to develop their land for agricultural and wildlife habitat.

Bergstrom with SCJ Alliance, fka Williams Engineering, stated that they worked with the applicant to do what they wanted. Gave a synopsis of what they do. The current system is at least 500 feet from where they want the garage and it would need a pump. It would be more environmentally disruptive to tie into the current system and she recommended that they apply for the variance of the second system. Barvitski asked how many people will be using it. Bergstrom stated that the design was designed based off the bathroom, 33.2 gallons per day. Barvitski stated the system is supposed to be designed per person in the regulations per table 6.2. Bergstrom will make the note for the revisions for the OWTS permit.

Staff Comments:

Lambert stated that the variance request submittal has been received and all of the required items for a variance request submittal have been verified. Lambert went through the Variance Request Submittal Analysis:

Variance request submittals shall include the following items:	Applicant Submittal Summary	Staff Comments
Site-specific request identifying the specific criteria from which a variance is being requested. Section 3.M.1.b(1)	The variance is being requested for a second OWTS to be installed on the referenced parcel.	Per Section 3.A.10 of the Gunnison County OWTS Regulations, no more than one OWTS shall be permitted for an undivided parcel. This is a local County requirement. The State of Colorado OWTS Regulations do not contain a requirement regarding number of systems per parcel.
Technical justification by a professional engineer or professional geologist, which indicates the specific conditions which exist and/or the measures which will be taken that	All the required setback distances between system components and waterbodies, wells, and	All required horizontal setback distances to water bodies and pertinent physical features will be met. The existing system

support a finding that the variance shall result in no greater risk than that associated with compliance with the requirements of the OWTS Regulations. Section 3.M.1.b(2)	pertinent physical features can be met. The existing septic system that serves the dwelling is over 500 feet away from the proposed workshop building. Connection to the existing system would require pumping and significant disturbance.	was installed in 1996 and serves the four-bedroom dwelling. The existing system is over 500 feet away from the proposed location.
A discussion of alternatives considered in lieu of the requested variance. Section 3.M.1.b.(3)	Connection to the existing system is not desirable and would require pumping and trenching over 500 feet.	
Technical documentation for selected alternative, which may include a testing program, which confirms that the variance does not increase the risk to public health and to the environment. Section 3.M.1.b.(4)		N/A-the applicant is not proposing an alternative system design. The proposed system meets the technical requirements of the OWTS Regulations.
A statement of the hardship that created the necessity for the variance. Section 3.M.1.b.(5)		Previous development on the parcel did not anticipate facilitating a sewer connection.

Section 3.M.2.: Prohibitions on the granting of variance requests	
Prohibitions on the granting of variance requests:	Staff comments:
No variance shall be issued where the property can accommodate a conforming OWTS. Section 3.M.2.a.	The OWTS will conform to the technical and design requirements. The variance request is for a second OWTS on a parcel. If the variance request is approved, a proposed design will only be accepted for an OWTS permit if it meets the design requirements of the OWTS Regulations.
No variance shall be issued to mitigate an error in construction involving any element of property improvements. Section 3.M.2.b.	There is no known error of construction involving any element of the property improvements.
No variance shall be allowed on the grounds of cost of compliance. Section 3.M.2.c.	A claim of cost burden is not being made.
No variance shall be issued if it will result in a setback reduction to an offsite physical feature that does not conform to the minimum setbacks defined in Table 7-1 of this regulation without proof of compliance of Section 3.M.5. Section 3.M.2.d.	The minimum setbacks to off-site physical features appear to be met with the proposed development plan.
No variance shall be issued if it reduces the separation to ground water or bedrock based on the level of treatment in Table 7-2. Section 3.M.2.e.	Required separations to groundwater and bedrock will be made.

<p>No variance from the horizontal setback from a well shall be issued unless it also meets the variance requirements of the Board of Examiners of Water Well Construction and Pump Installation Contractors. Section 3.M.2.f.</p>	<p>The minimum required setback distances to wells will be met. The proposed system is approximately 200 feet away from the spring cistern.</p>
<p>No variance shall be issued for the installation of a higher level treatment system based on sizing or separation reductions without the Department having a maintenance and oversight program. Section 3.M.2.g.</p>	<p>A higher level treatment system is not proposed.</p>

Staff Recommendation on the application for a variance to the *Gunnison County OWTS Regulations*:

It appears that the proposed OWTS design meets the design criteria and setback distance requirements of the Gunnison County OWTS Regulations. Connecting to the existing system, which serves the existing dwelling, would require pumping and 500 feet of trenching. Staff recommends approval of the applicant’s proposal which requires a variance to the Gunnison County OWTS Regulations, Section 3.A.10, for a second OWTS on a parcel to serve a future residence.

Lambert went over the definition of a utility building within the International Residential Code. She did not get the impression that they are building the structure for commercial use. Sabato stated that they have received multiple letters from neighbors with concerns on commercial use. Sabato went over the commercial uses that require a Land Use Application and Special Event Permits. Commercial use is not permitted without a commercial land use application, minor impact application.

J. Proffitt stated that they are not doing anything commercial, neither do they plan to. They obtained a special event permit last year when they had the Halloween party. They may have gone a little overboard with decorations and activities. There was no money exchanged during the party. They have had a friend’s wedding out there. They had a party in 2019 with a band and 20 people who camped out there. That was the only night they have ever had anyone camp out there otherwise. It was a one-time thing. Wanted to know if they would need a permit if they wanted to in the future. Sabato stated that they would need a special event permit. Sabato asked about how their access has changed. J. Proffitt stated they use to have to access it through the campground north of their property. They decided to buy about 16 acres adjacent to them and built their own private access, driveway, off Cove Road. They have kept the access road off the easement for emergency services or when necessary. The new driveway was completed prior to the Halloween Party. They haven’t used the access easement since October 28, 2020. On the adjacent property they are building a house, they will use the easement to get the dump truck to the property if needed. Carla Alley, with the Lake Fork Cove Alliance, reported the roads do not start until after the cattle guard that is after the Proffitt access so they wouldn’t need an access permit. J. Proffitt stated that they are in the process of improving Cove Road, where potholes have developed due to winter use. Sabato stated the applicant is aware of what a Special Event permit is and the applicant stated that there are no plans for commercial uses. The applicant agreed and will contact the County for any permits required.

Lambert stated that Table 6.2 is per person and the design will need to be adjusted. Bergstrom will resubmit the design to the County. Bembenek pulled up Section 3D and there is a second table of where the applicant used a different table and asked that if Barvitski is correct then there will need to be some clarification for applicants in the future. Lambert stated that the correct table for an auxiliary building is 6.2 and they will need to design it per person.

Review Body Comments:

Barvitski asked if the system will be connected to the existing water source. Yes they will use what is existing. Barvitski asked about electricity and Proffitt stated they will tie into what is existing. Barvitski stated that ultimately it is up to the board to decide whether a secondary system can be allowed, without using the land use requirements as part of the decision process. Sabbato stated that the land use component has no bearing on the decision as a board.

Public Comments and Responses:

Alley stated that the Lake Fork Cove Alliance Board met and believes that it would be ok to have a second OWTS.

Moved by: Barvitski, **seconded by** Balch to close the public hearing. The motion passed unanimously, with Board members Lull, Barvitski, Balch and Bembenek voting yes.

EH Determination of Application:

Moved by Barvitski, seconded by Balch to approve the application with the conditions that have been listed in the draft decision from staff, for Chandra and Jeremiah Proffitt (OWTS-21-00133) before the Gunnison County Environmental Health Board. The motion passed unanimously, with Board members Lull, Barvitski, Balch and Bembenek voting yes.

ENVIRONMENTAL HEALTH BOARD VARIANCE REQUEST ACTION

APPLICANT: Chandra and Jeremiah Proffitt
DATE: August 12, 2021
SITE LOCATION: 14752 Highway 50
ACTION: Request for a variance to the Gunnison County OWTS Regulations for a second OWTS on a parcel
PREPARED BY: Crystal Lambert, Building and Environmental Health Official

PROPOSED PROJECT:

The applicants are requesting a second septic system on their parcel to serve a future workshop building. There is an existing system on the parcel that serves the existing dwelling.

GUNNISON COUNTY ENVIRONMENTAL HEALTH OFFICE ACTION:

The application and proposed design plans have been reviewed by the Environmental Health Office for compliance with the OWTS Regulations and the land use requirements of the County. The proposed septic design meets the design criteria of the Gunnison County OWTS Regulations and the minimum horizontal distance requirements from water features, pertinent physical features and property lines are met.

The OWTS application was denied by the Environmental Health Office because *Section 3.A.10.* of the *Gunnison County OWTS Regulations* states that no more than one OWTS shall be permitted for an undivided parcel.

APPLICANT’S REQUEST FOR A VARIANCE:

A request for a Public Hearing with the Environmental Health Board for the consideration of a variance to *Section 3.A.10* of the *Gunnison County OWTS Regulations* has been received and was prepared by SCJ Alliance Consulting Services.

PUBLIC HEARING:

On August 12, 2021, the Gunnison County Environmental Health Board conducted a Public Hearing on this request for a variance.

FINDINGS:

Based on a review of all the information included with the OWTS application, the request for a variance, and staff reports for this project and consideration of any and all testimony and public input received relative to this application, the Gunnison County Environmental Health Board finds that:

1. Action on this request for a variance from the *Gunnison County OWTS Regulations* is property-specific and limited to the circumstances unique to this application.
2. The applicant has demonstrated that the requested variance from the *Gunnison County OWTS Regulations* is warranted by unique site-specific configuration and site size that make compliance with the Regulations technically infeasible.
3. The applicant has provided justification through specific conditions that exist which support a finding that approval of the requested variance will result in no greater risk than that associated with compliance with the requirements of the *Gunnison County OWTS Regulations*.
4. The applicant has demonstrated that approval of the requested variance will not be in violation of any minimum standards established in any other applicable federal or state rule or regulation.
5. The applicant has demonstrated that the proposed OWTS will not be a nuisance or injurious to public health, safety or welfare. The proposed development meets minimum horizontal distance requirements from water features, pertinent physical features and property lines.
6. The applicant has demonstrated that no substantial injury will result from the granting of the requested variance.
7. This review and decision incorporates, but is not limited to, all the documentation submitted to the County and included within the Department file relative to this application; including all exhibits, references and documents.

DECISION:

The Gunnison County Environmental Health Board, having reviewed the proposed application and supporting documentation, site observations and public testimony does approve the requested variance to *Section 3.A.10* of the *Gunnison County OWTS Regulations* for Chandra and Jeremiah Proffitt at their parcel, 14752 Highway 50, under OWTS application 21-00133, with the following conditions:

1. The OWTS shall be designed and installed in accordance with the *Gunnison County OWTS Regulations* and the *Gunnison County Land Use Resolution*, including but not limited to setback requirements, design standards, requirements for system components and general technical standards.

2. This approval is founded on each individual requirement. Should the applicant successfully challenge any such finding or requirement, this approval is null and void.
3. This permit may be revoked or suspended if Gunnison County determines that any material fact set forth herein or represented by the applicant was false or misleading, or that the applicant failed to disclose facts necessary to make any such fact not misleading.
4. Approval of this use is based upon the facts presented and implies no approval of similar use in the same or different location and/or with different impacts on the environment and community. Any such future application shall be reviewed and evaluated, subject to its compliance with current regulations, and its impact to the County.

Adjourn: Lull closed the meeting of the Environmental Health Board at 2:20 P.M.

/S/ Rebecca Ricord
Administrative Assistant
Gunnison County Community Development Department

DRAFT



**GUNNISON COUNTY, COLORADO
COMMUNITY DEVELOPMENT DEPARTMENT, ENVIRONMENTAL
HEALTH OFFICE STAFF REPORT**

Hayes

Application No: OWTS-21-00034
Date application scheduled with EH Board: September 9, 2021
Prepared by: Crystal Lambert, Building & EH Official

APPLICANT/OWNER:	Douglas Hayes
PROJECT DESCRIPTION:	The applicant is proposing a variance for an OWTS on a parcel less than one acre to serve a future residence. The parcel is currently vacant.
CURRENT STATUS OF OWTS APPLICATION:	The OWTS application was denied by the Environmental Health Office because <i>Section 3.A.9. of the Gunnison County OWTS Regulations</i> states that an OWTS shall not be permitted to be installed on a parcel of land less than once acre in size.
ENVIRONMENTAL HEALTH BOARD ACTION REQUESTED:	A request for a Public Hearing with the Environmental Health Board for the consideration of a variance to <i>Section 3.A.9 of the Gunnison County OWTS Regulations</i> has been received and was prepared by the applicant's representative and system designer, Carla Ostberg of CBO, Inc.
PROPERTY LOCATION:	60 Miners Camp Road, Lot 89 Marble Ski Area, Filing No. 3
AREA DESCRIPTION:	The parcel is 0.779 acre adjacent to County Road 3 and less than one mile from the Town of Marble.
ATTACHED EXHIBITS:	<ul style="list-style-type: none">▪ OWTS application▪ Aerial view of parcel and surrounding parcels▪ Variance Request and Proposed Design Report▪ Geotechnical site evaluation report

	<ul style="list-style-type: none"> ▪ Colorado Geologic Survey review of geo-tech report and comments towards development of the parcel ▪ Site Visit Inspection ▪ Development Draft Action
ENVIRONMENTAL BOARD TASKS AT PUBLIC HEARING:	<ul style="list-style-type: none"> — Acknowledge receipt of application by applicant name, name of development (if applicable) and date of application — Confirmation of adequate public notice: <ul style="list-style-type: none"> • Posting of legal notice in the County's official newspaper at least 20 days prior the hearing. • Posting of public hearing notice at the County posting locations. • Mailing of public hearing notice to all owners of properties who own surface rights within 500 feet of each boundary of the entire parcel at least 20 days prior to the hearing. • Posting of the public hearing notice in a conspicuous location at or near the parcel. — Hear applicant presentation — Hear staff comments — Ask questions, identify and consider issues — Hear applicant response and staff response — Continue public hearing or close public hearing.

Variance Request Submittal Analysis		
Variance request submittals shall include the following items:	Applicant Submittal Summary	Staff Comments
Site-specific request identifying the specific criteria from which a variance is being requested. Section 3.M.1.b(1)	The variance is being requested for an OWTS to be permitted to be installed on the referenced parcel which is less than one acre in size.	Per Section 3.A.9 of the <i>Gunnison County OWTS Regulations</i> , an OWTS shall not be permitted to be installed on a parcel of land less than one acre in size. This is a local County requirement above the State minimum. The State of Colorado OWTS Regulations do not contain a requirement for minimum parcel size.
Technical justification by a professional	All the required setback distance	The required setback distances between

<p>engineer or professional geologist, which indicates the specific conditions which exist and/or the measures which will be taken that support a finding that the variance shall result in no greater risk than that associated with compliance with the requirements of the OWTS Regulations. Section 3.M.1.b(2)</p>	<p>requirements between components of the OWTS and wells, waterbodies, and physical features are proposed to be met.</p>	<p>existing and proposed septic components and existing and proposed wells and property lines will be met with this plan. Additionally, the proposed site layout arrangement will not prohibit future development on adjacent vacant parcels in regards to placement possibilities for future wells and system components.</p>
<p>A discussion of alternatives considered in lieu of the requested variance. Section 3.M.1.b.(3)</p>	<p>There are no practical alternatives available.</p>	<p>The possibility of purchasing one of the two adjacent vacant parcels in order to cluster land and achieve at least one acre would be dependent on the adjacent parcel owners desire and price to sell and may not be feasible. Both adjacent vacant parcels are already more than one acre.</p>
<p>Technical documentation for selected alternative, which may include a testing program, which confirms that the variance does not increase the risk to public health and to the environment. Section 3.M.1.b.(4)</p>	<p>The proposed OWTS includes an over-excavated, pressure-dosed, unlined sand filter to properly treat effluent and soils have been classified as R-0.</p>	<p>The proposed system meets the technical requirements of the OWTS Regulations.</p>
<p>A statement of the hardship that created the necessity for the variance. Section 3.M.1.b.(5)</p>	<p>The subdivision was platted and filed within Gunnison County prior to the OWTS Regulations that require the minimum parcel size. If a variance is not granted, it would deem the property undevelopable.</p>	<p>The small, less than one acre, parcel was created prior to modern septic regulations requiring a minimum of one-acre.</p>

Section 3.M.2.: Prohibitions on the granting of variance requests

Prohibitions on the granting of variance requests:	Staff comments:
No variance shall be issued where the property can accommodate a conforming OWTS. Section 3.M.2.a.	The OWTS will conform to the technical, design and setback distance requirements of the OWTS Regulations. The variance request is for a system on a parcel less than one acre.
No variance shall be issued to mitigate an error in construction involving any element of property improvements. Section 3.M.2.b.	N/A
No variance shall be allowed on the grounds of cost of compliance. Section 3.M.2.c.	N/A
No variance shall be issued if it will result in a setback reduction to an offsite physical feature that does not conform to the minimum setbacks defined in Table 7-1 of this regulation without proof of compliance of Section 3.M.5. Section 3.M.2.d.	The minimum setbacks to on-site and off-site physical features appear to be met with the proposed development plan.
No variance shall be issued if it reduces the separation to ground water or bedrock based on the level of treatment in Table 7-2. Section 3.M.2.e.	N/A
No variance from the horizontal setback from a well shall be issued unless it also meets the variance requirements of the Board of Examiners of Water Well Construction and Pump Installation Contractors. Section 3.M.2.f.	N/A
No variance shall be issued for the installation of a higher level treatment system based on sizing or separation reductions without the Department having a maintenance and oversight program. Section 3.M.2.g.	N/A

Staff Recommendation on the application for a variance to the *Gunnison County OWTS Regulations*:

It appears that the proposed OWTS design meets the design criteria and setback distance requirements of the Gunnison County OWTS Regulations. Staff recommends approval of the Hayes application for a variance to the Gunnison County OWTS Regulations, Section 3.A.9, to install the proposed OWTS on Lot 89, Marble Ski Area Subdivision, Filing No. 3.



Gunnison County, CO
 Community Development Department
 221 N. Wisconsin St. Ste. D, Gunnison, CO 81230
 Phone: (970) 641-0360
 Website: <https://www.gunnisoncounty.org/144/Community-and-Economic-Development>
 Email: planning@gunnisoncounty.org

**ON-SITE WASTEWATER TREATMENT SYSTEM (OWTS)
 PERMIT APPLICATION**

Application Fee- Residential New- Due at Submittal: \$870.00
 Application Fee- Commercial New or Replacement- Due at Submittal: \$975.00
 Application Fee- Residential Repair- Due at Submittal: \$335.00
 Application Fee- Commercial Tank Replacement Only- Due at Submittal: \$155.00
 Application Fee- System Alteration or Expansion- Due at Submittal: \$530.00

Application Received Date: _____
 Application Fee Paid: _____

SUBMIT ALL PERMIT PACKET INFORMATION TO PLANNING@GUNNISONCOUNTY.ORG

OWNER: Douglas P. Hayes
 MAILING ADDRESS: 7444 ad Mill Trail, Boulder, CO 80301
 DAY PHONE: 603-667-1885 CELL PHONE: 603-667-1885
 EMAIL ADDRESS: hayesdp@gmail.com

LICENSED SEPTIC CONTRACTOR: Shane Edmunds
 MAILING ADDRESS: 74 Feldspar Rd., Marble, CO 81623
 DAY PHONE: 970-963-7468 CELL PHONE: 970-370-6195
 EMAIL ADDRESS: edmundsski@yahoo.com

PRIMARY PROJECT CONTACT PERSON: Douglas Hayes
 DAY PHONE: 603-667-1885 CELL PHONE: 603-667-1885

DESCRIPTION OF PARCEL (legal description, site address): Lot 89, Marble SK Area 3.

PARCEL SIZE: 0.779 ACRES

HAVE YOU APPLIED FOR A LAND USE CHANGE PERMIT? No.

- Is this application for a secondary residence?
- Do you need a lot cluster? (Do you own adjacent lots that are less than one acre, if so you may need a lot cluster)

WHAT TYPE OF PERMIT ARE YOU REQUESTING?

- New
- Alteration
- Repair

Project Description (Please identify all existing buildings/development and all proposed buildings/development on the parcel.)

Proposed: Cabin/dwelling of approx. 1,200 square feet, 2 Bd/1 BA; OWTS.
Existing: rough driveway, building site excavated in the 1970s or 1980s.

Description of Proposed Development

- Single-Family Residence
- Multi-Family Residence
- Commercial; describe use: _____
- Other: _____

Number of Bedrooms: 2 Number of Baths: 1 Number of Kitchens: 1

For commercial note the square footage, number of seats if it is a food/bar establishment, number of rooms for hotel/motel/B-N-B facility, number of employees. _____

Type of System Proposed (For engineered systems, provide the design, stamped and signed by a Colorado Licensed Professional Engineer)

- Conventional Septic System Design
- Engineered System; Engineer Name: Carla Ostberg Phone: 970-309-5259
- Other: _____

Description of the Proposed and/or Existing Water Source. Description of proposed/existing water source; if such proposed source is by well, copy of the well permit may be required to verify the location of the well; and, if such source is a central system, documentation from the operator of that system that water will be supplied:
Well permit granted 2/26/21 (attached)

THE FOLLOWING INFORMATION IS NEEDED FOR THE SUBMITTAL OF ALL OWTS APPLICATIONS:

- Report from Site and Soils Evaluation and Site Plan.** The report from the Site and Soil Evaluation in accordance with Section 5-110: *Report and Site Plan* of the *Gunnison County OWTS Regulations* (see page 9 for description).
- Vicinity Map.** General area map showing the location of the proposal on a typical U.S. Geological Survey map, U.S. Forest Service map or County parcel map, available from the Gunnison County Geographic Information Services Department or the Gunnison County Assessor's Office.
- System Design.** The system design document shall contain all plan details necessary for permitting, installation and maintenance and shall include a brief description of the facility and its proposed use, basis and calculations of design flow, and influent strength in accordance with Section 5-111: *Design Document* of the *Gunnison County OWTS Regulations* (see page 10 for description).
- A copy of the recorded **Warranty Deed** is required for proof of ownership. This may be obtained from the Recorder's Office, located on the first floor of the Blackstock's Government Center. The Recorder's Office can be reached by phone at 970-641-2038.
- Letter of Consent.** If applicable, a letter from the property owner acknowledging a person other than the owner may apply for permits.
- Copy of **Well Permit**, if applicable
- Application Fee. **Fees** are determined by type of OWTS permit and proposed use. *See fee schedule.

**GUNNISON COUNTY PUBLIC WORKS
ACCESS DETERMINATION**

SIGNATURE OF OWNER OR CONTRACTOR: _____

DATE: 3/11/21



Scale = 1:2000

The data herein is general in nature and not assumed to be complete nor accurate in its entirety and is therefore to be used with all discretions necessary. The data portrayed should not be relied upon to establish legal title, boundary lines, the precise location of improvements, ownership, maintenance, easements or public right-of-ways. Wednesday, September 1, 2021



129 CAINS LANE
CARBONDALE, CO 81623
970.309.5259
CARLA.OSTBERG@GMAIL.COM

June 17, 2021

Project No. C1586

Onsite Wastewater Treatment System (OWTS) Variance Request
Lot 89, Marble Ski Area 3
Gunnison County, Colorado

Gunnison County Environmental Health Board,

This variance request is for the OWTS application for parcel *Lot 89, Marble Ski Area, Filing No.3*, with an address of *60 Miner's Camp Road Marble, CO 81623* (OWTS-21-00034). The applicant, Doug Hayes, is seeking to build a 2 bedroom /1 bathroom residence on the parcel with a OWTS system designed by CBO, Inc.

On June, 3, 2021, the applicant was notified by the County that the OWTS application was denied because the property's parcel size is 0.779 acres, which is less than the minimum one acre required by the Gunnison County OWTS Regulation Section 3.A.9.a. The applicant now respectfully requests the Gunnison County Environmental Health Board to issue a variance, and/or for a public hearing to consider the variance request.

EXISTING CONDITIONS

CBO Inc. has visited the property and evaluated onsite wastewater treatment system (OWTS) alternatives for the proposed development. The subject 0.779-acre property located outside of Marble.

The property is currently undeveloped. A 2-bedroom residence is proposed and will be located along the east side of the existing road cut.

The property will be served potable water from a private well. The proposed well location to the northeast of the proposed residence, just north of the road cut. The well will be at least 50-feet from the proposed septic tank and at least 100-feet from the proposed soil treatment area (STA). No other neighboring wells come within these setback distances.

An electrical easement runs through the area of the proposed residence. The applicant is working with Holy Cross Energy to re-route the overhead electrical line to the north of the proposed residence.

No waterway comes within 100-feet of any proposed OWTS component.

The proposed STA will be located south of the proposed residence. This area has an approximate 30% slope to the southwest toward the Crystal River, which is located across County Road 3 to the south.

SUBSURFACE

The subsurface was investigated on December 22, 2020 by excavated two soil profile test pits (Test Pits). A visual and tactile soil analysis was completed by Carla Ostberg.¹

The materials observed in Test Pit #1 consisted of predominantly large angular rock to a maximum depth explored of 6-feet. No bedrock or groundwater was observed.

The materials observed in Test Pit #2 consisted of predominantly large angular rock to 3.5-feet, underlain by light brown sandy loam to a maximum depth explored of 7-feet. No bedrock or groundwater was observed.

With rock content exceeding 35% in the test pits, we are proposing an over-excavated, pressure-dosed, unlined sand filter.

STA sizing is based on Soil Type R-0 with a minimum of 3-feet of secondary sand filter material. **A long term acceptance rate (LTAR) of 0.8 gallons per square foot will be used to design the OWTS.**



View from proposed house location to the south toward proposed STA

¹ Carla Ostberg holds a Certificate of Attendance and Examination from the CPOW Visual and Tactile Evaluation of Soils Training.



Test Pit #1



backfill (mostly rock)



Test Pit #2 / mostly rock underlain by sandy loam



OWTS DESIGN SUMMARY

A 2-bedroom residence is proposed. A design flow of 300 GPD will be used.

Design Calculations:

2 bedrooms x 75 GPD/person x 2 ppl/bedroom = 300 GPD

300 GPD / 0.8 gal/SF = 375 SF

Footprint 11' x 34.5'

The proposed OWTS design will consist of one 1000-gallon, two-compartment poly septic tank followed by a 500-gallon poly pump chamber with a pump. Effluent will be pressure dosed to a 11' x 34.5' over-excavated, pressure dosed, unlined sand filter with a minimum of 3-feet of sand filter material. Sand filter material must be clean, coarse sand, all passing a screen having four meshes to the inch. The sand must have an effective size between 0.15 and 0.60 mm. The uniformity coefficient must be 7.0 or less. Material meeting ASTM 33, for concrete sand, with three percent or less fines passing 200 mesh sieve may be used.

With this proposed design, there will no encroachment to any regulatory setbacks. Other design alternatives may be considered as long as there will be no encroachment to any regulatory setbacks.

The OWTS Design Packet and Component Specifications dated February 4, 2021 are enclosed.

VARIANCE REQUEST CRITERIA

- 1) Site-specific request identifying the specific criteria from which a variance is being requested.

A request for a variance is being requested for the minimum 1-acre lot size. This property is 0.779-acres.

- 2) Technical justification by a professional engineer or professional geologist, which indicates the specific conditions which exist and/or the measures which will be taken that support a finding that the variance shall result in no greater risk than that associated with compliance with the requirements of these *Regulations*.

There is no technical justification necessary as all regulatory setbacks will be met.

- 3) A discussion of alternatives considered in lieu of the requested variance.

Because the OWTS Regulations require a minimum of one acre for an OWTS permit, and an OWTS permit is required for the construction of a residence, there are no practicable alternatives for development for this parcel.

- 4) Technical documentation for selected alternative, which may include a testing program, which confirms that the variance does not increase the risk to public health and to the environment.

The proposed OWTS includes an over-excavated, pressure-dosed, unlined sand filter to properly treat effluent as soils have been classified as R-0. See *attached design*.

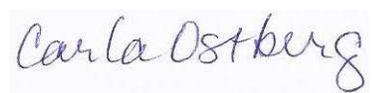
- 5) A statement of the hardship that created the necessity for the variance.

This subdivision was platted and filed within Gunnison County prior to the OWTS regulations that require the minimum parcel size. If a variance is not granted, it would deem the property undevelopable.

Please call with questions.

Sincerely,

CBO Inc.

A handwritten signature in cursive script that reads "Carla Ostberg". The signature is written in black ink on a light-colored background.

Carla Ostberg, MPH, REHS



33 FOUR WHEEL DRIVE ROAD
CARBONDALE, CO 81623
970.309.5259
CARLA.OSTBERG@GMAIL.COM

February 4, 2021

Project No. C1586

Doug Hayes
hayesdp@gmail.com

Subsurface Investigation and Onsite Wastewater Treatment System Design
2-Bedroom Residence
Lot 89, Marble Ski Area
Gunnison County, Colorado

Doug,

CBO Inc. performed a subsurface investigation and completed an onsite wastewater treatment system (OWTS) design for the subject residence. The subject 0.779-acre property located outside of Marble.

Gunnison County OWTS Regulation (Adopted July 1, 2014, Amended June 19, 2018), Section 3: A. 9. states "An OWTS shall not be permitted to be installed on a parcel of land less than one acre in size." **A variance from this requirement will be necessary.**

Legal Description: LOT 89, MARBLE SKI AREA, FILING NO. 3
Parcel ID: 2917-271-06-032

SITE CONDITIONS

The property is currently undeveloped. A 2-bedroom residence is proposed and will be located on the east side of the property, along an existing road cut.

The property will be served potable water from a private well. The proposed well location is to the northwest of the proposed residence, just north of the road cut. The well will be at least 50-feet from the proposed septic tank and at least 100-feet from the proposed soil treatment area (STA). No other neighboring wells come within these setback distances.

An electrical easement runs through the area of the proposed residence. You are working with Holy Cross to re-route the over-head electrical line to the north of the proposed residence.

No waterway comes within 100-feet of any proposed OWTS component.

The proposed STA will be located south of the proposed residence. This area has an approximate 26% slope to the southwest toward the Crystal River, which is located across County Road 3 to the south.

SUBSURFACE

The subsurface was investigated on December 22, 2020 by excavated two soil profile test pits (Test Pits). A visual and tactile soil analysis was completed by Carla Ostberg.¹

The materials observed in Test Pit #1 consisted of predominantly large angular rock to a maximum depth explored of 6-feet. No bedrock or groundwater was observed.

The materials observed in Test Pit #2 consisted of predominantly large angular rock to 3.5-feet, underlain by light brown sandy loam to a maximum depth explored of 7-feet. No bedrock or groundwater was observed.

With rock content exceeding 65% in the test pits, we are proposing an over-excavated, pressure-dosed, unlined sand filter.

STA sizing is based on Soil Type R-0 with a minimum of 3-feet of secondary sand filter material. **A long term acceptance rate (LTAR) of 0.8 gallons per square foot will be used to design the OWTS.**



View from proposed house location to the south toward proposed STA

¹ Carla Ostberg holds a Certificate of Attendance and Examination from the CPOW Visual and Tactile Evaluation of Soils Training.



Test Pit #1



Backfill (mostly rock)



Test Pit #2 / mostly rock underlain by sandy loam



DESIGN SPECIFICATIONS

Design Calculations:

2 bedrooms x 75 GPD/person x 2 ppl/bedroom = 300 GPD

300 GPD / 0.8 gal/SF = 375 SF

Footprint 10' x 37.5' with GeoMat™

The *new* OWTS design is based on 2-bedrooms. An average daily wastewater flow of 300 GPD will be used.

For the purposes of this OWTS design, Benchmark Elevation at grade 7870' (approximate finished floor) has been established as 100'. CBO Inc. should be notified of any discrepancies or problems with grade elevations of proposed components during installation of the OWTS.

OWTS Component	Minimum Elevation
Primary Tank Inlet Invert	Approx. 7868' / Approx. 5' horizontal distance min. 2% fall / min. 1.25" fall
Outlet Dosing Chamber	Approx. 7864' / Pipe exits 13" above bottom of dosing chamber
Infiltrative Surface	Approx. 7854' / min. 1% fall to STA / approx. 10' of fall

A 4-inch diameter, SDR-35 sewer line must be installed exiting the residence with a minimum 2% fall and double sweep clean out. A 1000-gallon, two-compartment Infiltrator® poly septic tank followed by a 500-gallon, single-compartment Infiltrator® poly chamber with a Fluid Dynamics Model 212 Dosing Siphon will be installed. An effluent filter must be installed on the outlet tee of the 1000-gallon tank. The dosing siphon discharges approximately 162 gallons per dose. Siphon calculations are enclosed. Specifications and parameters noted in the siphon calculation sheet will provide pressurization of the STA each siphon dose. A battery counter panel must also be installed to track doses.

Effluent will be dosed via a 4-inch diameter sewer pipe to the STA. A 4-inch diameter vent pipe must be installed immediately downstream of the dosing chamber, with the pipe extending above high potential snow line, with a 3/16-inch diameter hole drilled in the cap.

Effluent will be pressure dosed to an over-excavated, 10' x 37.5' unlined sand filter with a minimum of 3-feet of sand filter material. Sand filter material must be clean, coarse sand, all passing a screen having four meshes to the inch. The sand must have an effective size between 0.15 and 0.60 mm. The uniformity coefficient must be 7.0 or less. Material meeting ASTM 33, for concrete sand, with three percent or less fines passing 200 mesh sieve may be used. **A gradation of the sand media must be submitted to this office prior to obtaining the sand.**

Laterals must be 1.5-inches in diameter with **3/16-inch diameter orifices** facing down, **spaced 3-feet on center**, installed on the GeoMat™ with the filter fabric over the laterals. Laterals should be placed 2-feet from the edges of the bed with the center lateral 3-feet between the outer laterals. Three 39" wide GeoMat™ must be placed on the 10-foot wide bed. All material associated with the GeoMat™ installation must be proprietary products associated with the GeoMat™, including orifice shields and geotextile fabric. Manufacturer instructions must be followed regarding installation of the GeoMat™.

Each 1.5-inch diameter lateral must end in a sweeping ell facing up with a ball valve for flushing. Valves should be placed in a 10-inch sprinkler box for access. Laterals must be covered by a soil separation fabric and at least 1-foot of topsoil or other suitable soil able to support vegetative growth. There shall be no cobble-sized (<2.5") or greater rock in final cover over the GeoMat™. Inspection ports must be placed at

the beginning and each corner of each bed. Ports may be cut to grade and covered with a valve box for access.

The component manufacturers are typical of applications used by contractors and engineers in this area. **CBO Inc. must approve alternative components prior to installation of the OWTS. Requests must be submitted, in writing, to our office for approval prior to installation.** Component technical data sheets are available upon request.

COMPONENT	MANUFACTURER	MODEL NO.	COMMENTS
Septic Tank	Infiltrator®	Item # 1060-2CP	2-compartment poly septic tank
Effluent Filter	Orenco®		Full Size Effluent Filter
Pump Chamber and Fluid Dynamics Siphon Model 212	Infiltrator® and Fluid Dynamics	Item # 540-D2 FD 212	Single-compartment poly chamber with Series 200 siphon
Tank Risers and Lids	Orenco®		Double-walled PVC Risers and Lids (24" diameter)
Siphon	Fluid Dynamics®	212	Siphon and Counter
Flushing Assembly	Orenco®	1.5" diameter	(2) 45° or 90° long sweep only (3 total)
GeoMat	GeoMatrix Systems, LLC		113' GeoMat™ (39") 33 orifice shields

Construction must be according to *Gunnison County, Colorado On-Site Wastewater Treatment System Regulations*, the OWTS Permit provided by Gunnison County Community Development Department, and this design.

INSTALLATION CONTRACTOR

CBO Inc. expects that the installer be experienced and qualified to perform the scope of work outlined in this design. The installer must review this design thoroughly and coordinate with our office in advance of installation. Any additional conditions in this design or county permit must be completed and documented prior to final approval of the OWTS installation. Communication between the installer and this office is expected throughout the installation.

INSTALLATION OBSERVATIONS

CBO Inc. must view the OWTS during construction. The OWTS observation should be performed before backfill, after placement of OWTS components. Septic tanks, distribution devices, pumps, dosing siphons, and other plumbing, as applicable, must also be observed. CBO Inc. should be notified 48 hours in advance to observe the installation.

In an effort to improve the accuracy of the record drawing, **we request that the installer provide a sketch of the installation, including path of the sewer lines, water line installation (if applicable), septic tank location, STA location, and measurements from building corners or another fixed objects on the property.** This sketch is most easily provided on Sheet W2.0 of the OWTS Design Packet. Photographs of the installation and final cover are also requested to supplement our installation documentation.

REVEGETATION REQUIREMENTS

An adequate layer of good quality topsoil capable of supporting revegetation shall be placed over the entire disturbed area of the OWTS installation. A mixture of native grass seed that has good soil stabilizing characteristics (but without taproots), provides a maximum transpiration rate, and competes well with successional species. No trees or shrubs, or any vegetation requiring regular irrigation shall be placed over the STA. Until vegetation is reestablished, erosion and sediment control measures shall be implemented and maintained on site. The owner of the OWTS shall be responsible for maintaining proper vegetation cover.

OPERATION INFORMATION AND MAINTENANCE

The property owner shall be responsible for the operation and maintenance of each OWTS servicing the property. The property owner is responsible for maintaining service contracts for manufactured units, alternating STAs, and any other components needing maintenance.

Geo-fabrics or plastics should not be used over the STA. No heavy equipment, machinery, or materials should be placed on the backfilled STA. Machines with tracks (not wheels) should be used during construction of the STA for better weight distribution. Livestock should not graze on the STA. Plumbing fixtures should be checked to ensure that no additional water is being discharged to OWTS. For example, a running toilet or leaky faucet can discharge hundreds of gallons of water a day and harm a STA.

If an effluent filter or screen has been installed in the OWTS, we recommend this filter or screen be cleaned annually, or as needed. If the OWTS consists of a pressurized pump system, we recommend the laterals be flushed annually, or as needed.

The homeowner should pump the septic tank every two years, or as needed gauged by measurement of solids in the tank. Garbage disposal use should be minimized, and non-biodegradable materials should not be placed into the OWTS. Grease should not be placed in household drains. Loading from a water softener should not be discharged into the OWTS. No hazardous wastes should be directed into the OWTS. Mechanical room drains should not discharge into the OWTS. The OWTS is engineered for domestic waste only.

ADDITIONAL CONSTRUCTION NOTES

If design includes a pump, weep holes must be installed to allow pump lines to drain to minimize risk of freezing. The pump shall have an audible and visual alarm notification in the event of excessively high water conditions and shall be connected to a control breaker separate from the high water alarm breaker and from any other control system circuits. The pump system shall have a switch so the pump can be manually operated.

Excavation equipment must not drive in excavation of the STA due to the potential to compact soil. Extensions should be placed on all septic tank components to allow access to them from existing grade. Backfill over the STA must be uniform and granular with no material greater than minus 3-inch.

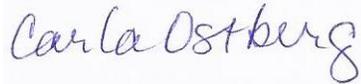
LIMITS:

The design is based on information submitted. If soil conditions encountered are different from conditions described in report, CBO Inc. should be notified. All OWTS construction must be according to the county regulations. Requirements not specified in this report must follow applicable county regulations. The contractor should have documented and demonstrated knowledge of the requirements and regulations of the county in which they are working. Licensing of Systems Contractors may be required by county regulation.

Please call with questions.

Sincerely,

CBO Inc.



Carla Ostberg, MPH, REHS

Reviewed By:



Romeo A. Baylosis, PE

Siphon Dosing Calculations

Company: CBO Inc.
Ph / Fax: 970-309-5259
Project Name: Doug Hayes / Lot 89 Marble Ski Area
Prepared by: Carla Ostberg

Input:

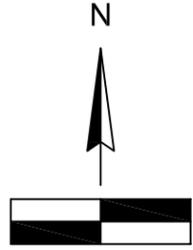
Siphon Model:	213	
Length of Run (ft):	38	feet
Fall (ft):	10	feet
Number of Orifices:	30	
Orifice Diameter (in):	0.1875	inches
Squirt Height (ft):	3	feet
Transport Line Size (in):	4	inches
Pipe Class/Schedule:	40	
Dose Chamber Volume Per Inch (gal/in):	11.88	gallons/inch
Volume of Lateral and Manifold Piping: (If orifices are orientated upwards and piping will remain full between doses - Enter " 0 ")	8.54	gallons

Calculation:

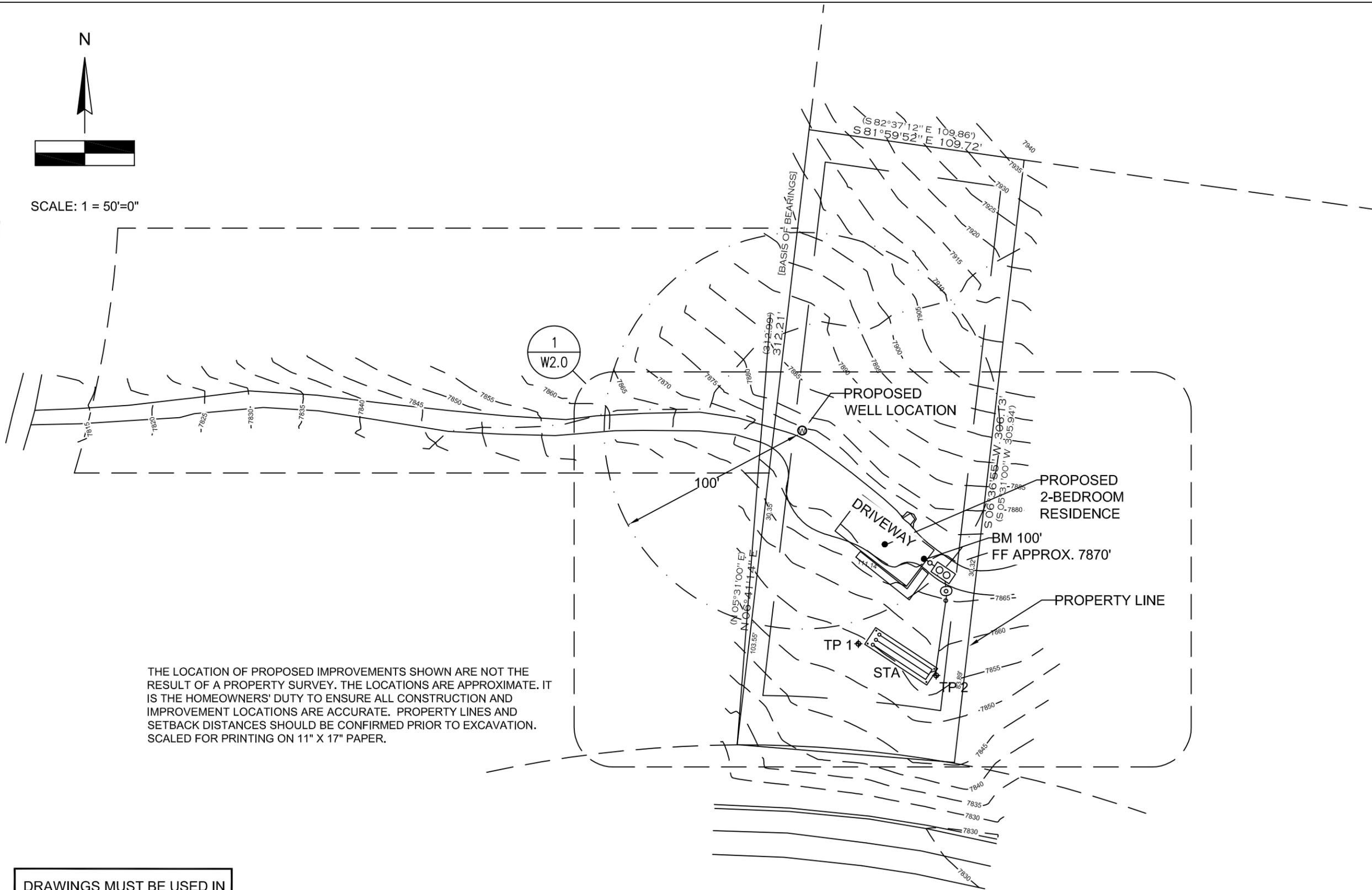
Approximate Flow Rate Required to Pressurize System (gpm):	22.62	gpm	
Siphon Discharge Rate (gpm):	31.00	gpm	
Siphon Drawdown (in):	13.00	inches	
Dose Volume (gal):	154.44	gallons	
Approximate Gallons Required to Fill Transport Line to the Required Squirt Height:	27.18	gallons	
Approximate Time For Siphon Discharge:	298.92	seconds	
Approximate Time Required to Fill Transport Line to the Required Squirt Height:	52.60	seconds	
Percent of Dose Required to Pressurize the System to the Required Squirt Height (Dose Volume/Gallons Required): Acceptable Values are 0 - 50%.	17.60	%	17.60%

Analyze Result:

"Error's" or "Caution's" regarding the Inputs and Calculations are listed below.



SCALE: 1" = 50' = 0"



THE LOCATION OF PROPOSED IMPROVEMENTS SHOWN ARE NOT THE RESULT OF A PROPERTY SURVEY. THE LOCATIONS ARE APPROXIMATE. IT IS THE HOMEOWNERS' DUTY TO ENSURE ALL CONSTRUCTION AND IMPROVEMENT LOCATIONS ARE ACCURATE. PROPERTY LINES AND SETBACK DISTANCES SHOULD BE CONFIRMED PRIOR TO EXCAVATION. SCALED FOR PRINTING ON 11" X 17" PAPER.

DRAWINGS MUST BE USED IN CONJUNCTION WITH DESIGN LETTER DATED 02/04/2021

1 PROPOSED SITE PLAN
1" = 50'-0"
(L=110.00')



CBO Inc.
33 Four Wheel Drive Road
Carbondale, Colorado 81623
Phone 970.309.5259
carla.ostberg@gmail.com

Hayes Residence

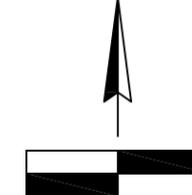
Lot 89, Marble Ski Area
Gunnison County, Colorado
Project Number: C1586

Date: 02/04/2021
Designed by: CBO
Reviewed by: RB
Drawn by: DD

W1.0

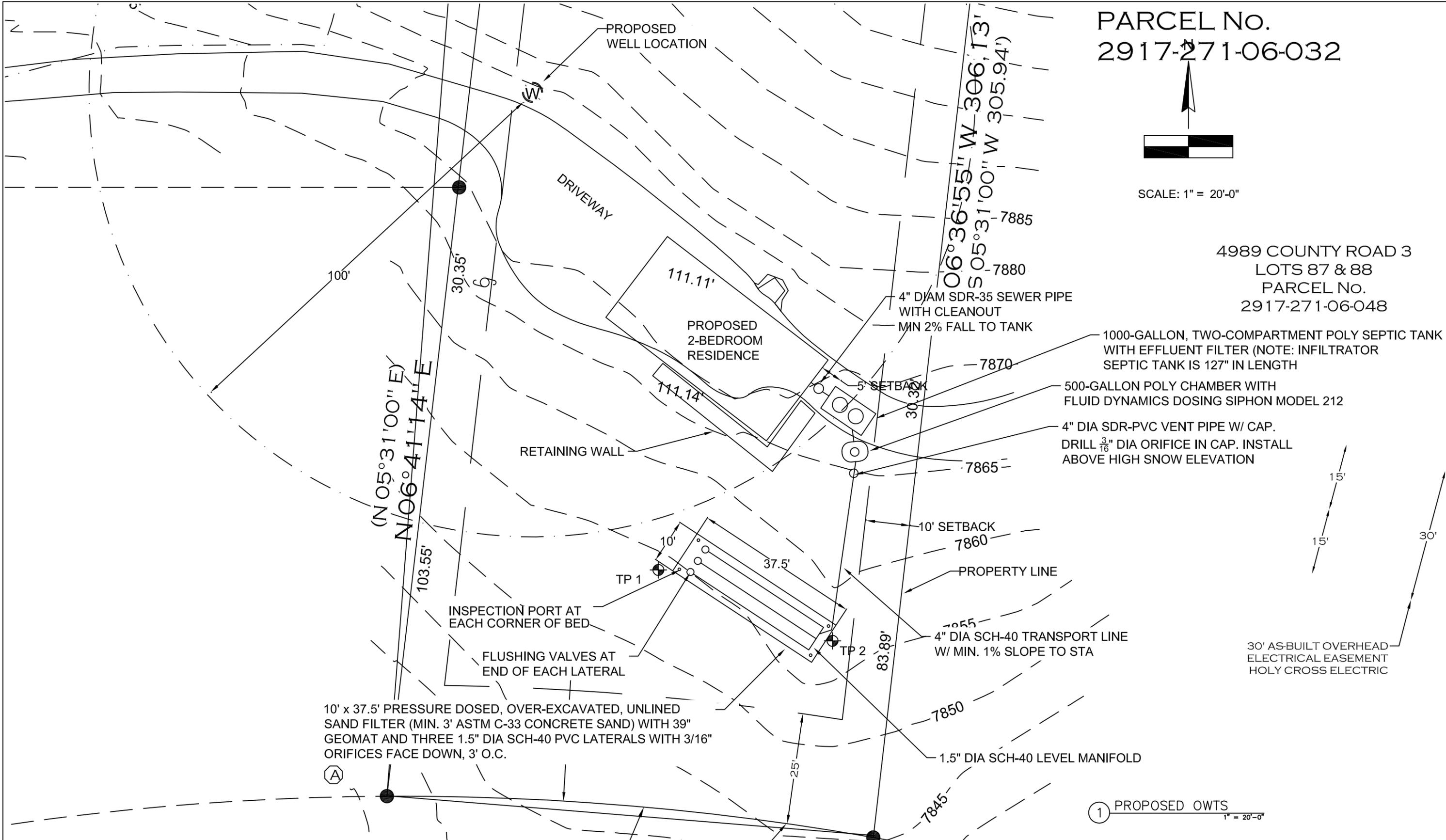
Sheet 1 OF 5

PARCEL No.
2917-271-06-032



SCALE: 1" = 20'-0"

4989 COUNTY ROAD 3
LOTS 87 & 88
PARCEL No.
2917-271-06-048



① PROPOSED OWTS
1" = 20'-0"



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33 Four Wheel Drive Road
Carbondale, Colorado 81623
Phone 970.309.5259
carla.ostberg@gmail.com

Hayes Residence

Lot 89, Marble Ski Area
Gunnison County, Colorado
Project Number: C1586

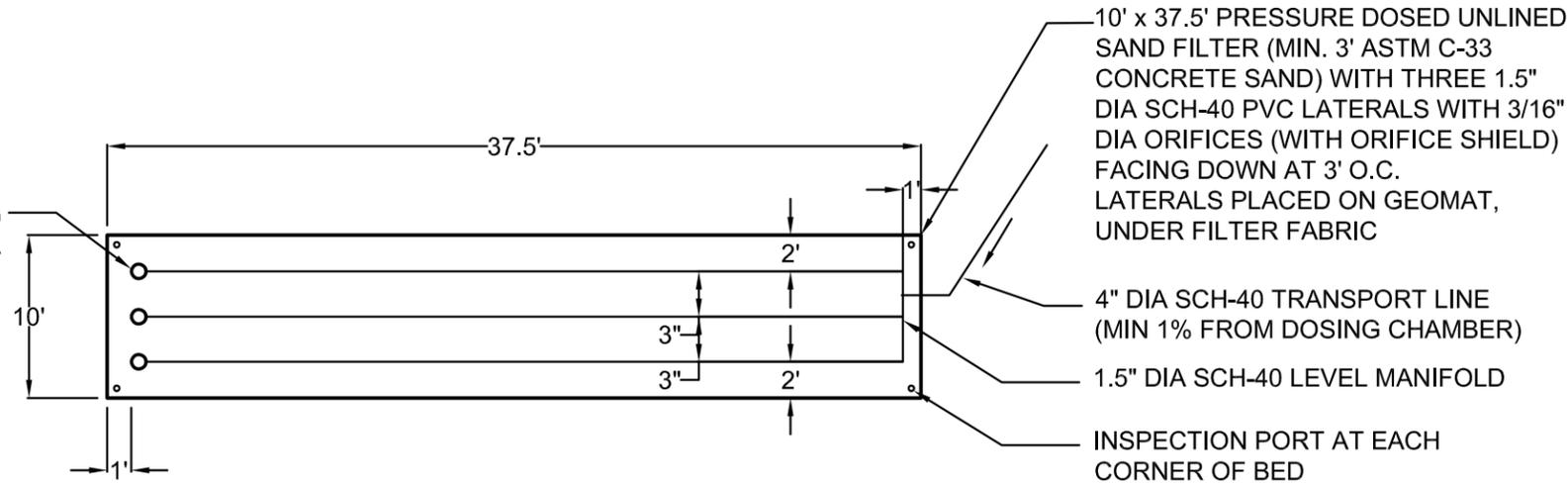
Date: 02/04/2021
Designed by: CBO
Reviewed by: RB
Drawn by: DD

W2.0

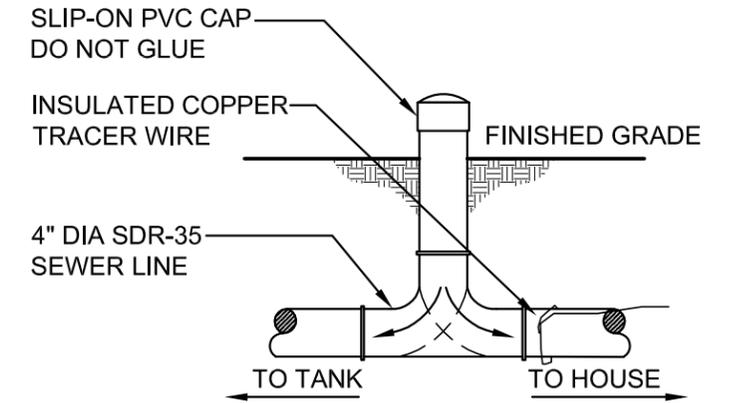
Sheet 2 OF 5

THREE SHEETS OF GEOMAT
(EACH 39") ON BED

END EACH LATERAL IN A 90° LONG
SWEEPING ELL FACING UP WITH A
BALL VALVE IN A VALVE BOX
ACCESSIBLE AT GRADE

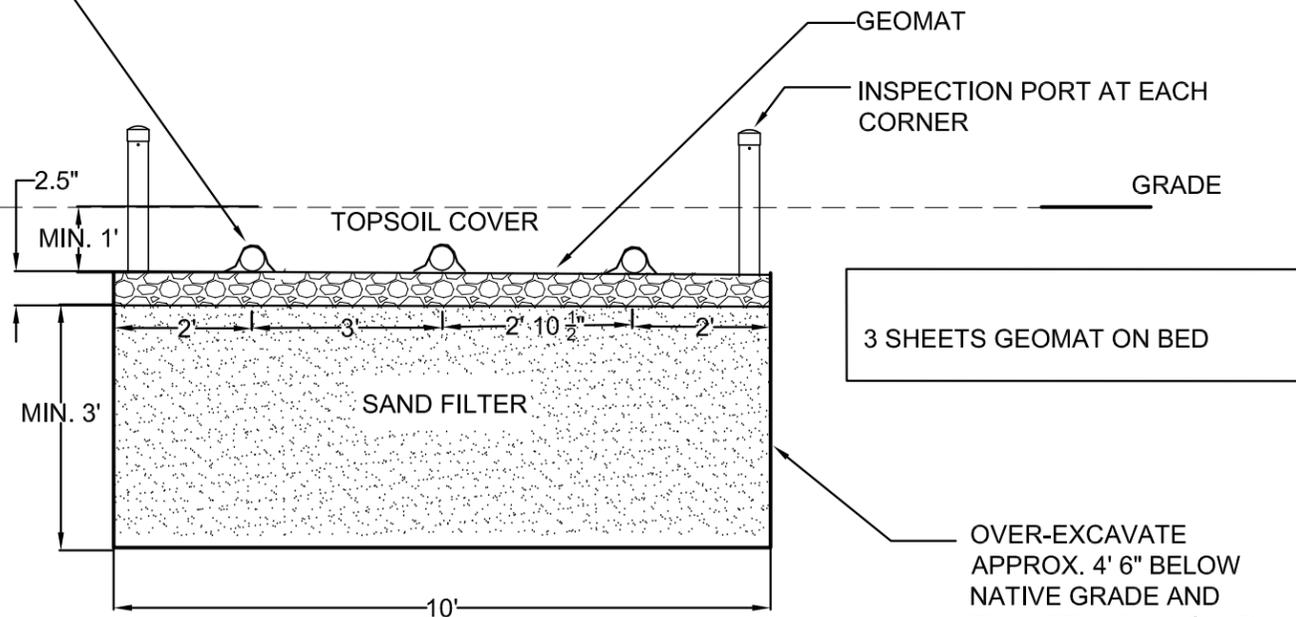


① STA PLAN
NOT TO SCALE



② CLEAN OUT DETAIL
NOT TO SCALE

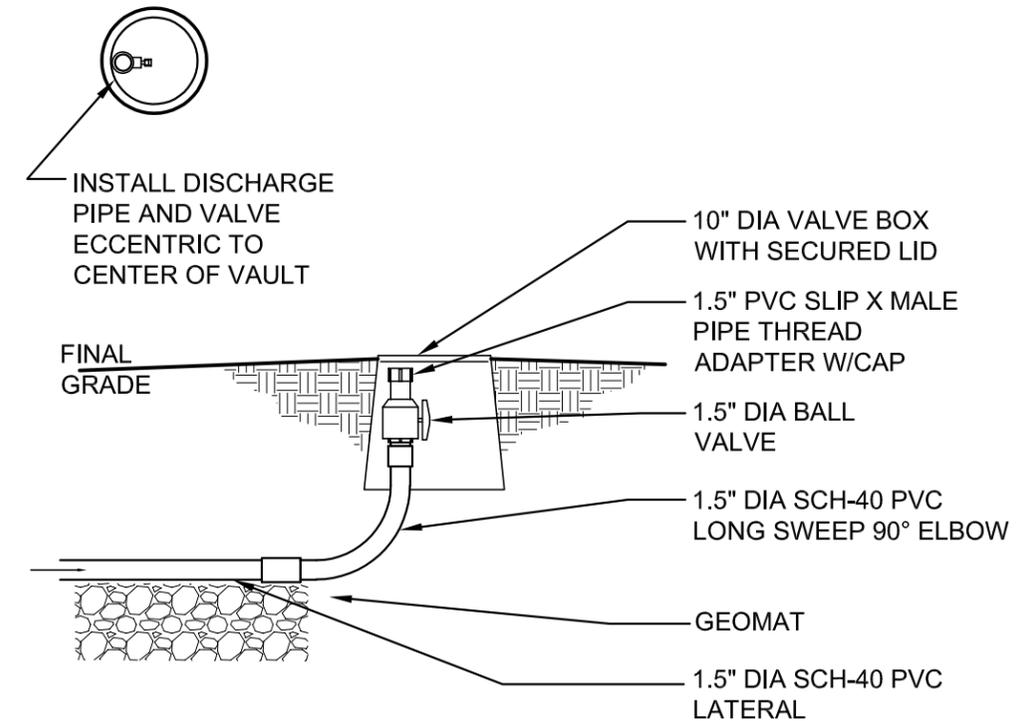
1.5" DIA SCH-40 PVC LATERALS
WITH 3/16" DIA ORIFICES FACING
DOWN, 3' O.C. ON GEOMAT



SAND FILTER MATERIAL
"SECONDARY SAND"

EFFECTIVE SIZE = 0.15 - 0.06 mm
UNIFORMITY COEFFICIENT ≤ 7.0
% FINES PASSING #200 SIEVE ≤ 3.0

③ STA SECTION
NOT TO SCALE



④ FLUSHING VALVE DETAIL
NOT TO SCALE



CBO Inc.
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Hayes Residence
Lot 89, Marble Ski Area
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Project Number: C1586

Date: 02/04/2021
Designed by: CBO
Reviewed by: RB
Drawn by: DD

W3.0
Sheet 3 OF 5

DESIGN

2-BEDROOM RESIDENCE

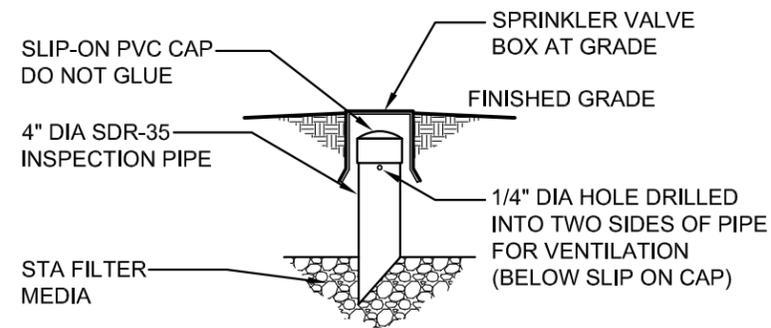
(75 GPD x 2 PERSONS/BEDROOM x 2 BEDROOMS)
WASTEWATER FLOW = 300 GPD

TANK:
MIN. 1000 GALLONS

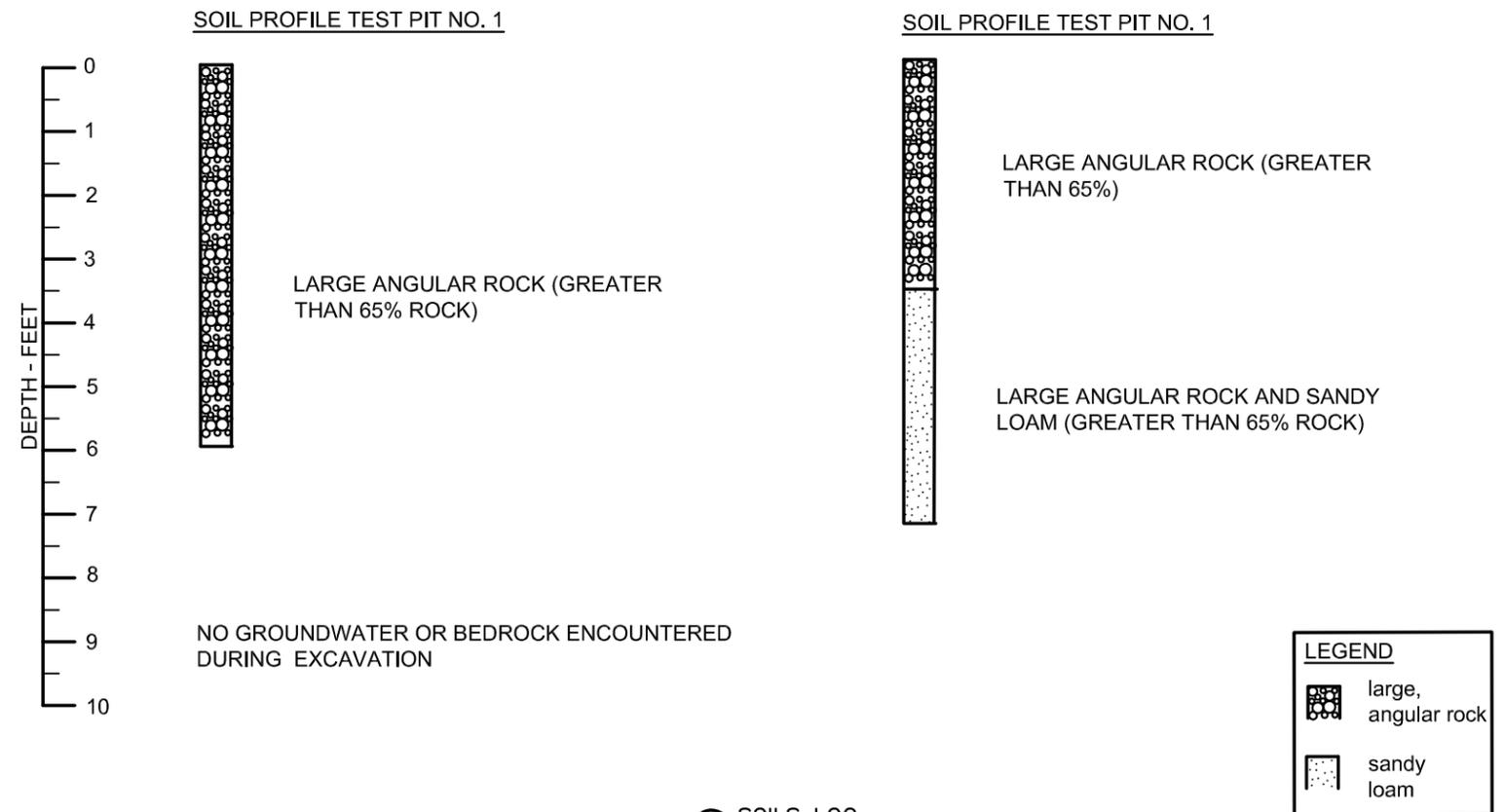
USE 1000-GALLON, TWO-COMPARTMENT POLY SEPTIC TANK FOLLOWED BY A 500-GALLON DOSING CHAMBER WITH A SIPHON

SOIL TREATMENT AREA (STA):
LONG TERM ACCEPTANCE RATE (LTAR) = 0.8 GAL/ SF
CALCULATED STA = Q/LTAR = 300 / 0.8 = 375 SF
PRESSURE DOSED, BEDS = 375 SF X 1.0 = 375 SF
MIN. 3' MIN SAND FILTER MATERIAL
10' X 37.5' = 375 SF ON GEOMAT

OWTS COMPONENTS AND PHYSICAL FEATURES	MINIMUM REQUIRED SETBACK	APPROXIMATE PROPOSED SETBACK
HOUSE TO SEPTIC TANK	5'	5'
SEPTIC TANK TO WELL	50'	95'
HOUSE (SLAB) TO STA	10'	26'
STA TO WATER COURSE	100'	>100'
STA TO WELL	100'	106'
STA TO PROPERTY LINE	10'	14'



1 INSPECTION PORT DETAIL
NOT TO SCALE



2 SOILS LOG
NOT TO SCALE



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Hayes Residence

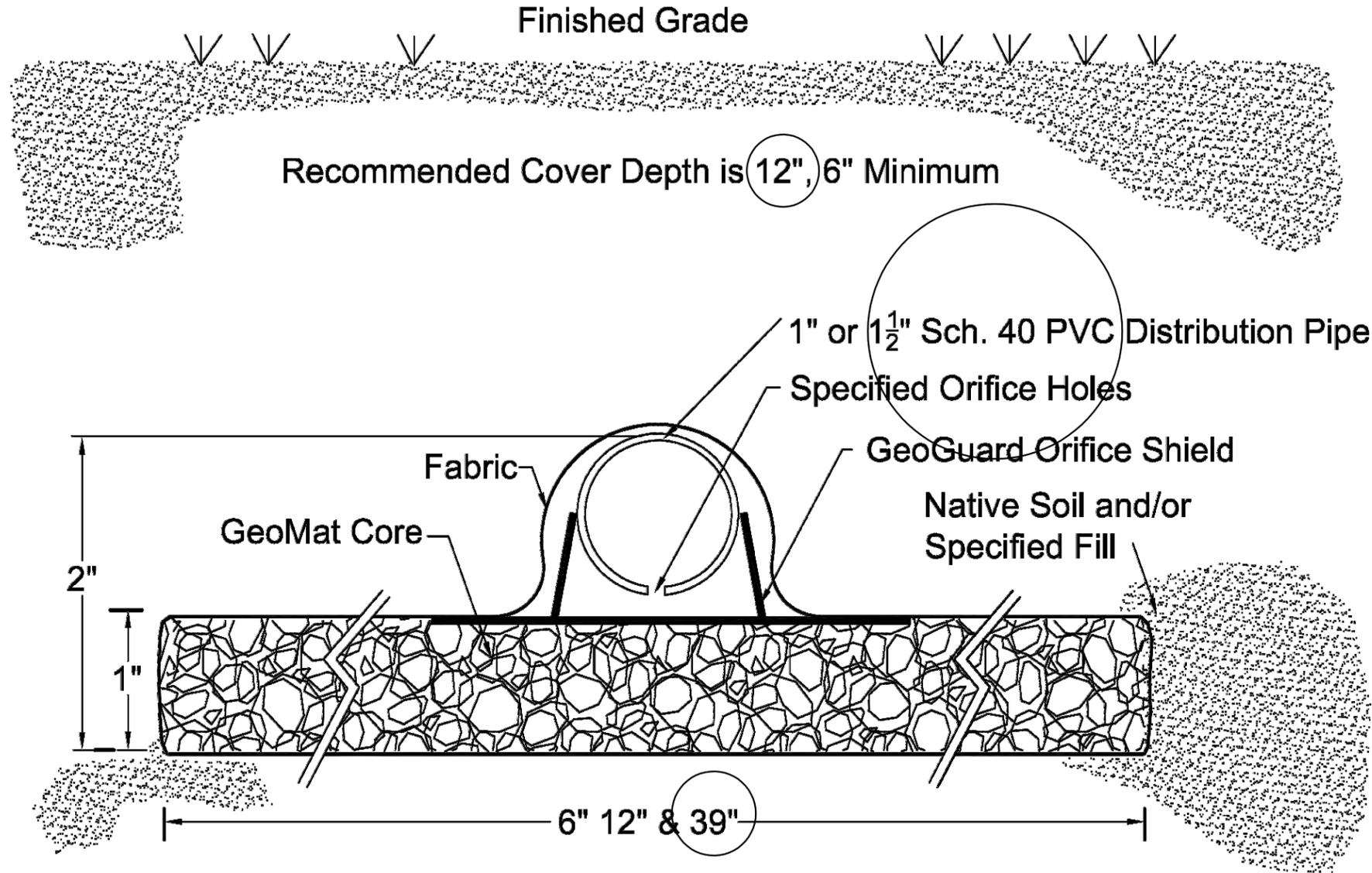
Lot 89, Marble Ski Area
Gunnison County, Colorado
Project Number: C1586

Date: 02/04/2021

Designed by: CBO
Reviewed by: RB
Drawn by: DD

W4.0

Sheet 4 OF 5



GEOMAT LEACHING SYSTEM
Cross Section
- Not to Scale -

Copyright 2010 GEOMATRIX SYSTEMS, LLC
 manufactured under one or more of the
 following US patents; 7,374,670; 7,165,390.
 Other US and foreign patents pending.

GEOMAT LEACHING SYSTEM	
Cross Section	
Geomatrix Systems, LLC., Old Saybrook, CT	
860-510-0730	
SCALE	NONE
DATE	7/2/2011
DRAWN BY:	ERP
REV.	A
ACAD No.	GEOMAT_XSECT.DWG
SHEET	1 OF 1

NOTE: Lateral spacing as required

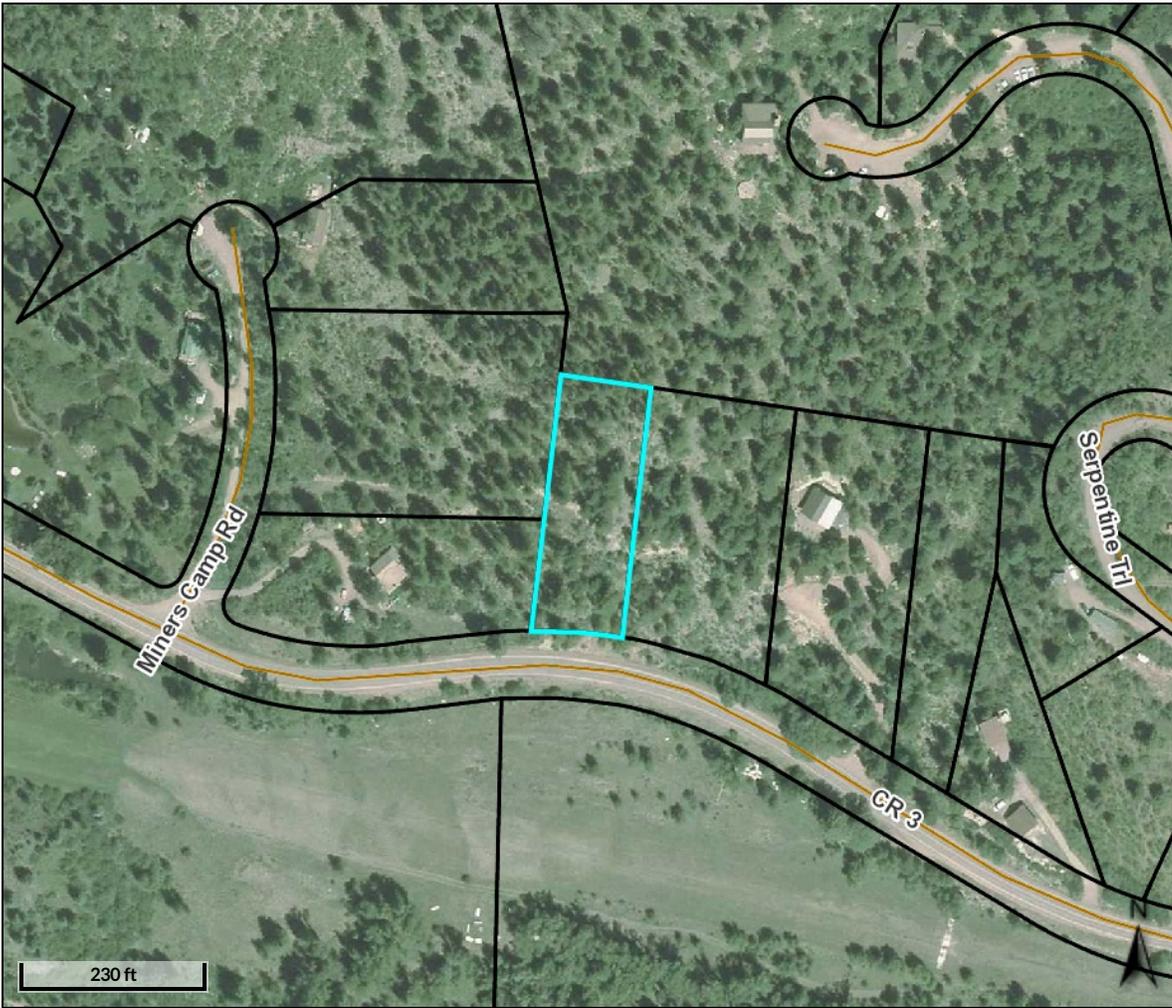


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Hayes Residence
 Lot 89, Marble Ski Area
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Date: 02/04/2021
 Designed by: CBO
 Reviewed by: RB
 Drawn by: DD

W5.0
 Sheet 5 OF 5



Overview



Legend

- Parcels
- Roads**
 - Back Roads
 - Local Roads
 - State Highways
 - Unconstructed
- City Labels**
- County Outlines**
 - <all other values>
 - Gunnison

?

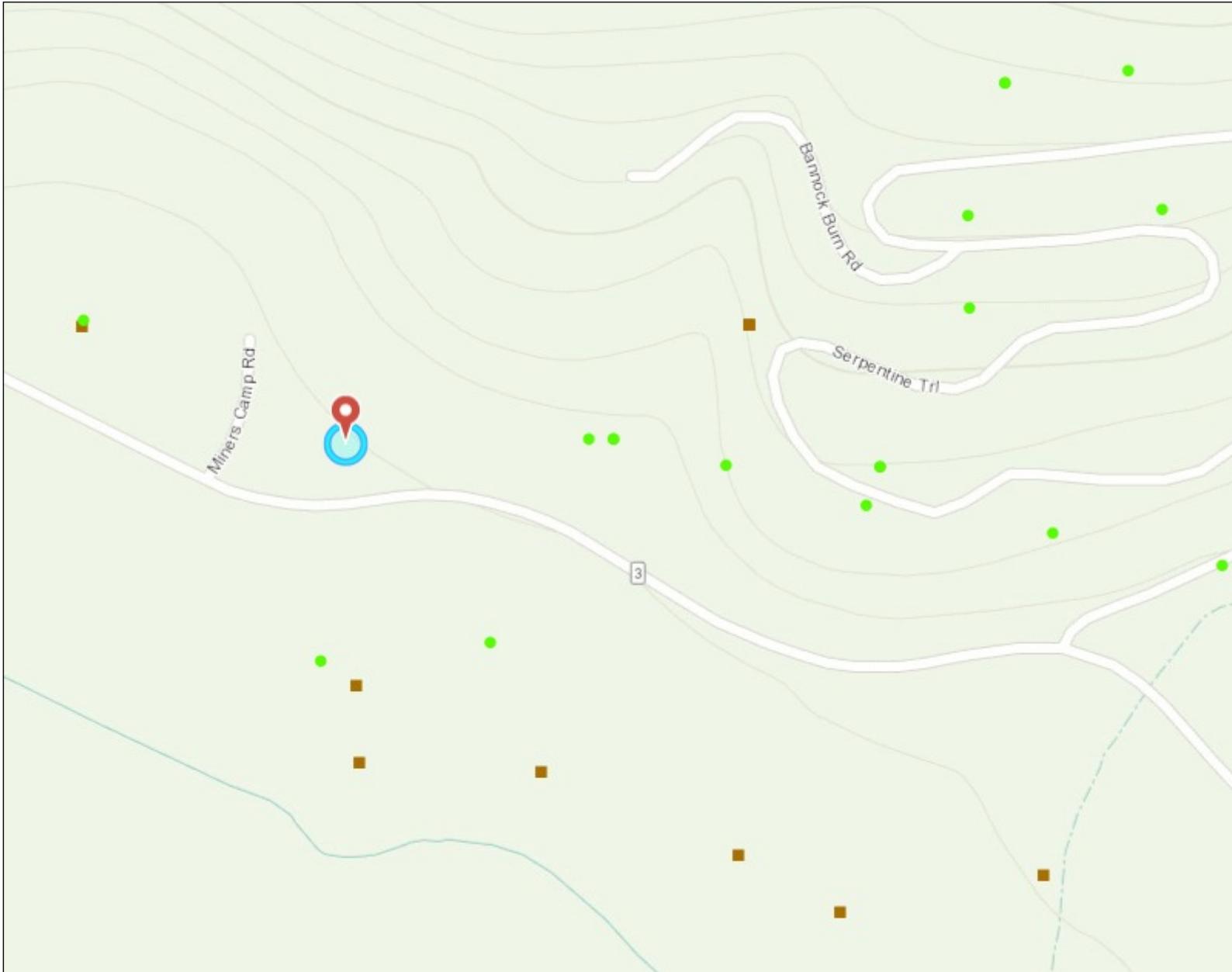
Account Number	R014192	Owner Address	HAYES DOUGLAS P 7444 OLD MILL TRL BOULDER, CO 80301-3910	Total Value	\$4,500	Last 2 Sales	
Parcel Number	2917-271-06-032	Physical Address	COUNTY ROAD 3, MARBLE	Current Value	\$1,310	Date	8/28/2015
Account Type	Vacant	Subdivision	MARBLE SKI AREA 3	Assessed Value		Price	\$0
Lot/Block	89	LEA	MSA VAC <1AC YR ROUND (81820)	Mill Levy	60.135	Qualified	N/A
Tax District	617	Legal Description	LOT 89, MARBLE SKI AREA, FILING NO. 3	Total Value	\$4,500		
Acres	0.779	(Note: Legal Description above is abbreviated for use on Assessor records and is not valid for use on legal documents.)		Last Year Taxes	\$79		

This electronic transmission may contain a map, diagram or information prepared by Gunnison County and represents generalized geographic data for general planning purposes only. The data portrayed should not be relied upon to establish legal title, boundary lines, the precise location of improvements, ownership, maintenance, easements or public rights-of-ways.

Date created: 2/4/2021
Last Data Uploaded: 2/4/2021 6:07:54 AM



Map Viewer



Legend

- Well Constructed
- Final Permit
- Ground Water
- County

Location

The inset map shows the state of Colorado with a red dot indicating the search location in the northern part of the state, near Denver.

Notes

Address searched is 50 Miners Camp Road, Marble

585 0 292 585 Feet



1: 3,508

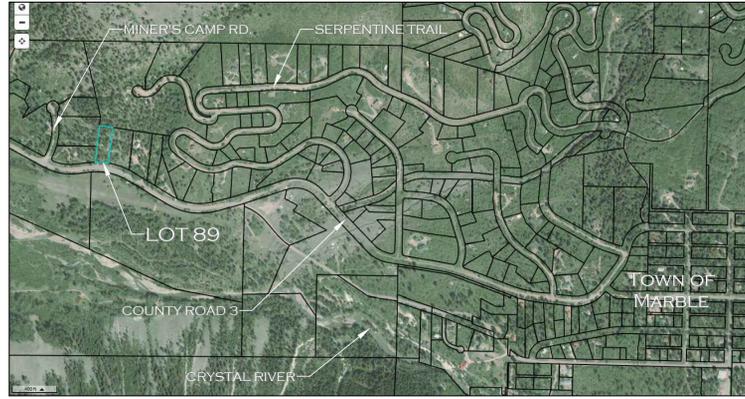


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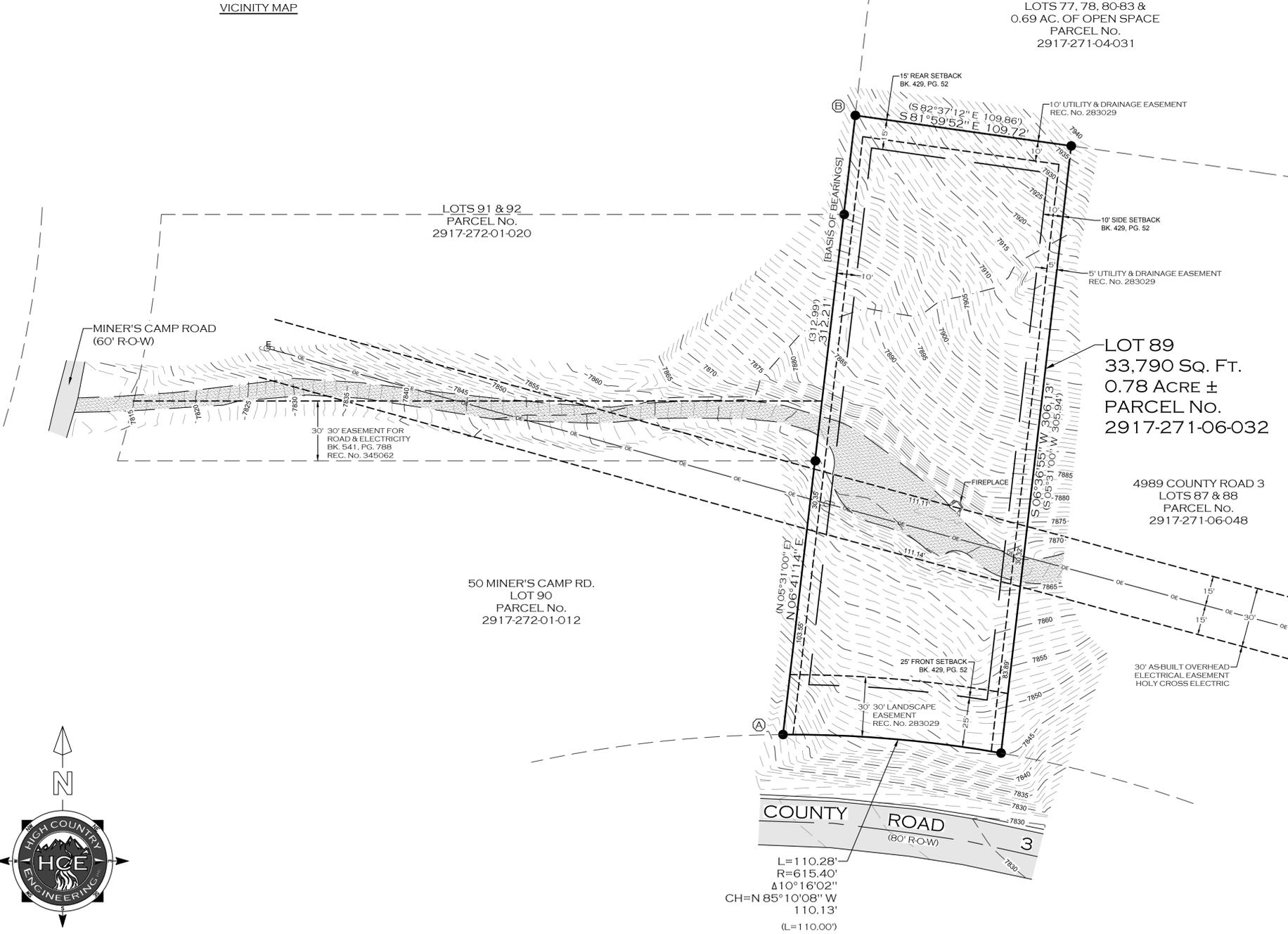
Date Prepared: 2/5/2021 11:40:28 AM

IMPROVEMENT SURVEY PLAT

A TRACT OF LAND SITUATED IN LOT 89, MARBLE SKI AREA FILING No.3
SECTION 27, TOWNSHIP 11 SOUTH, RANGE 88 WEST OF THE 6TH P.M.
TOWN OF MARBLE, COUNTY OF GUNNISON, STATE OF COLORADO



VICINITY MAP



LEGEND

- FOUND No. 5 REBAR w/1.28" RED PLASTIC CAP LS 3317
- POWER / UTILITY POLE
- E ELECTRICAL METER
- PROPERTY BOUNDARY LINE
- - - ADJOINER LINE
- - - SETBACK LINE
- - - EASEMENT LINE
- - - FLOW LINE
- - - EDGE OF GRAVEL
- - - MAJOR CONTOUR LINE
- - - MINOR CONTOUR LINE
- OE — OVERHEAD ELECTRIC LINE
- ASPHALT
- GRAVEL
- ROCK RETAINING WALL

NOTES

1. DATE OF FIELD SURVEY: AUGUST 6, 2019, AT THE TIME OF THE SURVEY IT WAS SUNNY.
2. THE ASSUMED BASIS OF BEARINGS FOR THIS SURVEY IS A BEARING OF N06°41'14"E ALONG THE WESTERLY PROPERTY LINE BETWEEN "A" THE SOUTHWEST CORNER A FOUND REBAR AND RED PLASTIC CAP LS3317 AND "B" THE NORTHWEST CORNER ANOTHER FOUND REBAR AND RED PLASTIC CAP LS3317 AS SHOWN HEREON.
3. ALL BEARINGS ARE GRID BEARINGS OF THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983. ALL DISTANCES ARE GROUND DISTANCES BASED ON A COMBINED SCALE FACTOR.
4. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY THIS SURVEYOR OF THE PROPERTY SHOWN AND DESCRIBED HEREON TO DETERMINE:
 - A) OWNERSHIP OF THE TRACT OF LAND
 - B) COMPATIBILITY OF THIS DESCRIPTION WITH THOSE OF ADJOINERS
 - C) RIGHTS-OF-WAY, EASEMENTS AND ENCUMBRANCES OF RECORD AFFECTING THIS PARCEL.
5. FOR ALL INFORMATION REGARDING EASEMENT, RIGHTS-OF-WAY AND/OR TITLE OF RECORD, HIGH COUNTRY ENGINEERING, INC. RELIED UPON TITLE COMMITMENT NO. 891CEA ISSUED BY STEWART TITLE GUARANTY COMPANY, EFFECTIVE DATE: AUGUST 2, 2019, 6:00 A.M. THIS PROPERTY IS SUBJECT TO ALL CONDITIONS AND RESTRICTIONS CONTAINED THEREIN.
6. THE CLIENT DID NOT REQUEST THAT ANY ADDITIONAL EASEMENTS, RIGHTS-OF-WAY AND/OR IMPROVEMENTS BE RESEARCHED OR SHOWN ON THIS PLAT.
7. ALL DIMENSIONS AND COURSES ARE AS MEASURED IN THE FIELD UNLESS DENOTED IN PARENTHESES, WHICH DENOTE THE BOUNDARIES OF RECORD ON THE ORIGINAL PLAT OF MARBLE SKI AREA FILING No. 3 IN THE PUBLIC RECORDS OF GUNNISON COUNTY, STATE OF COLORADO.
8. ELEVATIONS SHOWN HEREON ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) REFERENCED FROM NATIONAL GEODETIC SURVEY (NGS) BENCHMARK STATION S 159 HAVING AN ELEVATION OF 7720.88.
9. CONTOUR INTERVAL EQUALS 1 FOOT.
10. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITMENTS A CLASS TWO (2) MISDEMEANOR PURSUANT TO SECTION 18-4-508 OF THE COLORADO REVISED STATUTES.
11. NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED ON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED ON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.
12. NOTICE: THIS PLAT AND THE INFORMATION SHOWN HEREON MAY NOT BE USED FOR ANY ADDITIONAL OR EXTENDED PURPOSE BEYOND THAT FOR WHICH IT WAS INTENDED AND MAY NOT BE USED BY ANY PARTIES OTHER THAN THOSE TO WHICH IT IS CERTIFIED. THIS DOCUMENT AND THE WORK IT REPRESENTS IS THE PROPERTY OF HIGH COUNTRY ENGINEERING, INC. NO PART OF THIS DOCUMENT MAY BE STORED, REPRODUCED, DISTRIBUTED OR USED TO PREPARE DERIVATIVE PRODUCTS WITHOUT PRIOR WRITTEN PERMISSION. AN ORIGINAL SEAL AND ORIGINAL SIGNATURE IS REQUIRED TO VALIDATE THIS DOCUMENT AND IS EXCLUSIVE TO HIGH COUNTRY ENGINEERING, INC. AND THE OWNER(S) OF RECORD AS OF THIS DATE. IF THE PROPERTY DELINEATED HEREON AND THE SUBJECT OF THE SURVEY, THIS PLAT IS RESTRICTED TO THE INTENT OF TITLE 38, ARTICLE 50, §101, 5 (a) AND (b) C.R.S.

SURVEYOR'S CERTIFICATION

I, BILL W.A. BAKER, A LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO (#23875) DO BY THESE PRESENTS CERTIFY THAT THE DRAWING SHOWN HEREON, WITH NOTES ATTACHED HERETO AND MADE A PART HEREOF, REPRESENTS A MONUMENTED LAND SURVEY MADE UNDER MY DIRECT SUPERVISION AND THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, AN ACCURATE DEPICTION OF SAID SURVEY IS RENDERED BY THIS PLAT. THIS SURVEY WAS CONDUCTED IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE. IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED. THIS SURVEY PLAT COMPLIES WITH TITLE 38-51-102, COLORADO REVISED STATUTES.

BILL W.A. BAKER, COLORADO PROFESSIONAL LAND SURVEYOR #23875
CERTIFIED FEDERAL SURVEYOR #1699



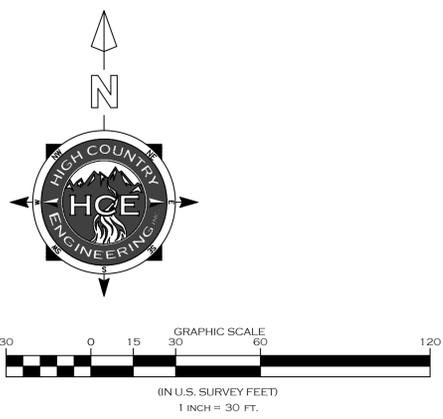
LAND SURVEY PLAT DEPOSIT

THIS LAND SURVEY PLAT HAS BEEN ACCEPTED FOR DEPOSIT IN THE OFFICE OF THE CLERK AND RECORDER OF GUNNISON COUNTY, COLORADO THIS ____ DAY OF _____, 2019, PLAT BOOK ____ PAGE ____ AS RECORDING NO. _____

TITLE 38, ARTICLE 50, SUBSECTION 101 C.R.S.

(5) (A) PLATS SHALL BE DEPOSITED IN ACCORDANCE WITH THIS SECTION FOR THE SOLE PURPOSE OF RECORDING INFORMATION ON SURVEYING MONUMENTATION IN ORDER TO PROVIDE SURVEY DATA FOR SUBSEQUENT LAND SURVEYS AND SHALL NOT BE CONSTRUED TO AFFECT, IN ANY MANNER WHATSOEVER, THE DESCRIPTION OF A SUBDIVISION, LINE, OR CORNER CONTAINED IN THE OFFICIAL PLATS AND FIELD NOTES FILED AND OF RECORD OR TO SUBDIVIDE PROPERTY.
(B) NO PLAT DEPOSITED IN ACCORDANCE WITH THIS SECTION SHALL CONSTITUTE NOTICE PURSUANT TO SECTION 38-35-109.

COUNTY SURVEYOR



CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
OR 954-06700 IN METRO DENVER
CALL 2 BUSINESS DAYS IN ADVANCE
EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

NO.	DATE	REVISION	BY

DRAWN BY: GEB
CHECKED BY: BWAB
DATE: 9.10.2019
FILE: _____

HIGH COUNTRY ENGINEERING, INC.
1517 BLAKE AVENUE, STE 101,
GLENWOOD SPRINGS, CO 81601
PHONE (970) 945-8676 - FAX (970) 945-2555
WWW.HCENG.COM



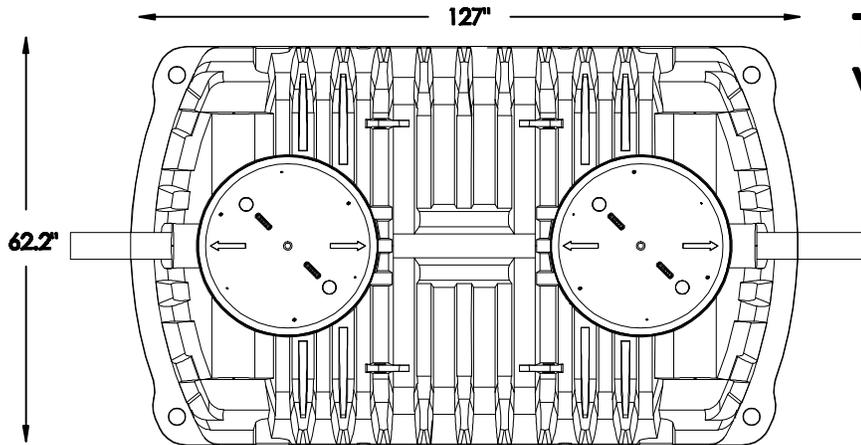
DOUGLAS HAYES
MARBLE, COLORADO
IMPROVEMENT SURVEY PLAT
LOT 89, MARBLE SKI AREA
FILING NO. 3

PROJECT NO.
2191674

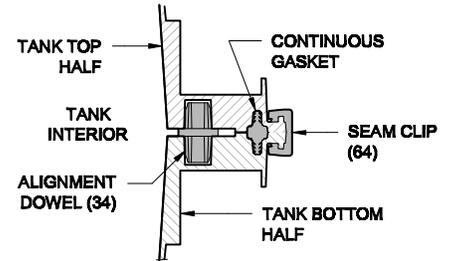
SHEET NUMBER
1 OF 1

**Item #
IM 1060-2CP**

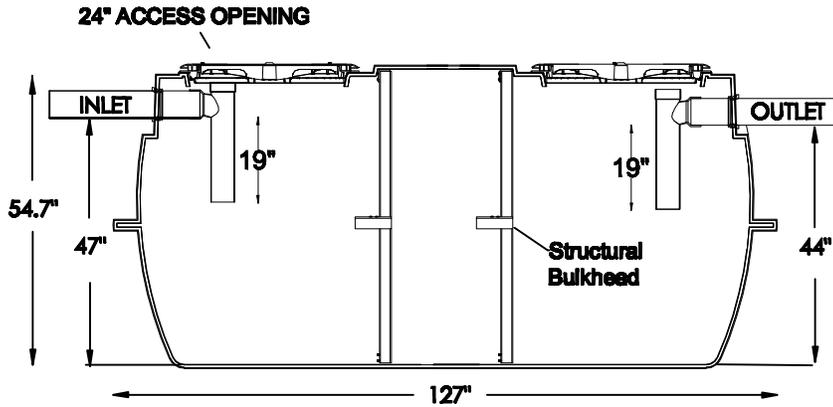
1060 Gallon Two Compartment Infiltrator® Poly Tank



**Top
View**

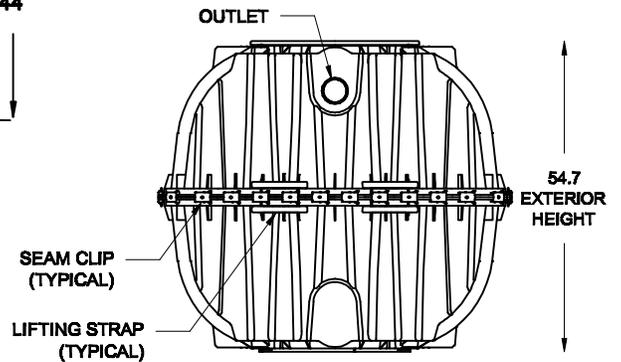


**Mid-Height Seam
Section**



**Section
View**

Tank includes lids



**End
View**

- Compliant with CSA and IAPMO Standards
- PVC risers available
- Secondary safety screen available with PVC riser
- Maximum burial depth is 48"
- Minimum burial depth is 6"
- Tank is not rated for vehicular traffic loading
- Exterior of manhole cover includes the following warning: "DANGER DO NOT ENTER: POISON GASES"

Digging Specs	Invert		Dimensions			Net Capacity	Weight
	Inlet	Outlet	Length	Width	Height		
12' Long x 7' Wide	47"	44"	127"	62.2"	54.7"	1094 gal	320 lbs

INFILTRATOR®
septic tanks
INFILTRATOR SYSTEMS INC.

**VALLEY
PRECAST, Inc.**

**Water &
Wastewater**

- Systems
- Products
- Service

(719) 395-6764

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Website: www.valleyprecast.com

Email: frontdesk@valleyprecast.com

**28005 Co. Rd. 317
P.O. Box 925
Buena Vista, CO 81211**

Residential Biotube® Effluent Filters

Applications

Our patented* 4-in. (100-mm) Biotube Effluent Filters, Biotube Jr., Biotube Insert Filters, and Biotube Base Inlet Filters are ideal for residential septic tanks and have a lifetime warranty. They prevent large solids from leaving the tank, dramatically improving wastewater quality and extending the life of residential drainfields.

4-in. (100-mm) Biotube Effluent Filter



4-in. (100-mm) Biotube Jr.
(4-in. Biotube cartridge available separately as Insert Filter)



8-in. (200-mm) Base Inlet Filter



4-in. (100-mm) Insert Filter



Orenco's superior effluent filters resist clogging better than all other brands. Our standard, full-sized 4-in. (100-mm) Biotube Effluent Filter provides maximum long-term protection in a complete package, with housing. Our 4-in. (100-mm) Biotube Jr., at half the size of our standard model, has more filtering capacity than the full-sized filters sold by other manufacturers. For tanks with existing outlet tees, the Biotube Insert Filter is ideal. And for low-profile tanks, there's the Base Inlet Filter.

* Covered by patent numbers 5,492,635 and 4,439,323

To Order

Call your nearest Orenco Systems®, Inc. distributor. For nearest distributor, call Orenco at 800-348-9843 or go to www.orenco.com and click on "Distributor Locator."

APS-FT-1
Rev. 3.4 © 11/10
Orenco Systems®, Inc.

Standard Features & Benefits

- Has 5-10 times more flow area than other brands, so lasts many times longer between cleanings, increasing homeowner satisfaction
- Installs in minutes inside new or existing tanks; extendible tee handle for easy removal
- Easy to clean by simply hosing off whenever the tank needs pumping
- Removes about two-thirds of suspended solids, on average, extending drainfield life
- Corrosion-proof construction, to ensure long life
- Lifetime warranty

Optional Features & Benefits

- Alarm available, to signal the need for cleaning
- Flow modulating discharge orifices available to limit flow rate leaving tank, mitigating surges and increasing retention time
- Custom and commercial sizes available

Biotube Filtering Process

Effluent from the relatively clear zone of the septic tank, between the scum and sludge layers, horizontally enters the Biotube Effluent Filter. Effluent then enters the annular space between the housing and the Biotubes, utilizing the Biotubes' entire surface for filtering. Particles larger than the Biotube's mesh are prevented from leaving the tank.



Orenco Systems®
Incorporated

*Changing the Way the
World Does Wastewater®*

www.orenco.com

Nomenclatures

4-in. Biotube Filter (standard)

FT 04 -

- Options:
 Blank = no options
 M = flow modulation plate installed
 A = float bracket attached

Cartridge height: 28" and 36" are standard

Housing height: 36" and 44" are standard

Filter diameter (inches)

W = fits Type 3034 outlet pipe
 S = fits Schedule 40 outlet pipe

Blank = 1/8" filtration
 P = 1/16" filtration

Biotube effluent filter series

8-in. Biotube Filter (base inlet model)

FT 08 22 - 14 B

- Options:
 A = float bracket
 FS = 2" outlet orifice
 FSO = 2" outlet orifice and overflow plate*

Base inlet model

Cartridge height: 14" standard

Housing height: 22" standard

Filter diameter (inches)
 08 = 8"

Blank = 1/8" filtration
 P = 1/16" filtration

Biotube effluent filter series

* Also available with coupling and sleeve as a "kit": FT-OVERFLOWKIT

4-in. Biotube Jr. (includes cartridge and housing)

FT J 04 18

- Options:
 Blank = no options
 M = flow modulation plate installed
 A = float bracket attached

Cartridge height (inches)

Filter diameter (inches)

W = fits Type 3034 outlet tee
 S = fits Schedule 40 outlet tee

Blank = 1/8" filtration
 P = 1/16" filtration

Junior series

Biotube effluent filter series

4-in. Biotube Filter Insert (cartridge only)

FT i 04 18 - -

For customized options (e.g., NC indicates North Carolina regions)

W = fits Type 3034 outlet tee
 S = fits Schedule 40 outlet tee

Cartridge height (inches)

Filter diameter (inches)

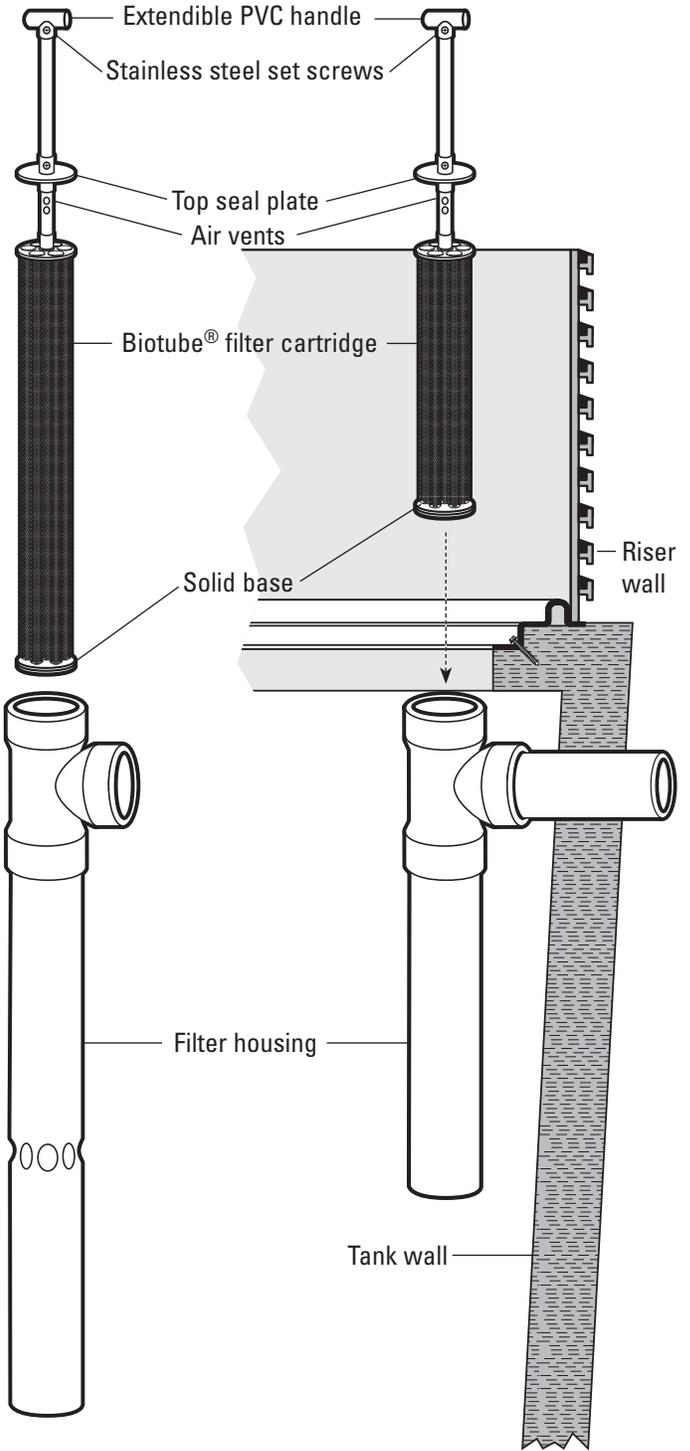
Blank = 1/8" filtration
 P = 1/16" filtration

Insert

Biotube effluent filter series

4-in. Biotube Effluent Filter

4-in. Biotube Jr.

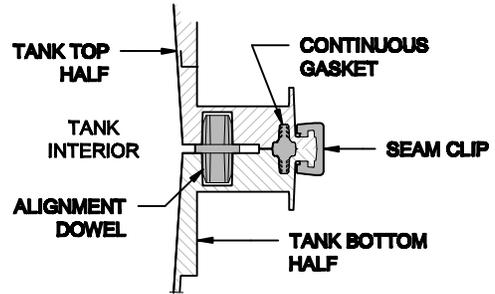
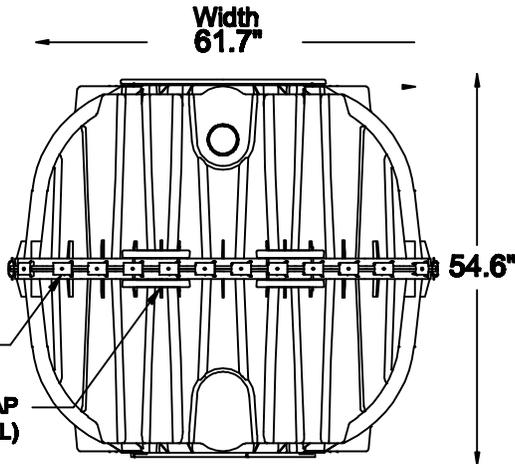


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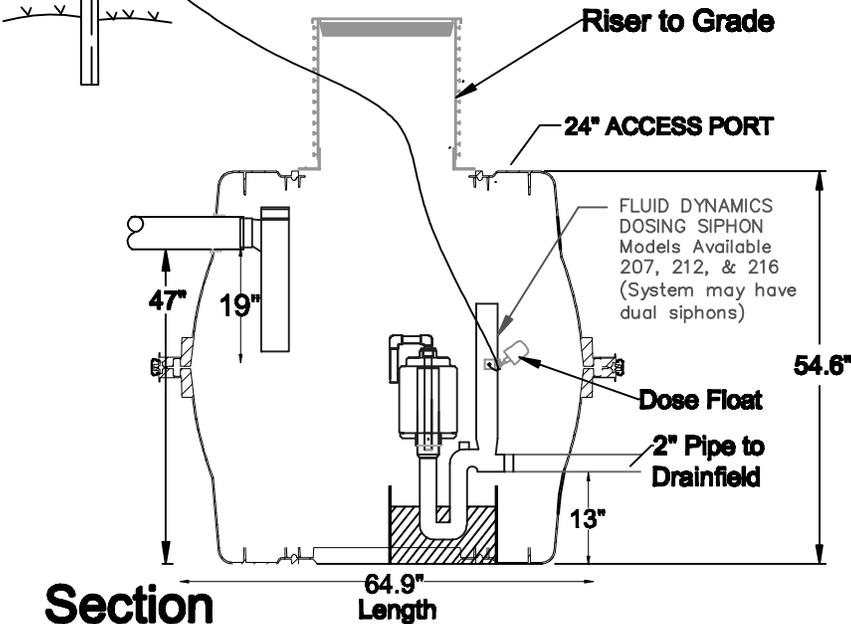
IM-540 Infiltrator® Poly Tank - 1CP with 200 Series Siphon

Item #
IM-540-1CP-D2

End
View



Mid-Height Seam
Section



Section
View

NOTE: TANK EXTERIOR WIDTH IS 61.7"

DESIGN NOTES

- Compliant with CSA and IAPMO Standards
- Battery Counter with Float
- Mount Panel on post next to tank and backfill
- Maximum burial depth is 48"
- Minimum burial depth is 6"
- Tank is not rated for vehicular traffic loading
- Exterior of manhole cover includes the following warning: "DANGER DO NOT ENTER: POISON GASES"

Dosing Information

Model 207	7" Dose	95 Gallons
Model 212	12" Dose	162 Gallons
Model 216	16" Dose	216 Gallons

Digging Specs	Invert		Dimensions			Net Capacity	Weight
	Inlet	Outlet	Length	Width	Height		
6' Long x 6' Wide 47" below inlet invert	47"	13"	64.9"	61.7"	54.6"	552 gallons	220 lbs



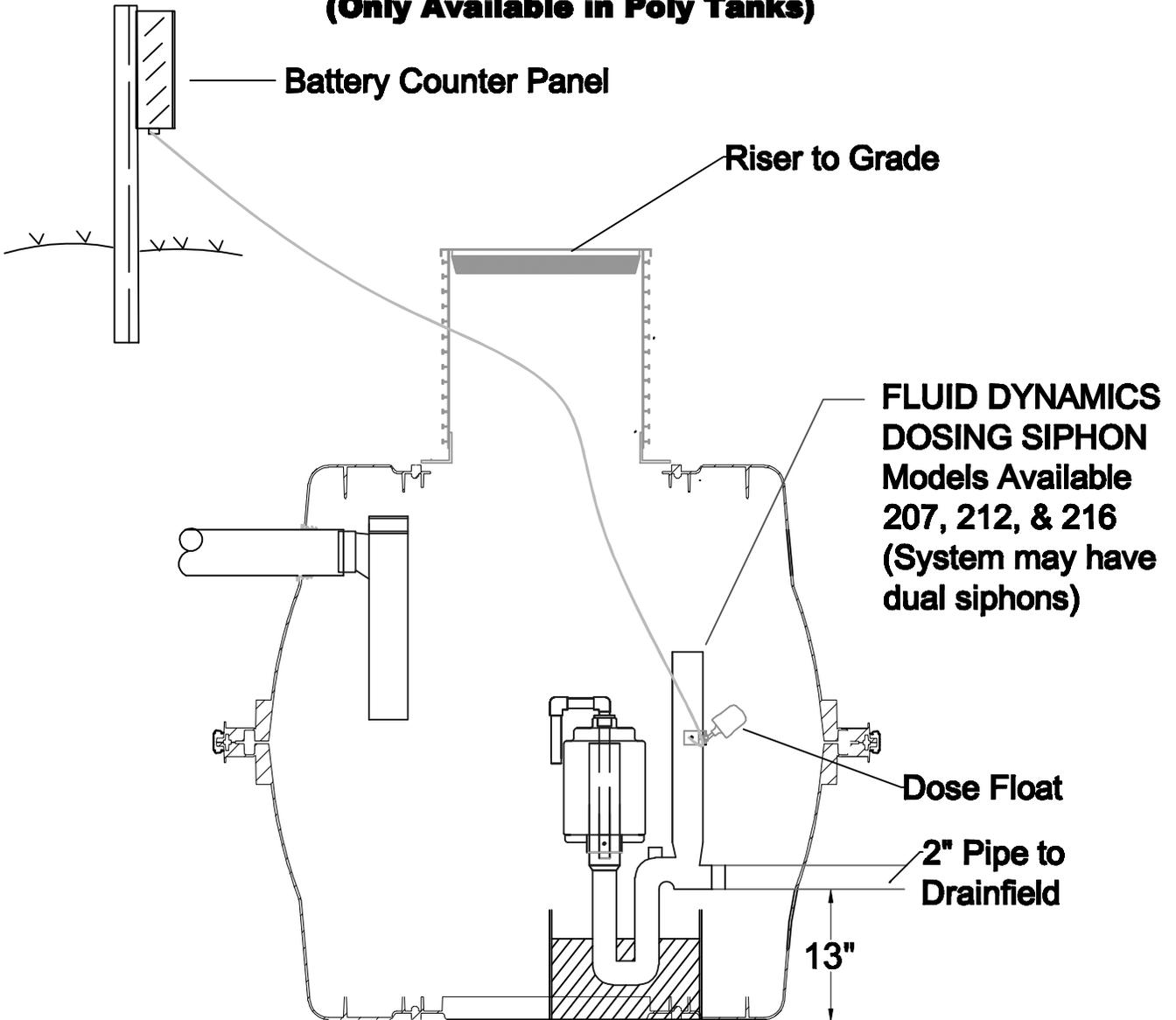
VALLEY PRECAST, Inc.
Buena Vista, Colorado

Phone: 719-395-6764
Fax: 719-395-3727
Website: www.valleyprecast.com
Email: frontdesk@valleyprecast.com

200 Series Fluid Dynamic Dosing Siphon

Item #
207, 212, 216

(Only Available in Poly Tanks)



Dosing Information

Model 207	7" Dose - 95 Gallons
Model 212	12" Dose - 162 Gallons
Model 216	16" Dose - 216 Gallons

- Valley Precast, Inc. only offers in poly tanks
- Counter required by State Reg
- For smaller doses

FLUID DYNAMIC SIPHONS, INC. **SIPHONS**

VALLEY PRECAST, Inc.
Buena Vista, Colorado

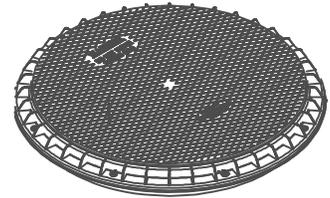
Phone: 719-395-6764
Fax: 719-395-3727
Website: www.valleyprecast.com
Email: frontdesk@valleyprecast.com

Double Walled PVC Riser & Lid Options

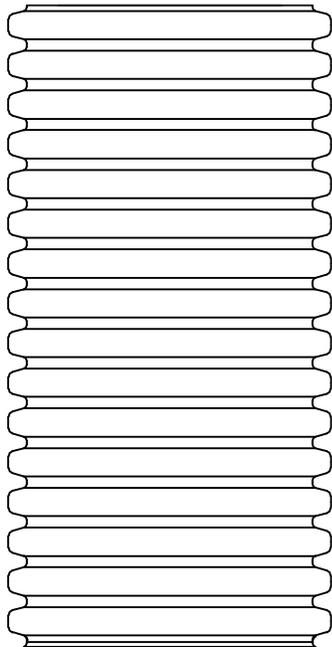
Poly Lid

(Static load tested to 5000 lbs)

- Skid resistance surface
- Available in green
- Highest level of UV Protection included
- Includes a foam gasket for airtight and watertight applications
- Includes square drive screws to discourage unauthorized entry
- Insulation panels achieve R-10 insulation rating



2" of Insulation
Standard

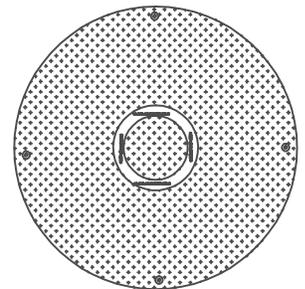


Orenco ® DuraFiber™ Access Lids (FLD)

Not recommended for vehicular traffic

24" and 30" Diameters

- Solid, resin-infused fiberglass construction
- 20,000-lb breaking strength
- Standard green or brown colors
- Available with or without urethane lid gasket
- Available with carbon filtration
- 4 stainless steel flathead socket cap screws & hex key wrench
- Insulated lids available - 2" or 4"



Double Walled PVC Riser

- Available in 24" and 30" Diameter
- Cut to length
- Sold in +/- 2" increments
- Must be cut between ribs



Water &
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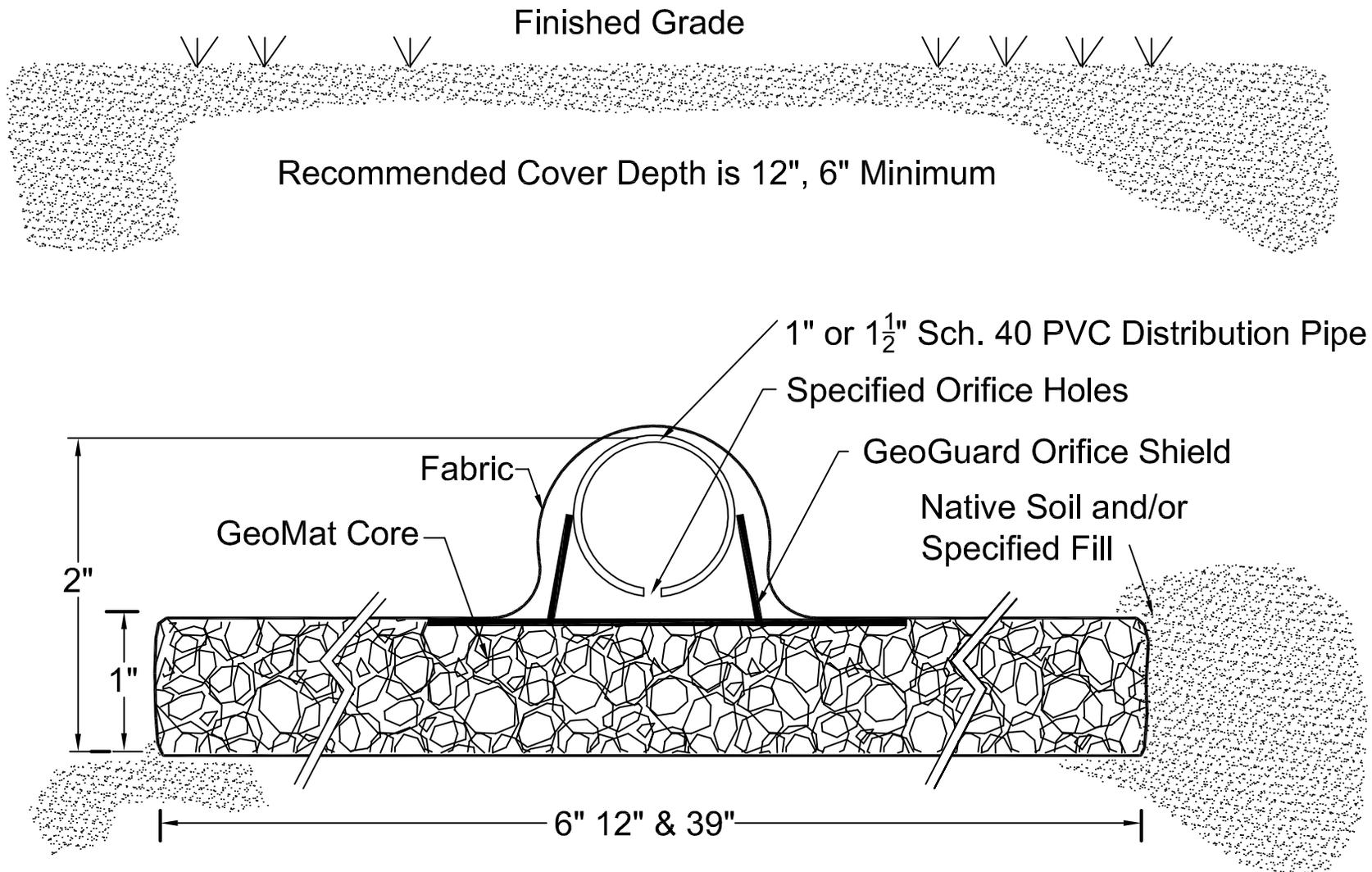
(719) 395-6764

Fax: (719) 395-3727

Website: www.valleyprecast.com

Email: frontdesk@valleyprecast.com

28005 Co. Rd. 317
P.O. Box 925
Buena Vista, CO 81211



GEOMAT LEACHING SYSTEM
Cross Section
- Not to Scale -

Copyright 2010 GEOMATRIX SYSTEMS, LLC
 manufactured under one or more of the
 following US patents; 7,374,670; 7,165,390.
 Other US and foreign patents pending.

GEOMAT LEACHING SYSTEM			
Cross Section			
Geomatrix Systems, LLC., Old Saybrook, CT			
860-510-0730			
SCALE	NONE	REV.	A
DATE	7/2/2011	ACAD NO.	GEOMAT_XSECT.DWG
DRAWN BY:	ERP	SHEET	I OF I

NOTE: Lateral spacing as required

Item#
SEK-

Orenco® Flushing Assemblies



Flushing Assemblies

Orenco® flushing assemblies provide easy access for lateral maintenance. Flushing assembly kits include a PVC sweep with ball valve and a polyethylene valve box enclosure.

Orenco® flushing assemblies are available in the following sizes:

- 1" diameter
- 1.25" diameter
- 1.5" diameter
- 2" diameter



Valve Boxes

Orenco® valve boxes are used to provide access to flushing assemblies. Constructed of polyethylene.

Valve Box, 7-in. diameter round enclosure

Note: Kits include VB7 valve box enclosure.



An Employee Owned Company

Office Locations: Denver (HQ), Parker, Colorado Springs, Fort Collins, Glenwood Springs, and Summit County, Colorado

September 9, 2020

Doug Hayes
7444 Old Mill Trail
Boulder, Colorado 80301
hayesdp@gmail.com

Project No. 20-7-466

Subject: Geologic Site Assessment for a Proposed Cabin on Lot 89, Marble Ski Area,
Filing 3, TBD County Road 3, Gunnison County, Colorado

Dear Mr. Hayes:

As requested, we have performed a geologic site assessment for the proposed cabin to assess if there are geologic conditions that could present constraints or risks to the proposed construction. A field reconnaissance of the project site was made on September 1, 2020 to observe the site geology. In addition, we reviewed published regional geologic studies, looked at aerial photographs and reviewed our previous work in the area. Based on this information, an assessment of the potential influence of the geology on the proposed construction was made. This report summarizes our findings and presents our conclusions and recommendations.

PROPOSED DEVELOPMENT

It is our understanding that you plan to build a cabin on the existing hillside cut and fill bench at the end of the existing driveway on Lot 89. At the time of this study architectural plans for the cabin were not available. Since the cabin will be located on the existing hillside bench, we expect that little additional site grading will be needed for the building site preparation. Water will be obtained from an onsite well.

SITE CONDITIONS

Lots 89 is on the northern Crystal River valley side about one mile downstream to the west of Marble. The lot is on the lower part of a steep, south facing hillside to the north of the Marble Landing Strip, see Figure 1. The average slope of the hillside is about 40 percent but it is broken into several less steeply sloping benches. Vegetation on the hillside is a conifer forest with brush and some aspen trees. A driveway from Miners Camp Road to the proposed cabin site was constructed previously and a cut and fill bench that should be large enough to accommodate the cabin was present at the end of the driveway. The cut and fill slopes along the driveway and at the proposed cabin site appear stable and to have performed satisfactorily since they were built.

GEOLOGIC SETTING

The main geologic features in the project area are shown on Figure 1. This map is based on our field review for this and other projects in the area and is a modification of published regional maps by Gaskill and Godwin (1966), Rogers and Rold (1972) and Wright Water Engineers (1996).

Formation Rock: The hillside at the project site is on the northern limb of a northwest-trending syncline. The syncline is the northwestern extension of the Treasure Mountain dome that is located about 5 miles to the southeast of the project site (Gaskill and Godwin, 1996). Bedding in the sedimentary rock in the area strikes to the northwest and dips between 15 and 30 degrees to the southwest. The near surface formation rock in the area are the late Cretaceous-age Mesaverde Formation (Kmv) and upper part of the Mancos Shale (Kmu). These sedimentary rocks have been intruded by an Eocene and younger quartz monzonite porphyry sills and laccoliths. The Mesaverde Formation is made up of interbedded sandstone, shale, carbonaceous shale and local coal beds. The upper part of the Mancos Shale is a dark-gray, silty to clayey shale with thick zones of sandy shale and siltstone and some lenticular sandstone beds.

Geologically Young Faults: Geologically young faults are not located in the project vicinity. The closest geologically young faults, that may be capable of producing large earthquakes, are in the southern section of the Sawatch fault zone in the Rio Grande Rift about 53 miles to the southeast, Fault Zone Q56b on Figure 2.

Landslides: Landslides are common in the Marble area and we have identified three relative ages of landslides based on their surface features. The Q11 landslides are the youngest, the Q12 landslides are of intermediate-age and the Q13 are the oldest. All have been active in post-glacial times and all are younger than about 15,000 years. The hillside at Lot 89 is in the youngest class of landslide (Q11). Previous regional studies have also identified a landslide in this area. The hillside was described as a talus mantled landslide that is probably currently undergoing creep movements (Rogers and Rold, 1972). Wright Water Engineers (1996) described the hillside as a talus covered, slowly moving, deep landslide in the Mesaverde Formation that exhibits the character of a rock glacier (Wright Water Engineers, 1996). Based on our field observations, these previous descriptions of the hillside in the vicinity of Lot 89 seem reasonable.

GEOLOGIC SITE ASSESSMENT

Lot 89 is not in potential rockfall, debris flow or snow avalanche areas. The lot is on a young landslide (Q11) which presents inherent risks that must be accepted if Lot 89 is developed. The proposed cabin could also be subject to moderate levels of earthquake

related ground shaking. These two geologic conditions, their potential risks and mitigations to reduce the potential risks are discussed below.

Potential Landside Movements: The proposed cabin site is located on a young landslide (Q11) that may be-undergoing seasonal creep movements. Although surface features are suggestive of landslide creep, it is not possible to determine if creep movements are actually occurring from surface observations. Deep borings and slope movement monitoring with inclinometers over a period of years would be required to determine if landslide creep is actually occurring at Lot 89. We have monitored landslide creep at other, similar looking, landslides elsewhere in Colorado. These observations have shown that seasonal landslide creep can range from less than one- quarter inch per year to around one inch per year, in the wetter years. Similar levels of landslide creep should be expected at the proposed cabin site unless site specific monitoring shows otherwise. It should be possible to reduce, but not eliminate, the potential for cabin damage with a rigid foundation system and other architectural measures, as discussed in the *Mitigation of Landslide Creep* section of this report.

In addition to potential landslide creep, there is also a potential for a large-scale landslide reactivation during a reasonable exposure time for the cabin. A large scale landslide reactivation should not present a safety risk to the cabin occupants, but a large scale landslide reactivation could result in severe damage and possible loss of the building.

It is not possible to determine the likelihood of a large scale landslide reactivation with a high level of confidence. In our judgment, the probability that a large scale landslide reactivation will occur at the cabin site during the next 50 years is low. Considering the large size of the landside, it will not be feasible to improve landslide stability by engineered methods.

Mitigation of Landslide Creep: It should be feasible to reduce, but not eliminate, damage to the cabin related to moderate levels of landslide creep with special foundation and architectural design measures. The cabin could be founded on a mat, or other rigid foundation system that would allow releveling of the building. A reinforced framing system could be used to resist larger than normal superstructure tilts. Also, flexible utility connections at the building could be used to reduce the potential for line breakage. This is important for potentially hazardous utilities such as gas lines.

Earthquake Considerations: Historic earthquakes within 150 miles of the project site have been moderately strong with magnitudes less than M 5.5 and maximum Modified Mercalli Intensities less than VII, see Figure 1. Historic ground shaking at the project site does not appear to have exceeded Modified Mercalli Intensity VI (Kirkham and Rogers,

1985). Modified Mercalli Intensity VI ground shaking should be expected during a reasonable exposure time for the proposed cabin, but the probability of stronger ground shaking is low. Intensity VI ground shaking is felt by most people and causes general alarm, but results in negligible damage to structures of good design and construction. The cabin should be designed to withstand moderately strong ground shaking with little or no damage and not to collapse under stronger ground shaking. The U. S. Geological Survey 2014 National Seismic Hazard Map indicates that a peak ground acceleration of 0.07g has a 10% exceedance probability for a 50 year exposure time at the project site (Frankel and Others, 2014). This corresponds to a statistical recurrence time of 475 years. The region is in the 2018 Uniform Building Code, Seismic Risk Zone 1. Based on our current understanding of the earthquake potential in this part of Colorado we see no reason to increase the previously accepted seismic risk zone for the region.

Limitations: This study was conducted according to generally accepted engineering geology principles and practices in this area, at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based on our field observations, aerial photograph interpretation, the proposed construction and our experience in the area. This report has been prepared exclusively for our client and is an evaluation of the potential risks associated with the geology on the proposed construction. We are not responsible for technical interpretations by others of our information. A building specific geotechnical engineering study should be performed for the cabin when grading plans and foundation bearing elevations are available.

If you have questions or if we may be of further assistance, please let us know.

Respectfully Submitted,
Kumar & Associates, Inc.

Robert L. Duran, P.E.

Reviewed by:



A handwritten signature in black ink that reads "Daniel E. Hardin".

Daniel E. Hardin, P.E.

RLD/kac

Attachments Figure 1 - Project Area Geology Map
Figure 2 - Geologically Young Faults and Larger Historic Earthquakes

References:

Gaskill, D. L. and Godwin, L. H., 1966, *Geology of the Marble Quadrangle, Gunnison and Pitkin Counties, Colorado*: U.S. Geological Survey Map GQ-512.

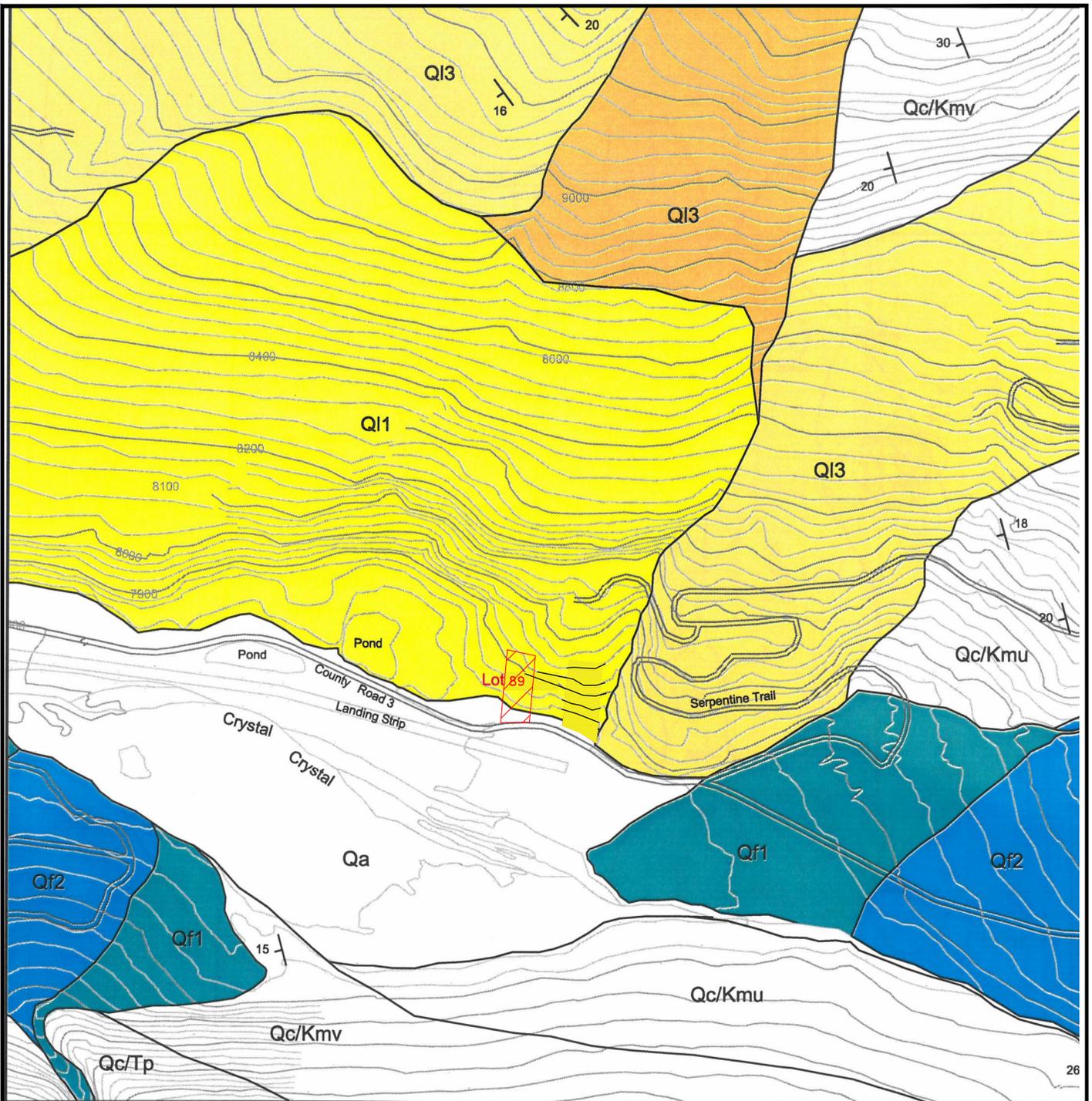
Frankel, A. D. and Others, 2014, *Documentation For the 2002 Update of the National Seismic Hazard Maps*: U.S. Geological Survey Open File Report 2014-1091.

Kirkham, R. M. and Rogers, W. P., 1985, *Colorado Earthquake Data and Interpretations 1867 to 1985*: Colorado Geological Survey Bulletin 46.

Rogers, W. P. and Rold, J. W., 1972, *Engineering Geology Factors of the Marble Area, Gunnison County, Colorado*: Colorado Geological Survey Miscellaneous Publication No. 8.

Widmann B. L. and Others, 1998, *Preliminary Quaternary Fault and Fold Map and Data Base a/Colorado*: Colorado Geological Survey Open File Report 98-8.

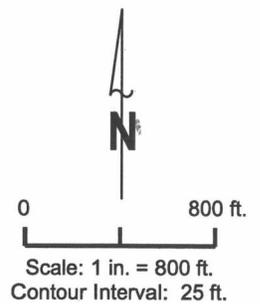
Wright Water Engineers, 1996, *Geologic and Hydrologic Factors Governing Impacts of Development on the Crystal River Near Marble, Gunnison County, Colorado*: Prepared for Gunnison County.

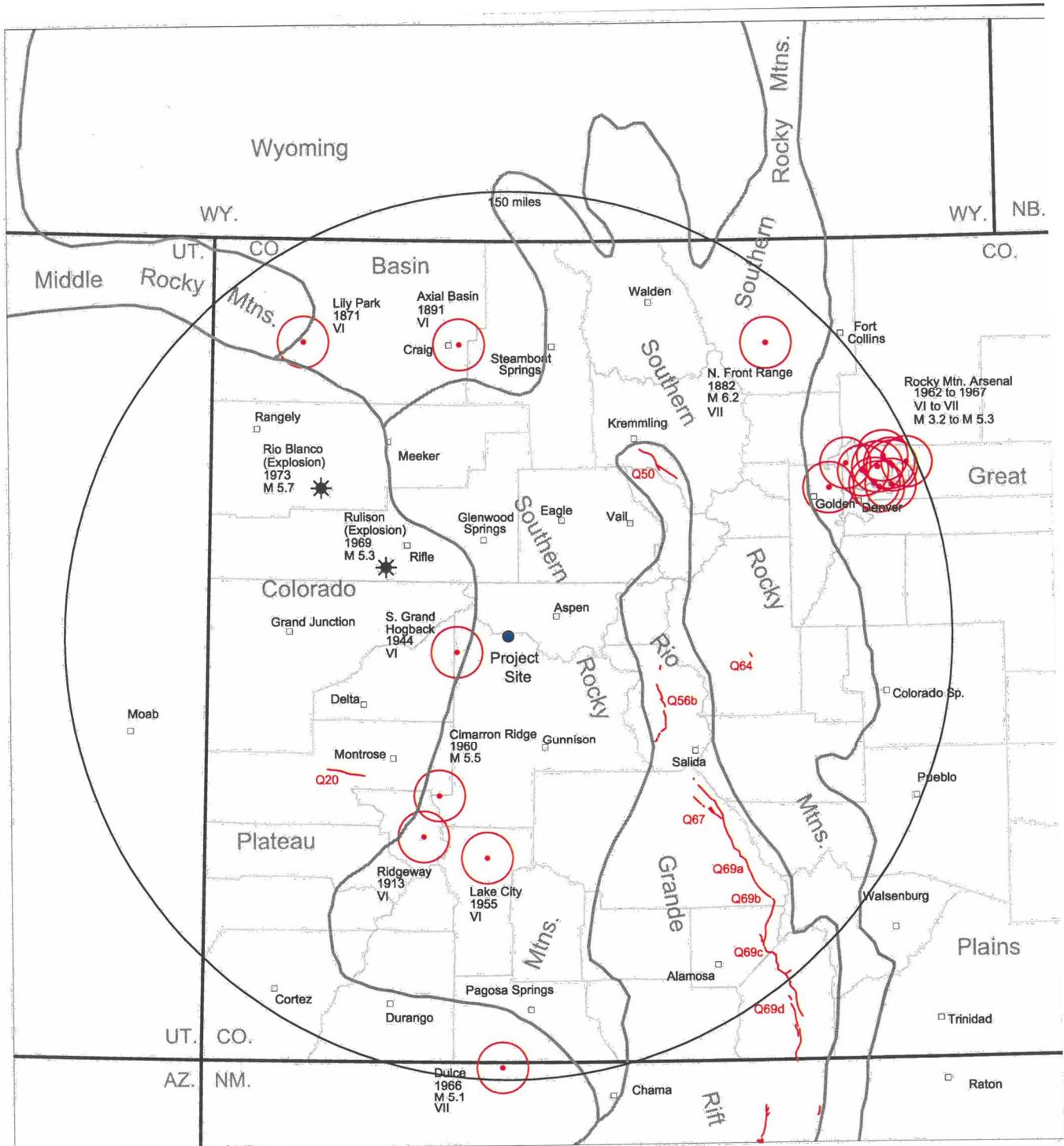


Explanation:

- Qc **Colluvium**
- Qa **Post-Glacial Alluvium**
- Qf1 **Active Alluvial Fan Areas**
- Qf2 **Dormant Alluvial Fan Areas**
- QI1 **Youngest Landslides**
- QI2 **Intermediate-Age Landslides**
- QI3 **Oldest Landslides**
- Tp **Quartz Monzonite Porphyry**
- Kmv **Mesaverde Formation**
- Kmu **Upper Mancos Shale**

- Contact:**
Approximate boundary of map units.
- Strike and Dip:**
Strike and dip of bedding in degrees.



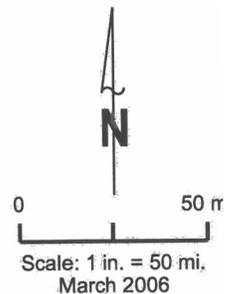


Explanation:

-  **Post-Glacial Faults:**
Fault younger than about 15,000 years.
-  **Larger Historic Earthquakes:**
Earthquakes with maximum intensity greater than VI or magnitude greater than M 5.0 from 1867 to present.
-  **Nuclear Explosion:**
Large underground nuclear explosion for natural gas reservoir enhancement.

M Local, surface wave or body wave magnitude
 VI Modified Mercalli intensity

References:
 Widmann and Others (1998)
 U. S. Geological Survey Earthquake Catalogs



COLORADO GEOLOGICAL SURVEY

1801 Moly Road
Golden, Colorado 80401



Karen Berry
State Geologist

April 2, 2021

Rachel Sabbato
Senior Planner
Gunnison County Community Development
RSabbato@gunnisoncounty.org

Location:
SW NW NE Section 27,
T11S, R88W, 6th P.M.
39.0753 -107.2096

Subject: Hayes OWTS Permit Application Review, Lot 89, Marble Ski Area Filing 3
Project # OWTS-21 -00034; Gunnison County, CO; CGS Unique No. GU-21-0007

Dear Rachel:

Colorado Geological Survey has reviewed the Hayes OWTS permit application referral. I understand the applicant proposes a septic system and, eventually, a cabin on approximately 0.78 acres located on the north side of County Road 3, across from the Marble landing strip. The available referral documents include a Geologic Site Assessment for a Proposed Cabin on Lot 89, Marble Ski Area, Filing 3, TBD County Road 3, Gunnison County, Colorado (Kumar & Associates, Inc. Project No. 20-7-466, September 9, 2020), an Improvement Survey Plat (High Country Engineering, Inc., revised February 18, 2020), a copy of the OWTS Permit Application (signed March 11, 2021), and other documents.

As discussed by Kumar (page 3), “**the proposed cabin site is located on a young landslide that may be undergoing seasonal creep movements.**” It is not possible to determine the probability or predict the magnitude of future landslide activity, and stabilization of a landslide complex this large is impractical.

Avoidance is the preferred mitigation strategy for landslides, and CGS discourages development within identified and potential landslide areas. However, Kumar’s mitigation recommendations (page 3) are valid, if the applicant is willing to accept, and fully disclose to any future purchaser, the inherent risk of building on or below a potentially active, creeping landslide. The applicant and future owners should be aware that seismic activity or an exceptionally heavy or prolonged rainfall or snowmelt event could result in destabilization and slope movement of unknown extent and magnitude.

The site is located outside (west) of the Carbonate Creek debris fan, on a mapped talus deposit (cobble- and boulder-size rocks deposited at the base of a slope). CGS agrees with Kumar that the site is not exposed to rockfall, debris flow, or snow avalanche hazards. However, any change in vegetation conditions above the site, such as through wildfire, disease, erosion, or other disturbance, may increase the rockfall and avalanche hazards, and mitigation may then be needed to protect occupants and improvements.

Thank you for the opportunity to review and comment on this project. If you have questions or require further review, please call me at (303) 384-2643, or e-mail carlson@mines.edu.

Sincerely,

Jill Carlson, C.E.G.
Engineering Geologist

A handwritten signature in black ink, appearing to read 'Jill Carlson', is written over the typed name and title.

OWTS Site Inspection

Permit #OWTS-21-00034

Date:5-19-2021

Owner: Douglas Hayes

Installer: Shane Edmonds

Site Address: 60 Miners Camp Road

Legal Description of Parcel: LOT 89 MARBLE SKI AREA 3 B681 P299

- Lot corners staked and labeled, or defined if parcel is large
- Location of proposed structure staked and labeled
- Proposed system components staked and labeled (tank, STA, etc.)
- Well and/or other potable water sources staked and labeled
- Other pertinent physical features staked and labeled
- Site conditions concur with the findings of the Site and Soil Evaluation
- Site adequate as are required by LUR & OWTS Regs
 - Flood hazards (check for floodplain if not mapped)
 - Ground slope in excess of twenty percent requires engineer
 - N/A Probability of high groundwater or shallow bedrock in area
 - Geologic hazards (avalanche, rockfall, soil creep, etc.)
 - Water quality--check for setbacks to water bodies including wetlands, ponds, irrigation ditches, gulches, etc.
 - Check for visibility on ridgelines from County Roads
- Proposed use of site verified-Residential, Commercial, Agricultural, etc.
- Other water sources verified-walking the site within 200' of the proposed system
- Pertinent physical and environmental features verified

Additional Comments:

Inspector and findings: Charlie Dominguez

Marked tank location is 10.5" feet from the marked property line

Marked tank is 97" feet from the marked well location.

Marked STA east edge is 13' feet from the marked property line.

Marked west edge of the STA is visibly more than 10' feet from the property line.

DRAFT-ENVIRONMENTAL HEALTH BOARD VARIANCE REQUEST ACTION

APPLICANT: Douglas Hayes

DATE: September 9, 2021

SITE LOCATION: 60 Miners Camp Road; Lot 89 Marble Ski Area Sub, Filing 3

ACTION: Request for a variance to the Gunnison County OWTS Regulations for an OWTS on a parcel less than one-acre

PREPARED BY: Crystal Lambert, Building and Environmental Health Official

PROPOSED PROJECT:

The applicant is requesting a variance to the Gunnison County OWTS Regulations for an OWTS on a parcel less than one acre to serve a future residence. The parcel is currently vacant.

GUNNISON COUNTY ENVIRONMENTAL HEALTH OFFICE ACTION:

The application and proposed design plans have been reviewed by the Environmental Health Office for compliance with the OWTS Regulations and the land use requirements of the County. The proposed septic design meets the design criteria of the Gunnison County OWTS Regulations and the minimum horizontal distance requirements from water features, pertinent physical features and property lines are met.

The OWTS application was denied by the Environmental Health Office because *Section 3.A.9. of the Gunnison County OWTS Regulations* states that an OWTS shall not be permitted to be installed on a parcel of land less than once acre in size.

APPLICANT'S REQUEST FOR A VARIANCE:

A request for a Public Hearing with the Environmental Health Board for the consideration of a variance to *Section 3.A.9 of the Gunnison County OWTS Regulations* has been received and was prepared by the applicant's system designer, Carla Ostberg of CBO, Inc.

PUBLIC HEARING:

On September 9, 2021, the Gunnison County Environmental Health Board conducted a Public Hearing on this request for a variance.

FINDINGS:

Based on a review of all the information included with the OWTS application, the request for a variance, and staff reports for this project and consideration of any and all testimony and public input received relative to this application, the Gunnison County Environmental Health Board finds that:

1. Action on this request for a variance from the *Gunnison County OWTS Regulations* is property-specific and limited to the circumstances unique to this application.
2. The applicant has demonstrated that the requested variance from the *Gunnison County OWTS Regulations* is warranted by unique and existing site-specific configuration and site size that make compliance with the Regulations technically infeasible.
3. The applicant has provided justification through specific conditions that exist which support a finding that approval of the requested variance will result in no greater risk than that associated with compliance with the requirements of the *Gunnison County OWTS Regulations*.
4. The applicant has demonstrated that approval of the requested variance will not be in violation of any minimum standards established in any other applicable federal or state rule or regulation.
5. The applicant has demonstrated that the proposed OWTS will not be a nuisance or injurious to public health, safety or welfare. The proposed development meets minimum horizontal distance requirements from water features, pertinent physical features and property lines.
6. The applicant has demonstrated that no substantial injury will result from the granting of the requested variance.
7. This review and decision incorporates, but is not limited to, all the documentation submitted to the County and included within the Department file relative to this application; including all exhibits, references and documents.

DECISION:

The Gunnison County Environmental Health Board, having reviewed the proposed application and supporting documentation, site observations and public testimony does approve the requested variance to Section 3.A.9 of the *Gunnison County OWTS Regulations* for Douglas Hayes at his parcel, 60 Miners Camp Road, Lot 89, Marble Ski Area Filing 3, under OWTS application 21-00034, with the following conditions:

1. The OWTS shall be designed and installed in accordance with the *Gunnison County OWTS Regulations* and the *Gunnison County Land Use Resolution*,

including but not limited to setback requirements, design standards, requirements for system components and general technical standards.

2. This approval is founded on each individual requirement. Should the applicant successfully challenge any such finding or requirement, this approval is null and void.
3. This permit may be revoked or suspended if Gunnison County determines that any material fact set forth herein or represented by the applicant was false or misleading, or that the applicant failed to disclose facts necessary to make any such fact not misleading.
4. Approval of this use is based upon the facts presented and implies no approval of similar use in the same or different location and/or with different impacts on the environment and community. Any such future application shall be reviewed and evaluated, subject to its compliance with current regulations, and its impact to the County.