



## HAYMEADOW RESPONSE

# **TOWN OF EAGLE REFERRAL RESPONSES NEEDING FURTHER ACTION REPORT**

**ISSUED: February 25, 2020**

Project Name: PUDA20-01 Haymeadow PUD Amendment

Owner/Applicant: Rick Pylman, Brandon Cohen, Scott Schlosser

Prepared by: Dennis C Wike-PE, Town Engineer

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The Town of Eagle Public Works Department is issuing the following Response Summary Report of Items Needing Further Action. If you have any questions or concerns regarding any comment, contact me or the individual agency to clarify the statement and reach an understanding. Please include the Town's Public Works & Community Development contacts on all correspondence.

### **REFERRAL COMMENTS SECTION**

**Community Development** – Jessica Lake: [jessica.lake@townofeagle.org](mailto:jessica.lake@townofeagle.org)

**Engineering/Public Works** – Dennis Wike: [dennis.wike@townofeagle.org](mailto:dennis.wike@townofeagle.org)

The Haymeadow response to the COMMENTS BELOW are presented in red font.

March 26, 2021

1. TRAFFIC-SCHOOL SITE & NEAR-BY: Traffic memo states: “the configuration of Brush Creek Road and Ouzel Lane intersection should be studied prior to the time of Final Plat.” - This is problematic. We will need at least a preliminary analysis now, so that Council can make a more informed decision. This is potentially an area of concern for the Town, County and public to push off for a later phase. **See attached traffic memorandum by McDowell Engineering, Inc. dated March 26, 2021.**
2. TRAFFIC-INTERNAL & NEAR-BY: The original traffic study and the traffic memo should be updated to reflect the current predictions for comparing internal pedestrian, bicycle, vehicle, and bus trips between the existing and proposed relocated school site. The traffic analysis should account for drop-offs and pickups within the Haymeadow development including Level of Service impacts at the school site(s) and key intersections. **See attached traffic memorandum by McDowell Engineering, Inc. dated March 26, 2021.**
3. PUD/ADA: With the proposed increase of density in the initial Filing the site roundabout completion will likely need to accelerated. Review prior documentation and resubmit with required revisions needed to construction schedule to maintain expected Levels of Service. **The roundabout as constructed is sufficient to meet Town of Eagle level of service standards for all of the proposed first phase of construction.**



4. PUD/ADA: Submit a Joint Excavation Plan to comply with the Towns recently passed Joint Excavation ordinance identifying steps taken to install conduits & their dedication for future broadband utilities planning to serve the development. **We have reviewed and understand the new joint excavation ordinance. There are no engineering plans associated with the PUD Amendment application. Engineering and utility plans will be a part of the required Major Development Permit process prior to any construction. The development design for the multi-family parcels has not yet been initiated. Haymeadow will meet all Town of Eagle requirements, including those of the recently passed joint excavation ordinance, with all future Development Plan and Final Plat applications that include utility improvements.**
5. PUD: Re-model all utilities, especially water service, for the proposed increase in density within Filing 1 due to changes in uses, location, building type, & number of stories. Submit documentation showing existing utilities in Filing 1 can support proposed changes within Filing 1 and highlight any required changes to meet existing requirements. **The Haymeadow Filing 1 Hydraulic Study by Mott MacDonald (attached), appears to have all of the information loaded into the hydraulic model for fire flow for a 3 story condo building already since it was always an assumed use in Parcels RMF-1 and RMF-2 which are both being folded into the larger development parcel that will be combined with the school swap parcel.**

All Mott MacDonald needs to do to update the water demand is to increase the number of MF units from 80 to 192 (+112) and remove the demand for the 600 student K-8 school and then perform the hydraulic model run on the node that is closest to the School Swap Parcel. Also of note is the memo's summary of water storage within the town zone which exceeds the required storage volume based on the existing Cemetery Tank and not including any storage in the LBWTF clear well.

The PUD Swap Parcel is lower in elevation than the filing 1 water system and will therefore have a higher static pressure than the majority of the Filing 1 units already modeled by Mott MacDonald and summarized in their Final Technical Memorandum dated March 8, 2019.

The highest finish floor elevation for the proposed buildings within the swap parcel is approximately 6711. Assuming a 3 story building, the upper floor shower head would be around elevation 6738 which corresponds to an approximate static pressure of 46.5 psi based on the data contained in the Mott MacDonald model summary memo dated March 8, 2019.

6. PUD: Submit documentation detailing potable water and non-potable water changes in use, quantity, pressure, etc expected from the proposed use changes, especially for irrigation waters. Documentation will be reviewed by TOE subject matter experts. **Regarding non-potable water usage at the proposed School Swap parcel versus usage associated with the K-8 school find the following assumed irrigated areas. Please note that the assumed acreage for the school is a total guess since we don't have an actual site plan. In the Haymeadow Utility Impact Report, we assumed that half of the school's 15 acres would be irrigated with non-potable water. It was assumed in that report that the Town's recreation parcel (~18 acres) would be covered by an extension of the warm springs raw water system which has an estimated additional capacity of 22 acres available.**

**The proposed School Swap Parcel site plan shows that approximately 11.5 acres will require non-potable irrigation versus the assumed 7.5 acres for the K-8 school.**

7. PUD: Document age of all reports referenced in this document, discuss what assumptions of these studies are no longer accurate, if new data is available, and if any are reports need to be updated to be relied upon.



See attached response.

8. PUD: Expand Water & Wastewater paragraph to capture all above analysis and reviews as it is presently inadequate.

The above responses to items # 5 and 6 seem to address this request.

9. PUD: Add language about timing/commitment for providing services and infrastructure necessary to complete the school on the relocated tract to meet the School District's Plans similar to the language for the Fire Station tract.

We anticipate signing an agreement between the Eagle County School District and Abrika that would commit Abrika to providing access and necessary utilities to the new school site in time to suit the needs of the ECSD. We have already proposed to ECSD that we commit to beginning said work upon the later of five years following the effective date of the proposed land swap or submission of a complete development permit application for the school by the ECSD with notice to Abrika of the ECSD's intent to begin construction of the school within two years.

## Haymeadow response to Item #7

The approved 2014 Preliminary Plan included the following reports:

Wildlife Report  
Geology & Debris Flow Report  
Vegetation Assessment  
Traffic Analysis  
Fiscal Analysis  
Utility Report & Irrigation Report  
Engineering Technical Specifications  
Water Rights Analysis

The Wildlife Analysis is a very comprehensive analysis of the existing conditions, habitat values and the proposed development plan and identified a movement corridor and other wildlife mitigation measures. These wildlife mitigation measures, including the creation of a wildlife movement corridor to facilitate elk and deer movements across the Brush Creek Valley, were incorporated into the approved PUD Development Plan and PUD Guide.

Seasonal wildlife foraging use in the active agricultural fields was recognized, however, CPW does not map active agricultural hay fields as important habitat and the report recognizes that development should be concentrated within this low wildlife diversity value area.

Tract E, designated for a school/park site and Neighborhood C, designated as multi-family and single family residential use, both fall within the active agricultural fields of Haymeadow. Each of these areas was deemed appropriate for intensive development. The exchange of location of the two uses does not further any impact to wildlife habitats and is in compliance with the original wildlife analysis.

The proposed cabin use has been reviewed by CPW as a referral agency to this PUD Amendment application. The application has been amended to include seasonal limitations on the use to minimize impact to wildlife.

There is no demonstrable need to update the Wildlife Analysis as a result of the PUD Amendment Application.

The Geology and Debris Flow Report included a comprehensive overall drainage analysis completed by HP Geotech. This was updated for the Filing 1 Final Plat but did not include an overall drainage analysis for Tract E.

The multi-family project proposed on the School/Swap portion of Tract E will require an updated Drainage Study to determine the stormwater volumes that will need to be treated for Water Quality and Detention. This Drainage Study will be prepared as part of the Development Permit submittal assuming the Amendment is approved.

Note that the RMF-1 and RMF-2 portions of the site have been included in the Filing 1 Drainage Report and are covered for both WQ and detention in the existing stormwater ponds located south of Sylvan Lake Road. The portion of Tract E that falls west of the two RMF Parcels was not included in the original drainage report. It was assumed that the Town/Mountain Rec and ECSD would need to provide their own stormwater treatment facilities during the review process with the town.

The Multi-Family project proposed for a combined Swap Parcel plus the two RMF Parcels, will generally drain from east to west. A primary stormwater treatment pond is proposed at the southwest corner of the site in between two of the berms proposed for screening of the Soleil subdivision from the new multi-family development. The pond will be sized based on the final design and development permit submittal calculations. If the proposed primary stormwater pond as sketched in the attached exhibit, does not have sufficient capacity at its current location, a secondary pond could be constructed in between buildings 4 & 5 or it could act as a forebay for the primary pond. The primary stormwater pond is proposed to discharge into the existing cut off ditch that runs along the western property line of Tract E which then discharges through an existing 36" RCP under Sylvan Lake Road. The water that will be discharged from the pond will have been treated for water quality and detention per the Town's regulations.



The Vegetation Assessment identified and mapped non-native agricultural vegetation, native vegetation, concentrations of weed populations and wetlands. The two proposed development areas contain non-native agricultural vegetation and do not include wetlands. These areas have been approved for intensive development. The cabin lies within a disturbed area of native vegetation that

has been identified as a weed area. The revegetation of the cabin area will eliminate the existing weed population. There is no need to update the Vegetation Analysis for the PUD Amendment application.

The Traffic Analysis has been supplemented by a current report to address impacts of the proposed PUD Amendment application.

There is no overall impact to the Fiscal Analysis as the proposed land uses have already been approved. The shift of residential density into the first phase will expedite revenue to the Town of eagle through impact fees, tap fees, taxes and resident spending.

The cabin will be a positive economic driver for the community.

Alpine Engineering, Inc. has provided supplemental information regarding the effect of the proposed locational swap of the already approved land uses on utilities and irrigation.

There is no effect on the overall water rights demand or dedication.

## FINAL TECHNICAL MEMORANDUM

**TO:** Bryon McGinnis & Deron Dirksen – Town of Eagle, Colorado  
**FROM:** Robert Anderson & Nathan MacArthur – Mott MacDonald  
**DATE:** March 8<sup>th</sup>, 2019  
**JOB NO.:** 398349  
**SUBJECT:** Haymeadow Phase I Hydraulics Evaluation – Revision

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### I. PURPOSE

Mott MacDonald has completed a revised evaluation of the hydraulic conditions of the proposed Phase I Haymeadow development. The Phase I demands remained the same but the 12-inch main loop was edited to reflect the revised condition. The conclusions detailed in this technical memorandum are unchanged from the original evaluation. Fire flows are reviewed along with an analysis of peak hour demand hydraulics to ensure adequate service pressures for the proposed housing units in the proximity of the Town Zone.

The current water model includes the Upper Basin Water Treatment Plant (UBWTP) with a capacity of 4.3 million gallons per day (mgd) and the development frame work of Eby Creek, the Terraces, Upper Kaibab, the existing commercial area along Interstate 70, the Bluffs, Downtown Eagle, the existing residences along Brush Creek Road and the currently developed portion of the Fairgrounds Pavilion, Eagle Landing, Eagle Ranch, Brush Creek Meadows and Adams Rib-Frost Creek. We have also included Red Mountain Ranch (Phases 1 & 2) and Hockett Gulch (Phase 1, 2 & 3), considering these as existing, although these developments have not yet been constructed.

### II. BACKGROUND

Haymeadow is a proposed multi-phased development in the southeast portion of Town. Phase I is located in the upper portion of the Town Zone pressure boundary and is proposed to include single family, duplex and multifamily units. Future phases will be constructed in a new local high zone and will include a mix of single family and multifamily units. Due to the proximity of the Town Zone pressure boundary, the developer plans to integrate the Phase I distribution system into the future high zone to strengthen the system.

### III. WATER SYSTEM

#### Potable Water Demand

We have assumed 1.0 SFE (Single Family Equivalent) per single family, duplex and multifamily units, and raw water irrigation is proposed for the development. Estimated water demands for Phase I are as follows:

Unit Demand – Single Family, Duplex & Multifamily Units = 300 gal/day/SFE

Single Family Units = 8

Duplex Units = 20

Multifamily Units =  $80 \times 1.0 = 80$  SFE

Maximum Day Demand =  $((20+8) + 80) \times (300) = 32,400$  gal/day

=  $32,400$  gal/day  $\times (1\text{ day}/24\text{hr}) \times (1\text{ hr}/60\text{ min}) = 22.5$  gpm

Peak hour = Max Day  $\times 2 = 45$  gpm (Peaking Factor of 2)

The demands for the development were allocated to model nodes adjacent to the proposed unit locations.

#### Connection to Current System

The Phase I development is planned to be located within the upper portion of the Town Pressure Zone (Town Zone). It is proposed that the development will be connected to the existing main in Brush Creek Road using a 12-inch line extension. This extension is shown to feed a proposed 8-inch looped water system in the development. Additionally, the 12-inch line at the northwest end of Snowy Peak Drive (Tract R-2), connects to the 12-inch at the Eagle Ice Rink and Rec Center.

#### Distribution System

The normal design criteria used to evaluate the water distribution system is to maintain a minimum pressure of 60 psi throughout the distribution system during peak hour demand and a minimum pressure of 20 psi during maximum day plus fire flow demand. However, due to the proximity of the Town Zone pressure boundary, a 50-psi mainline pressure is being considered based on the service requirements defined below.

The developer is planning to integrate the Phase I system into a future local high zone increasing the distribution pressures. Because of this, the current system must be master planned for this future change with the provision of pressure reducing valves PRVs. PRVs will be required for downloading to the Town Zone and at individual services to control system pressures.

## IV. HYDRAULIC MODEL ANALYSIS AND RESULTS

### **Peak Hour Analysis**

During the peak hour modeling scenario, the main line pressure throughout the development ranges from 48 to 60 psi. The developer plans to have two story buildings for the single family, duplex and multifamily units and the Town has requested a minimum system pressure of 30 psi at the 2<sup>nd</sup> story. Based on an initial evaluation, the 30 psi 2<sup>nd</sup> story service pressure can be attained for single family and duplex units if the service line size is a minimum 1-inch and backflow prevention devices are not included (normal practice for single family units – except for irrigation). Depending on the proposed piping arrangements for the multifamily and again assuming no backflow prevention for the potable service, the 2<sup>nd</sup> story 30 psi minimum may also be attainable for the multifamily units. The developer will be required to design the multifamily service piping to minimize losses and ensure a minimum 30 psi 2<sup>nd</sup> story plumbing fixture pressure.

### **Maximum Day Plus Fire Flow Analysis**

Assuming fire suppression systems at the multifamily units, a single-family/duplex unit, Type V-B construction, fire flow of 2,500 gpm was modeled. A steady-state fire flow analysis was run at the proposed hydrant locations within the development during maximum day demand. The model showed that the combined hydrants can provide the required fire flow with a residual pressure of 20 psi and pipe velocities at less than 10 feet per second (fps) if the distribution line is sized at 12-inches. The planned 8-inch development mains shall be upsized to 12-inches as shown in the latest development water plans.

### **Available Storage**

Three (3) volumes are considered for evaluating storage; operational (typically 30% of maximum day demand), fire flow and emergency (typically 50% of maximum day demand). It is assumed that emergency storage can be down loaded from the upper zones of the Town and is therefore not included in the storage calculation. A commercial fire flow within the Town Zone of 3,000 gpm at 3 hrs is assumed. The Town Zone maximum day demand is estimated at 2.70 mgd, including Red Mountain Ranch, Hockett Gulch, Eagle Landing and Haymeadow. The estimated required water storage in the Town Zone is depicted in Table 2.

**Table 2. Town Zone Estimated Required Water Storage**

Demand Type	Criteria	Required Storage Volume (gals.)
Fire Flow	100% of 3,000 gpm, 3-hour fire flow	540,000
Emergency Storage	50% of maximum day demand	(down load from upper zones)
Operational Storage	30% of maximum day demand	810,000
<b>Total</b>		<b>1,350,000</b>

Town Zone storage is estimated 1.6 MG; 0.3 MG at the Cemetery Tank, 1.0 MG at the Horton Tank and 1/3<sup>rd</sup> of the Eby Creek Tank or 0.3 MG. The current 1.6 MG of storage exceeds the estimated volume required to serve the current Town Zone and Phase I of Haymeadow. It should be noted that the Town is planning to ultimately increase the Town Zone storage volume, possibly with a Cemetery Tank replacement project.

## V. SUMMARY

The proposed single family, duplex and multifamily units of the Phase I Haymeadow development can be served from the Town Zone. However, because the development is in the upper region of the Town Zone and the added complexity of integrating the system into a future higher zone, special requirements must be considered. The following is a summary of our findings and the special requirements:

- 1.) A 12-inch looped water system is required for the distribution piping.
- 2.) Using 12-inch distribution piping, fire flows and residual pressures are adequate at the hydrants. Note: individual fire suppression system hydraulics were not analyzed.
- 3.) Current Town Zone storage volumes are adequate for Phase I.
- 4.) Peak hour hydraulic analysis indicates a 30-psi minimum pressure can be attained at the 2<sup>nd</sup> story plumbing fixtures, assuming no potable service line backflow prevention (see developer requirements, item 5 below).
- 5.) Developer is required to install service line systems that ensure a 30-psi residual at the 2<sup>nd</sup> story plumbing fixtures for all residential units, assuming a 50-psi residual pressure at the mainline.
- 6.) Provide PRV vaults at low end connection points to the Town distribution system. Only vaults are constructed now, PRVs are installed in the future when the distribution system is converted to high zone.
- 7.) Incorporate provisions for adding service line PRVs to regulate the future high zone pressures.