

Appeal of the Rejection of a Site Plan Due to the lack of a Geohazard Report or a Geohazard Waiver under Section 7.5.302.C for a Single Family Residence.

Location: 506 Hawthorne Place, Colorado Springs, Colorado, 80906. LOT 9 BLK G RESUB OF BLKS B, D & E FRANTZHURST REFIL - NEW PARCEL NUMBER FOR 2013 IS 74254-06-012. Tax Schedule # 7425406012. City File# AR NV 19-00783.

Title: Appealed under City Code Section 7.5.904.A.2.B, Rejection of Site Plan Submittal

Appellant: Michael Lowery, owner/developer, owner of adjoining property at 121 Alsace Way, owner of 506 Hawthorne since 2000, property taxes paid since that time. Intends to build a modest single-family residence (2200 SF) in a neighborhood of similar residences. It is an infill and the lot is zoned R1-6.

Timeliness: The Appellant has been involved with City Planning, City Engineering, and two leading geo-engineering firms (RMG and Entech) for more than a month regarding the necessity to submit a Geohazard Report on the site. An email received by the Applicant on Monday, June 22 from Lonna Thelen, Senior Project Planner, rejected the Applicant's site plan.

Summary: The Colorado Springs City Council recently passed a Landslide Ordinance, and City Engineering, along with private-sector engineers, have implemented a methodology and required a Geohazard Report (GHR) or a Geohazard Waiver in a Landslide Susceptibility Zone, (LSZ) which is essentially every construction project with a foundation west of I-25. The Applicant is in that Zone.

This Appeal will discuss problems with the LSZ theory, problems with the application of the LSZ methodology to the geohazard requirements, problems obtaining the drilling samples required in the geohazard analysis, flaws in the geohazard analysis itself, flaws in the geohazard waiver process, and the exorbitant costs it will add to the Appellant's project and most future construction projects west of I-25. A reasonable person will conclude that the geohazard requirement is applicable for the houses that slid down the hill some years ago in southwest Colorado Spring but unreasonable for the Applicant's project, and likely the majority of ADU's and new single family residences west of I-25. The terms "West of I-25" and "Landslide Zone" are used interchangeably; the professional community says the geohazard report applies only to the LSZ map whereas City Planning says "West of I-25."

Hearing: The Appellant will be available by phone, Skype, or Zoom for the hearing.

Background: The Appellant bought the vacant lot at 506 Hawthorne in 1991. Some years later he attached it to his current residence at 121 Alsace Way; the lot was unbuildable under the fire code for 7 years until the water lines were upgraded and a fire hydrant installed nearby. The lot is triangular and not easily accessed from Hawthorne Place. (Figure 3) Water and gas have not been accessible until recently when utilities were extended on Hawthorne Place. The sewer line must cross the Appellant's lot at 121 Alsace Way. The Appellant filed for and was granted a variance to build the house higher on the lot to get the proper slope for sewer drainage. He filed and received approval for a Utilities site plan. He was directed back through the Pre-Approval Application Process and is now held up with the requirement for a geohazard report. In total, the

Appellant has been held up by one code or another for the past 19 years, pushing the Appellant into ever more expensive code requirements.

Discovery:

1. The Landscape Susceptibility Zone (LSZ)

The LSZ map was published in 2003 by the Colorado Geographical Survey. According to a paper published by the Survey: “These areas were delineated using historic landslide data, geomorphic features, bedrock geology as shown in the basic geologic mapping, slope, and aspect. Landslide-prone areas exist on slopes with grades greater than 12%, underlain by weak, clay-bearing formations such as the Cretaceous Pierre Shale. *The main purpose of the landslide susceptibility map is disclosure.*” (emphasis by Appellant) (1)

A definitive paper on the Southwest Colorado Springs LSZ states:

“In 2003 the CGS published Map Series 42: “Potential Areas of Landslide Susceptibility in Colorado Springs, El Paso County, Colorado”. These maps are based on site conditions that are similar to areas where landslides have previously occurred and are intended to show areas that have geologic, topographic, and geomorphic characteristics that indicate potential landslide susceptibility. *However, no levels of hazard assessment such as high, medium, or low were made within the susceptibility zone.* The outer boundary of this susceptibility zone closely follows the outermost boundary of inventoried landslides.” (page 17) The paper goes on to note in 3.6 Slope Stability Analyses: “The selection of slope stability analysis methods is frequently a difficult task.” (page 36) Page 3 states that there are 3 Tiers of landslide susceptibility, showing a map of Tier 1 but no other tiers. (emphasis by the Appellant)

The discussion of the analysis of slope stability (Section 3.6) is relevant in that several different methodologies are proposed, none of which can be deemed superior, and in every case, the primary variable is water content. Little can be known by the outside observer about the process because it is “black box” and only the formulas can be evaluated, but what is known for certain is that it is impossible to get a geotechnical expert out of his/her office to visit a site and walk the neighborhood. The Appellant can show that in the 100-year flood event in 2015, there was no soil instability on his project, and protected by a City street. (Figure 1)

The study consisted of “230 boreholes” presumably to find bedrock, and “historic landslides.” *There is no consideration of the many water remediating features including roads, gutters, stormwater drainage, foundations on the current slope, retaining walls on the current slope, rooftop channeling of rainwater into available channels, number of successful, non-landslided residences on the current slope, improvements to prevent landslides and analysis of the current neighborhood.* Thus the LSZ, predicting critical water flow, is a theoretical construct using old maps, disregarding stability added by improvements, to which a complex and unproven theoretical analysis has been applied. (see Section 3.6) Thus, 30%, 50%, 70%, 90% of the landslide risk may have been remediated by water channeling, stabilized by house foundations, stormwater improvements.

Three tiers of hazard are identified in the paper, yet, not very helpfully, they are not shown on the LSZ map and not spelled out in the requirements for a geohazard report. Thus, it can be assumed that the most expensive remediation applies to the least problematic tier. By extending this methodology to *all* projects west of I-25 a lot of additional costs are being incurred for even less theoretical engineering value.

1. The LSZ Geohazard Report/Waiver Process

Under the current permitting process, any site plan west of I-25 is required to submit a geohazard report. The cost of the geohazard report as quoted to the Appellant by leading geo-engineering firm is:

Subsurface Soil Investigation	\$1,465
Geologic Hazard Study	\$2,960
Slope Stability Analysis	\$2,530
Consultation and Professional Engineering/Geologist Services	\$650-\$1,250

Total \$7,206, doesn't include additional consulting for the foundation design.

Applying for a geohazard report Waiver, as noted, requires similar drilling tests, perhaps less so, and according to a second leading geo-engineering firm. Neither firm would discuss a geohazard waiver. The process for a report or waiver review is noted below. It is an additional expense, since it cost nearly the same as a Report, (says Entech) there is no point having that option. (Note 3)

Reasonableness: There is not a circumstance where a professional engineer or City engineer will visit a site and determine that it is obvious that a landslide is not going to occur (such as a road immediately above the site), that no landslides have occurred since the neighborhood was built. Thus every project is mandated the cost and the process in Note 3.

2. Geohazard Testing Accessibility

Figure 3 is a topographical map of the site. Note that there is no driveway to the site, and the geohazard triggers (slopes > 12%) are on the Hawthorne Road embankment, not on the lot proper. Figure 2 is the actual slope.

Proposals from both leading geo-engineering firms state that their drilling rigs are two-wheel drive and thus cannot traverse more than a 15-degree slope. (Note 1,2) They are requiring the Appellant to build a road into the site of fewer than 15 degrees for access, it would also mean that the top 20' of the lot would be inaccessible also. A temporary road into a triangular lot would be an engineering feat unto itself and cross most of the buildable area. (Figure 3) A road into the lot has its own requirements, including a separate permit, inspections, water containment from the downhill slope of Hawthorne, plus having to build the road "from the top-down" and doing a curb cut that may not be in the place where the finished road would be located. The estimated cost about \$12,000. The estimated cost to the Applicant for the geohazard report is between \$18,000 and \$22,000 added to the construction of a modest house in a modest neighborhood. In no sense is that reasonable.

It may be further noted that much of the land west of I-25 is on slopes > 15 degrees, thus the City Council has, with best intentions, passed an Ordinance and City Engineering has developed a requirement for which most geo-engineering firms with their current trucks in the LSZ are unable to comply. There are additional requirements by the firms, such as moving boulders, trees and bulldozing access that may disfigure the site before the house design can be initiated, says RMG. (Add \$10,000) If the site turns out to be unbuildable, or, as more likely, too expensive, the resulting damage to the terrain and water runoff remediation is a concern. The Applicant has in hand a soil test on the same lot done in 1996 that tells us all the data needed for a foundation, but in 2020, technology has “improved” to the point that this survey can no longer be done, says RMG. Doesn’t seem reasonable.

### 3. Practical Geohazard Considerations:

1. Across the west I-25 zone, south of Cheyenne Road, 100+ houses were built from 1945-2010 before the LSZ was regulated recently by Ordinance. Many of them are substandard concrete blocks on simple 4” slab foundations. None of these houses, to the knowledge of the Appelant, (living there since 1981) have been impacted by any landslides or experienced water other than basement issues which can be remediated by french drains.
2. The proposed 506 house location and the entire lot is adjacent and below the road surface of Hawthorne Place. (Figure 3,4) As such the lot and house are perfectly protected from landslides by the Street. Maintenance of the Street and prevention of landslides at the Street are entirely within the purview of the City of Colorado Springs. In the case of a 500 or 1,000-year rain event, perhaps the whole hillside would collapse, but there is nothing that could be done to a foundation or a house that would help if the road collapsed.
3. There is a 100-year old irrigation ditch on the 506 lot, on the top of the slope, that has not filled in because of landslides, unstable or creeping soils. Any reasonable engineer would agree. (Figure 1)
4. The house at 123 Alsace Way is built on the same slope (1947) and has had no soil instability problems. (Figure 1) More than 100 homes nearby can be referenced as being stable in the neighborhood LSZ.
5. There are numerous retaining walls in the adjacent neighborhoods in the LSZ that have held without major issues since their construction more than 70 years ago, they can be readily examined by professional engineers as an effective remediation.
6. A calculation of the homes west of I-25 divided by the number of homes that slid down a hill that were not in a Hillside Zone should be calculated but a rough guess is that it is less than one tenth of one percent if not zero. City Planning would have this number.

#### 4. Offsetting Benefits:

The Geohazard Report testing cost adds a significant cost to infilling in the LSZ and 506 Hawthorne in specific. The permit is estimated to cost \$25,000 including the infrastructure fee, \$7,500 for the geohazard report, estimated \$12,000 for a temporary driveway, if the truck can access the lot, uncertain, so the cost of the permit is estimated \$44,500. If that money is in a mortgage, over 30 years, the cost at 3.8% is roughly \$114,000. That is without the architect (\$25,000) and the PE structural (\$10,000 - \$15,000). Doesn't seem reasonable for a 2200 SF single family residence.

#### Benefits:

506 Hawthorne is an *infill* project, utilizing all existing utilities, roads, and services, include the Appellant will be paying nearly \$10,000 in “infrastructure fees” without requiring any new infrastructure.

The geohazard report cost and foundation design cost are in opposition to other City initiatives, including utilization of existing utilities, fire, police, east-west traffic issues, infrastructure optimization, City Council's desire to reduce the cost of housing, utilization of new District 12 education resources, the upgrading of neighborhoods with modern energy-efficient, radon-remediated and fire-resistant structures. A completed house will bring substantively higher property taxes, a new City Utilities customer, an additional family for the sales tax base, all net positives for the City.

#### 5. Costs of Home Construction vs Inflation

“Residential construction inflation in 2019 was only 3.6%. However, the average inflation for six years from 2013 to 2018 was 5.5%. It peaked at 8% in 2013 but dropped to 4.3% in 2018 and only 3.6% in 2019. Forecast residential inflation for the next three years is level at 3.8%.” (3) Homebuilding costs are rising, on average, more than twice the rate of inflation. Part of this escalation is due to professionals, trades and their associations pushing ever new technology, process, submittals, and inspections through the regulatory process, irregardless of cost, without input from the mortgage-strapped homeowner and renter. Just one instance, the requirement for AFCI circuit breakers has tripled the cost of a residential breaker box. While every improvement is justified as “critical” and “lifesaving” by trade associations and professionals, the end result is unaffordable housing and huge mortgages.

#### Taxpayer Protection:

It can be seen from many pictures of the distressed houses that triggered the Landslide Zone Ordinance that the proposed single-family residence site does not share any features with the numerous houses that were bailed out. There is zero risk of this house sliding precipitously down a hill because there isn't a hill of any consequence. (Figure 3) Four homebuilders that visited the site in January 2020 did not see any issues building on the lot, other than the ones already addressed in the site and utility plans.

6. Additional Waivers in this Appeal:

Two additional Waivers are requested in this Appeal, to avoid process circularity and in consideration of the other difficulties experienced by the Applicant, due to the complexity of the lot.

1. Delayed Foundation Certification

As noted, it will not be able to do an “improved” soil test prior to the design of the foundation and permit process. The Appellant has a soil test by RMG Engineering done in 1996 which describes the soil conditions and remediation efforts in detail. It identifies the soil type which falls within historical soil loads in the table below. The soil has not been disturbed in any way since the test was taken in 1996. There are no issues listed in the soil test which cannot be remedied by a best-practices foundation design by a leading geo-engineering firm.

Typical soil loads are:

Soil Type	Allowable Bearing (lb/ft <sup>2</sup> )	Drainage
BEDROCK	4,000 to 12,000	Poor
GRAVELS	3,000	Good
GRAVELS w/ FINES	3,000	Good
SAND	2,000	Good
SAND W/ FINES	2,000	Good
SILT	1,500	Medium
CLAYS	1,500	Medium
ORGANICS	0 to 400	Poor

The water flow through the area has been identified by the Appellant (he built a french drain at 121 Alsace Way) at 20-40 gallons per day (based on the 2015 event) which should be sufficient (at 50 times that water flow) to develop a drainage plan, such that a standard of reasonableness applies in regard to the water remediation plan.

The Appellant proposes to submit a house design with a robust foundation in the permit process, based on the 1996 soil test, then verify the composition of the soil during the excavation process and submit a revised foundation plan certified by a geo-engineering firm.

## 2. Driveway Waiver:

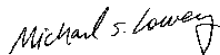
The Appellant requests a driveway approval with a slope over 10 degrees with the proviso that the slope > 10 degrees be heated with electric elements in the area where the slope exceeds 10 degrees in any 5' section, identical to the heated driveway that was allowed for 711 S. Bear Paw Lane, heating to be actuated by an electronic thermostat and relay set to energize by snowfall and temperature, according to best industry practices for driveway heating.

### Conclusion:

The Appellant has shown that a requirement for a geohazard report or waiver for a permit for his project at 506 Hawthorne is unreasonable in all aspects, and asks the City Planning Commission to agree. The other two waivers are required in the construction plan to for reasonable access and a reasonable foundation design.

Everyone understands the City Council made a good-faith effort to impose a regulation that would remedy the permit situation that led to a number of houses sliding down the hill. One could envision a master plan with one report for ten, million-dollar homes on a virgin slope. A \$7,500 fee and drilling access costs on every foundation project west of I-25 is unreasonable, especially in mature neighborhoods where all soil conditions are easily observable and have a historic record through decades of major rainfall events. There is nothing about the proposed house at 506 Hawthorne that in any way warrants a geohazard report.

Respectfully Submitted,



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### Sources

1. David C. Noe, Jonathan L. White, and T.C. Wait. Colorado Geological Survey, "MAPPING AREAS OF LANDSLIDE SUSCEPTIBILITY IN COLORADO SPRINGS, COLORADO" Undated  
<https://www.americangeosciences.org/sites/default/files/Environment-colorado1.pdf>
2. Garrett, Jordan. "GIS-BASED LANDSLIDE SUSCEPTIBILITY ANALYSIS OF SOUTHWESTERN COLORADO SPRINGS, EL PASO COUNTY, COLORADO," undated.

[https://mountainscholar.org/bitstream/handle/11124/79381/Garrett\\_mines\\_0052N\\_10210.pdf](https://mountainscholar.org/bitstream/handle/11124/79381/Garrett_mines_0052N_10210.pdf)

3. Construction Analytics 2020. <https://edzarenski.com/2020/01/28/construction-inflation-2020/>

**Notes:**

**Note 1:** Engineer's access requirements, proposal 6/1/2020: "Ingress and egress to the site for a two-wheel drive, truck mounted drill rig. Access is the responsibility of the client. Access requirements include a 12' wide and 12' high path to the drill site, completely free of trees, scrub oak or stumps, as well as an area of 20' high, 20' diameter zone free of trees, snow, wires and other obstructions at the drill location itself. We can drill on terrain with up to a 15% grade. Removal of obstructions such as fences, boulders or trees must occur before driller arrives on site."

**Note 2:** There are a handful of tracked drilling rigs in Colorado, they are booked far in advance, the additional cost is \$3,500 and it is not known if they can access the lot from Hawthorne.

**Note 3:** "This site does need to comply with 7.4.5 – Geologic Hazard studies because it is west of 1-25. In this case, per 7.4.502.B you are required to submit a geologic hazard study. There is an ability to request an exemption or waiver from the requirement per 7.4.503. The waiver does need to meet 5 criteria and be prepared by a geotechnical engineer. Once you have made a decision of which report you want to submit (a full geologic hazard report or a geologic hazard waiver), you will submit that report and then DRE, City Engineering and Colorado Geologic Survey will review the report. If you do not agree with the decision they you can appeal to a consultant review/analysis panel per 7.4.506.C. You will be responsible for paying the panel for their time during the review of your application. Once their decision is made, if you do not agree with that decision, you can appeal to City Planning Commission."



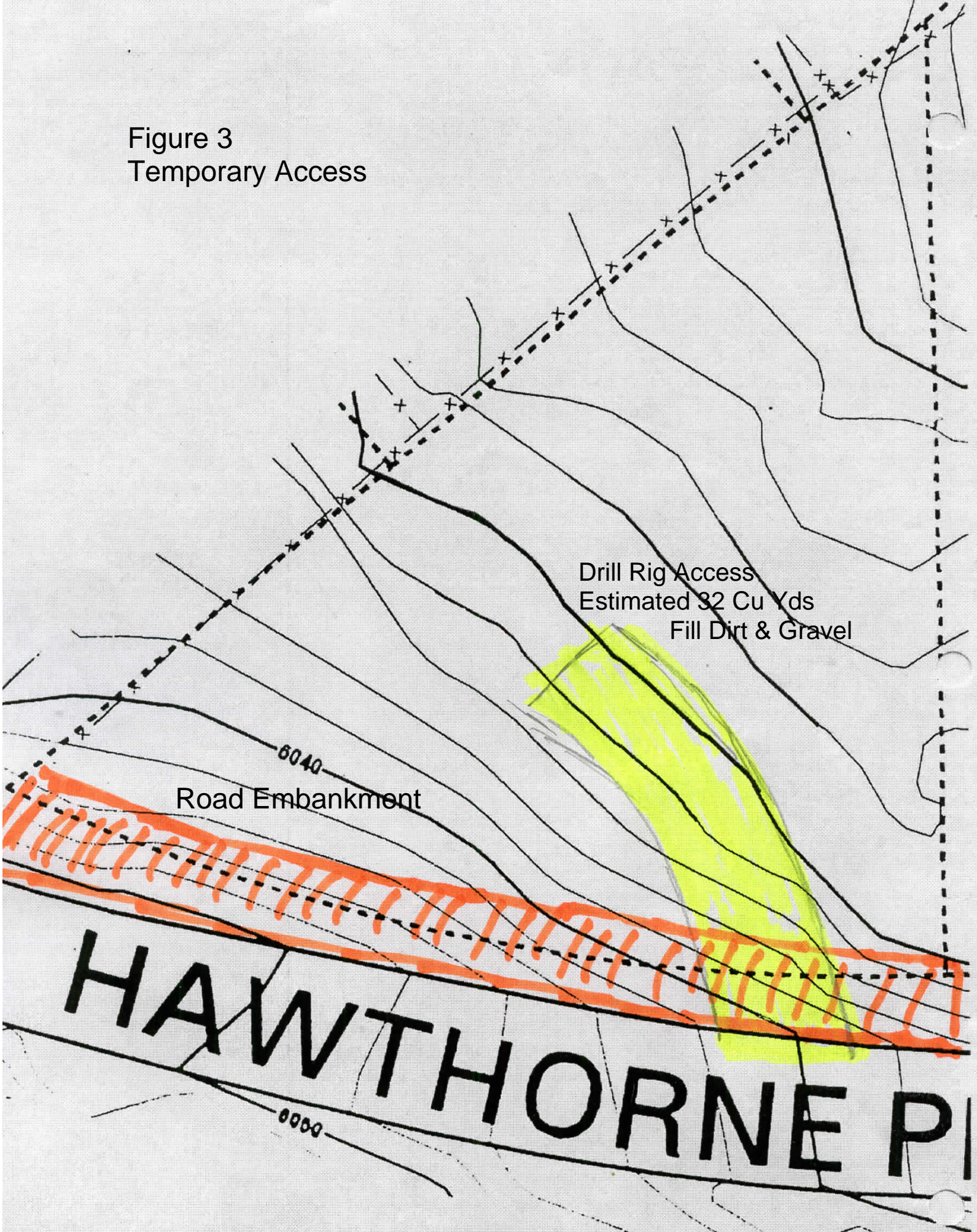


Figure 1



Figure 2

Figure 3  
Temporary Access



Drill Rig Access  
Estimated 32 Cu Yds  
Fill Dirt & Gravel

6040  
Road Embankment

HAWTHORNE PI

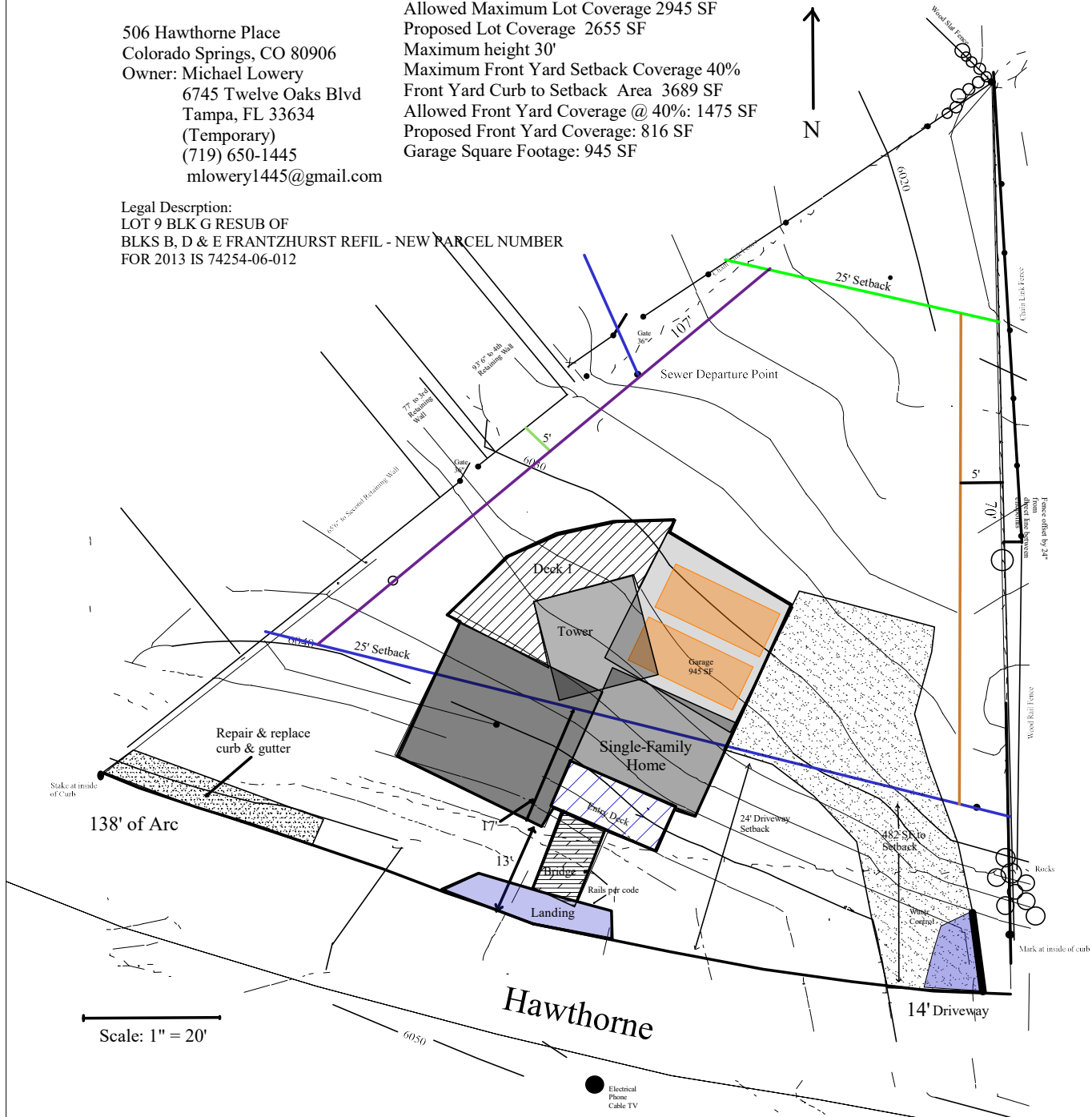
6000

**Proposed Site Plan  
With Front Setback  
Non-Use Variance**

506 Hawthorne Place  
Colorado Springs, CO 80906  
Owner: Michael Lowery  
6745 Twelve Oaks Blvd  
Tampa, FL 33634  
(Temporary)  
(719) 650-1445  
mlowery1445@gmail.com

Site Data:  
R-1 6000  
Lot: 9198 sf  
Maximum Lot Coverage 30%  
Allowed Maximum Lot Coverage 2945 SF  
Proposed Lot Coverage 2655 SF  
Maximum height 30'  
Maximum Front Yard Setback Coverage 40%  
Front Yard Curb to Setback Area 3689 SF  
Allowed Front Yard Coverage @ 40%: 1475 SF  
Proposed Front Yard Coverage: 816 SF  
Garage Square Footage: 945 SF

Legal Description:  
LOT 9 BLK G RESUB OF  
BLKS B, D & E FRANTZHURST REFIL - NEW PARCEL NUMBER  
FOR 2013 IS 74254-06-012



Scale: 1" = 20'

Note 1. AR NV 19-00783 was approved to allow a 13 foot front yard setback where 25 feet is required.

File Number AR NV 19-00783

**APPEAL STATEMENT**