



Griffith Environmental Consulting Inc.
5089 Hedges Drive
Helena, MT 59602
406-458-5720
406-459-4830 (cell)
email: egriffithgec@gmail.com

20 May 2020

Broadwater County Commissioners, Attn: Ms. Laura Obert
Broadwater County Commission
515 Broadway
Townsend, MT 59694

RE: Work Plan for Contaminated Soil Removal at the Former Townsend Star Location Adjacent to the Former Grover's Exxon Site, 417 Broadway Townsend, MT; Facility # 04-07957, Release #s 358 and 1632

Dear Ms. Obert and Fellow Commissioners:

Introduction

After nearly 30 years of ground-water monitoring, two soil removal efforts, and an investigation by a national environmental company, the decision has finally been made to remove the contaminated soil from under the old Townsend Star building. The many years of monitoring have confirmed that the residual soil contaminated by diesel and gasoline is contributing to ground-water contamination both on the site proper and off-site across Oak Street on the health center property.

Even though the many years of monitoring have shown a decline in the concentrations of gasoline and diesel HCs, the threshold levels for release closure cannot be met, in my opinion, without removal of the contaminated soil under the old Townsend Star building. To achieve this cleanup, the planned work will proceed in two stages: removal of the concrete structure including the buried wall and wall footing and floating slab first, and then excavating and stockpiling off-site a considerable amount of clean overburden to access and removing the contaminated soil horizon underneath.

The excavated soil is to be land-farmed at a DEQ approved and permitted site owned by Broadwater County which is located about 1.5 miles north of the site across Canton Lane from the Canton Lane baseball field. Broadwater County will manage the land farm operation and till the soil as needed to achieve total remediation.

Site Status and Extent of Contamination

With soil boring data from the 2017 investigation by Weston showing soil contamination north of MW-11 and the ground-water flow direction to the north toward the Missouri River and Canyon Ferry Reservoir, it is very likely that there will be contaminated soil in the alley ROW under the utilities located there; the municipal sewer and the propane gas main. The soil sample I collected in January 2020 between MW-11 and the alley clearly showed that the contaminated horizon started at 9 feet below the ground surface. Obviously, since the excavation effort will not be able to address any contamination under these

utility lines, the excavation should try to get as close as safe conditions allow and no closer to access the contaminated horizon. My experience from the two previous soil removal efforts in 1996 and 2003 indicate however, that the gravel and sand will not maintain a stable angle of repose more than 50-60 degrees, especially if saturated.

Excavation Methodology and Approach

Once the concrete walls and floor from the building are removed, overburden should be easily removed by a medium to large sized front-end loader. Use of these mobile units allows for simple excavation and rapid transport of the clean soil to a storage location nearby. If the access ramp becomes too steep or too long for the excavation, or the size of the excavation starts to limit efficient use of a loader, excavation will proceed with the hoe only. Once the furthest extent of the excavation of contaminated soil is reached, backfilling will begin in lifts not to exceed 1 foot. Because of the proximity of the historic hotel to the west, no vibratory compaction will be allowed; compaction must be conducted with a sheepsfoot roller or a comparable unit on the trackhoe so that adequate down pressure can be applied to the backfill material. Since there is no way of knowing exactly how much contaminated soil will be excavated, the upper limit is set at 2000 cubic yards. If excavation where the building was located is short of the maximum, the effort will seek additional contaminated soil in areas outside the 1995-6 and 2003 excavation boundaries.

The first soil to be used for backfill will be the material stored nearby followed by reject from the limestone mine stored on county property about 6 blocks away. The final lift of material will be the choice of Broadwater County and based on what the ultimate use of the area will be in the future.

Prior to start of work every day of the excavation, the gec Inc. engineer or senior scientist on site will hold a "tailgate" meeting for all personnel taking part in the soil removal. Safety concerns from the previous day, if any, will be discussed as will the approach to excavation efficiency, and any issues with soil hauling to the land farm.

Soil Transport and Placement at the Landfarm

Because of the site location and size, it is likely that standard end dumps would be the better choice for hauling the soil. And, these trucks allow the soil to be spread more evenly than a belly dump or side dump trailer. The land farm site will be inspected during the first few truck loads to evaluate soil depth so that recommendations for the tailgate opening can be decided by the operator and the gec on-site engineer.

No truck will leave the excavation site without a thorough inspection to ensure that there are no rocks on the upper rail of the truck box or anywhere else that could fall off and become a hazard to oncoming drivers or create a hazard on the public roads. Further, if traffic conditions require it, traffic control will be instituted to ensure efficient movement of the trucks from the site to the land farm. At a minimum, "trucks entering" and "construction zone" signage will be strategically placed on Broadway (US Highway 12) and Oak Street.

If necessary, one hoe bucket of dry overburden will be placed at the tailgate end of the truck box to act as a block to the saturated material in front to ensure that no liquids will leak from the truck box if loaded with saturated contaminated soil as was the case in 1995.

Excavation Sampling

- Discrete "worst-case" samples will be collected as the excavation proceeds using a Mini-Rae PID to screen the soil. This task is necessary because the primary focus is to acquire samples

that provide baseline samples of the land farm soil so that the best approach to tilling and, if necessary, amendment addition can be made.

- Excavation sidewall and bottom samples will be collected as agreed by the DEQ case manager, the Tetra Tech project manager, and **gec** Inc. All samples collected will be properly placed in glass jars, labeled, chained for analyses, and placed in a cooler with ice for hand delivery to the lab in Helena as set forth in the DEQ approval letter. In addition, five (5) worst case samples for EPH, lead, oxygenates, lead scavengers, and RCRA metals should be collected to confirm that these contaminants are not left to continue contaminating the ground water. These samples will be hand delivered to the lab before the end of business on the day collected.
- The location of all soil samples will be carefully recorded on field notes and the depth of the sample noted as well. The samples will also be differentiated as to whether or not it is a confirmation sample or a worst-case sample as indicated by field screening.
- At no point in the excavation will any person be allowed to enter the excavation to collect soil samples; all samples will be extracted from the trackhoe bucket as the excavation proceeds.

Preparation of Bid Specifications

Integral to the bid specifications is the DEQ unit cost form for estimating soil excavation costs per yard, haul costs, land farm costs, and backfill costs. This form as well as a brief explanation of what is expected from it will be available to all prospective bidders. In addition to this essential item, there will be a map or maps indicating the exact location of the excavation site, the land farm site, county stockpile of reject limestone, and the suggested route to the land farm site. Specific details of the haul route will be finalized among the County commissioners, Tetra Tech, the Sheriff's Office, and **gec** Inc.

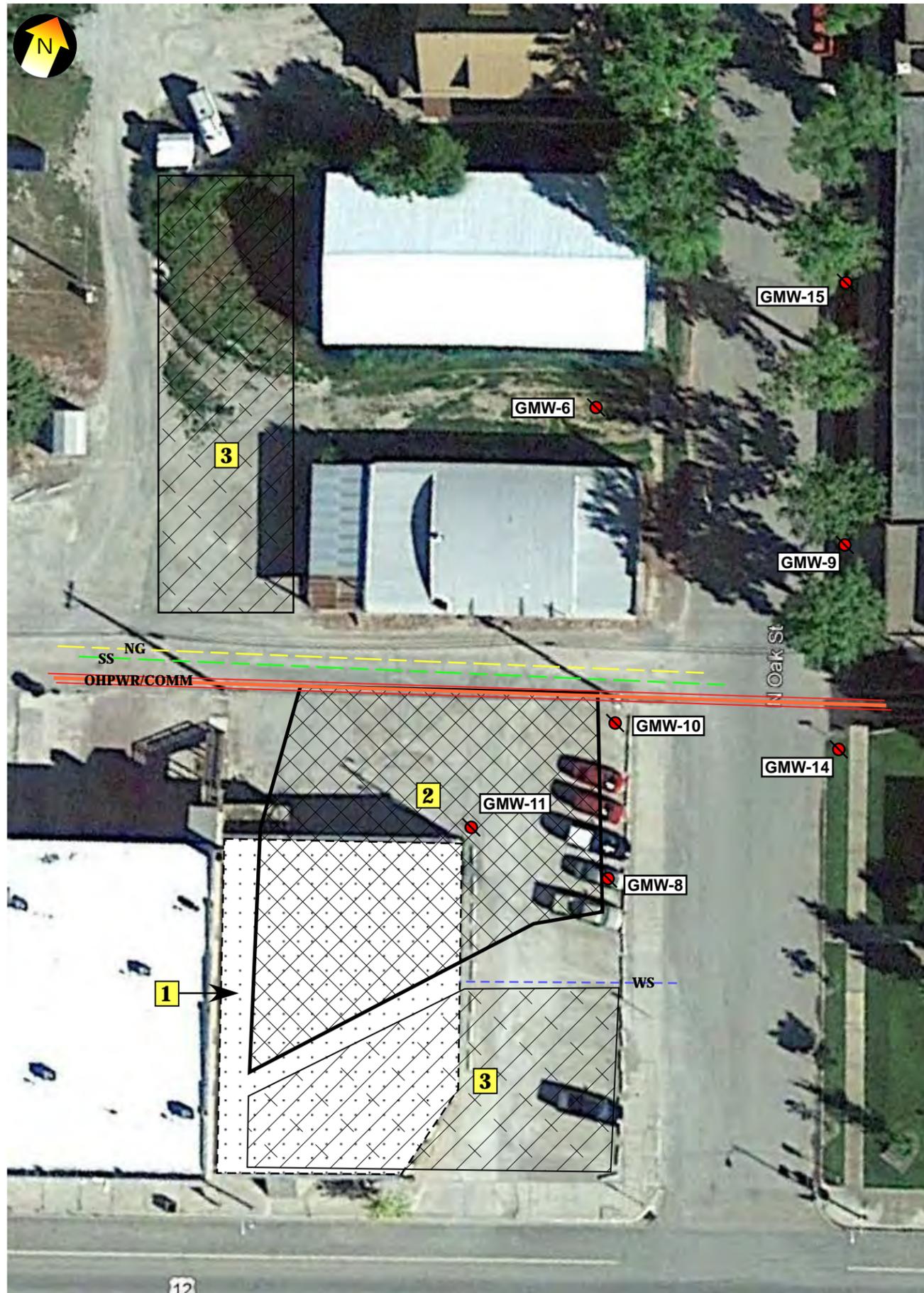
Report

Upon completion of the excavation and receipt of the laboratory results, a report will be completed describing the results of the lab analyses. The report will also include a detailed excavation figure showing all soil sample locations, as well as photos documenting the phases of the soil excavation and land farm conditions.

Respectfully,



Earl F. Griffith PG
Wyoming # 1033



GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY LOCATES AND FIELD VERIFICATION OF THE SAME
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL
3. CONTRACTOR SHALL COORDINATE TRUCK ROUTES WITH CITY OF TOWNSEND AND BE RESPONSIBLE FOR STREET CLEANING ASSOCIATED WITH THE WORK TO THE SATISFACTION OF THE CITY.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PUBLIC SAFETY AND PROTECTION WHILE WORK IS IN PROGRESS AND FOR OPEN EXCAVATION UNTIL WORK IS COMPLETED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE

SHEET NOTES & KEY



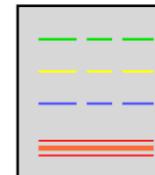
1 EXISTING BUILDING TO BE DEMOLISHED AND REMOVED IN ENTIRETY PRIOR TO THE WORK OF THIS PROJECT COMMENCING, INCLUDING ALL CONCRETE SLAB AND FOUNDATION MATERIALS



2 ESTIMATED LIMITS OF CONTAMINATED SOIL EXCAVATION



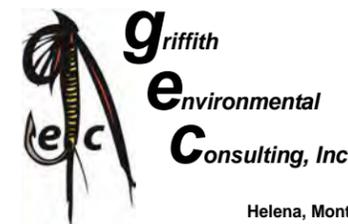
3 STAGING/STORAGE AREA FOR ON SITE NON-CONTAMINATED OVERBURDEN TO BE USED FOR PARTIAL BACKFILL MATERIAL



SANITARY SEWER
 NATURAL GAS
 WATER SUPPLY (OFF AT CURB STOP - VERIFY)
 OVERHEAD ELECTRICAL & COMMUNICATIONS



GMW- # GROUND WATER MONITORING WELL LOCATIONS
 AVERAGE DEPTH TO GROUND WATER 8-10' (SEASONAL VARIATIONS)



Helena, Montana
 406-459-4830

FORMER
GROVER'S EXXON
 417 Broadway Street
 Townsend, Montana

Facility ID # 04-07957
 Release # 1632

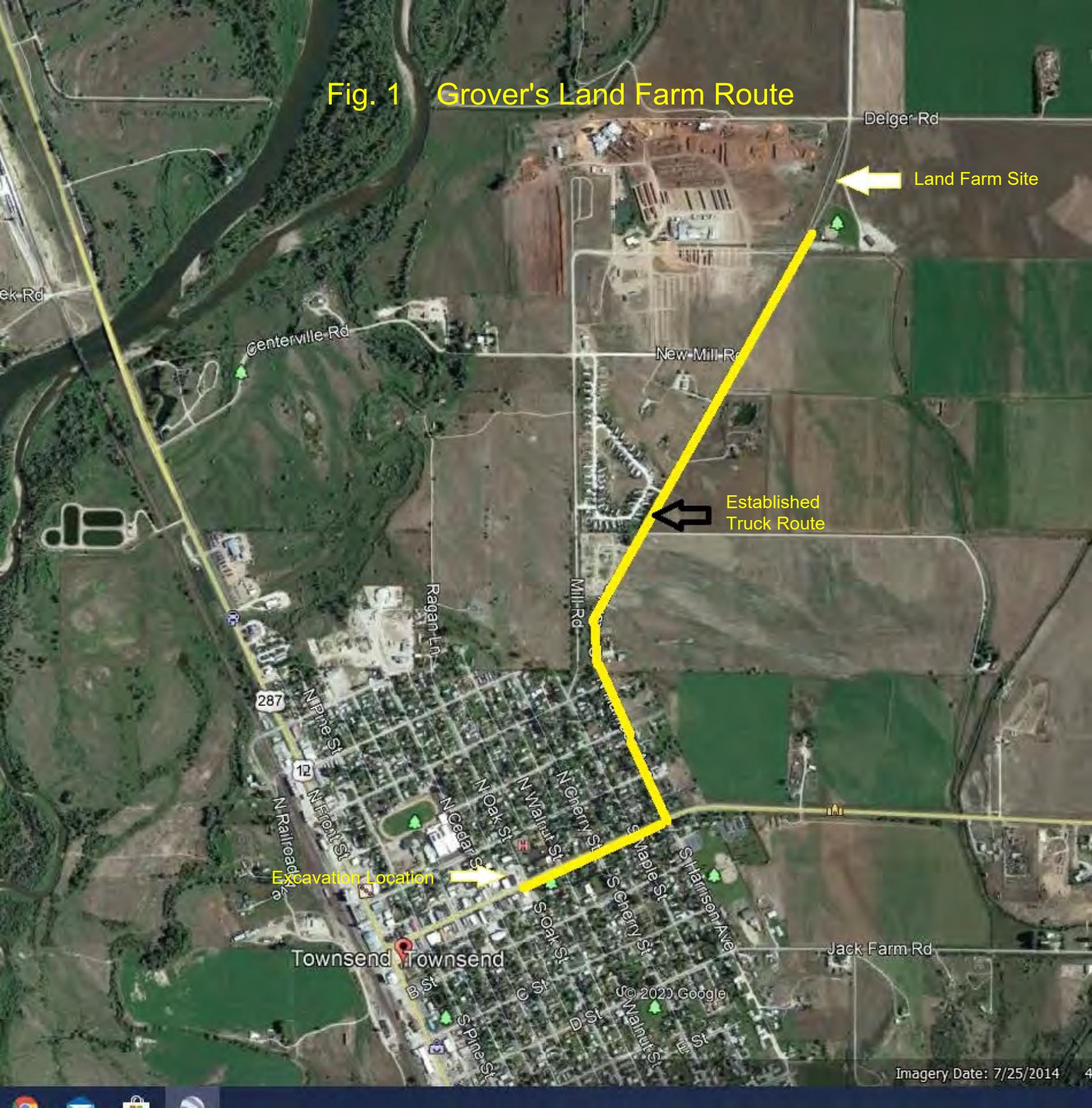
Drawing Date: 2/13/2021

Image Source: May 2018

CONTAMINATED SOIL
 EXCAVATION and
 REMOVAL SITE PLAN

GT - S1.0

Fig. 1 Grover's Land Farm Route



Delger Rd

Land Farm Site

Established
Truck Route

Centerville Rd

New Mill Rd

Ragan Ln

Mill Rd

287

12

Excavation Location

Townsend Townsend

Jack Farm Rd

© 2020 Google

Imagery Date: 7/25/2014



Photo 1. "Native soil " that was encountered during the 2003 soil removal. The zone of contaminated soil is easily determined by the color change and obvious odor of old fuel.



Photo 2. Pit run from the 2003 soil removal showing both the clean material above ~9 feet and the recontaminated material from 9 feet down. Slot trench from 28 Jan 2020.



Photo 3. View west across Oak Street showing the powerline location and that of the gas line (yellow stripe) in the middle of the photo. The sanitary sewer line is also buried in the alley.



Photo 4. View to the NNE near well MW-11 showing the low hanging communication cables on the power poles.