Stormwater Narrative – 12N011 Waughon Road
December 11, 2023

The current owners of the property have increased the impervious area of the site by installing aggregate pavement to the property. The increase in impervious area is to accommodate the parking area needed due to an intended change in the use of the site. Under the previous owners the property was used as a residence and landscaping company combined. The previous owners increased the aggregate and concrete parking areas and added buildings during their occupation of the property without receiving a permit from the County. There were multiple vehicles stored on the property that were in questionable working order and did not move. This stagnated state of the vehicles created a potential pollution problem with the fluids leaking from the vehicles.

The new owners are proposing to change a portion of the 10-acre property for use as an event venue; they will continue to reside in the home on the property. Therefore, the owners are intending to have established stable and defined parking areas for the temporary use of the patrons to park. This will reduce the possibility of vehicle fluid pollutants due to the short-term duration of the vehicles parking at the property. The added impervious to property since 2002 has been 37,553 square feet. The additional area that was disturbed by improvements has already been restored to a good condition.

The amount of impervious added to property is above the threshold of the stormwater facility submittal requirement. Therefore, a plan for a stormwater management facility with the capacity to detain the runoff from extra impervious is being proposed. The natural flow of the land is divided between the west and east sides of the property. The east side drains to a wetland depressional area on the south border of the property. The west side of the property drains to the north property line and travels overland into a wetland depressional area through the neighbor's property. There are no drain tiles located on the property as determined by the Huddleston McBride Land Drainage Company report. There is also no offsite drainage that is tributary to the proposed detention basin.

The added impervious to the site is located primarily on the western drainage area of the property. The proposed stormwater management facility will be located in an unused open field area on the west side of the property. An area of 37,200 square feet will be disturbed by the installation of the stormwater management facility. The stormwater management facility will be sized such that it will detain the runoff from the additional impervious of 37,553 square feet or 0.862 acres. The allowable release rate from the proposed detention shall be restricted to the lesser of the pre-improvement runoff rate or 0.10 cubic feet per second per acre of the area of the improvement. The previous runoff rate of the 0.862 acre of impervious addition when the area was previous grassland is 0.71 cubic feet per second. The 0.10 cfs per the improvement area 0.862 acres is equal to 0.0862 cfs. Therefore, the allowable release rate for the 100-year storm event of the detention basin is restricted to 0.0862 cfs which is 8 times less than the runoff rate for the same conditions of the pre-improvement state. The stormwater management facility shall also have a 2-year storm event allowable release rate of 0.04 cfs per acre, therefore the 2-year allowable release rate of discharge is 0.034 cfs.

The required capacity of the proposed stormwater management facility for the design event of a 100-year rain event for a 24-hour duration based the HydroCAD stormwater modeling software report on the current detention basin design is 22,915 cubic feet. The detention basin model at a volume 22,991 Cubic Feet has a high-water level at an elevation of 938.50 within the proposed stormwater management facility. The design capacity of the proposed stormwater management facility is 24,516 cubic feet with a

high-water level at the elevation of 938.60. The detention volume will shall be theoretically restricted by two restrictors in order to meet the requirements for both 2-year and 100-year storm events. A 1.5" restrictor at an elevation 937.00 will discharge the 2-year storm event at a rate of 0.03 cfs, which is less than the allowable release rate, with a high-water level of 937.40. The 100-year storm event shall be restricted through the 1.5" restrictor along with another 0.5" restrictor situated above the 2-year high water level at an elevation 937.50. The 100-year storm event will be discharged through these two restrictors at a rate of 0.08 cfs with a high-water level of 938.50.

However, since the restrictors are less than 4" and could be prone to being blocked by debris per KCSO a single restrictor of 4" restrictor at the elevation of 937.00 will be install instead of the two restrictors. This single restrictor will have a discharge rate of 0.36 cfs for the 100-year storm event which is below the discharge rate of the 2002 conditions of 0.71 cfs.

This discharge volume will outlet through a 12" storm sewer pipe to a flared end section onto a rip rap area to dissipate the discharge energy further and to prevent erosion before flowing from the subject property to the Waughon Road right of way. Investigation of the existing grades of the right of way and the surrounding areas show that the existing drainage is directed along the north border of the subject property with the neighboring property to the north. The investigation also shows that the runoff flow from the neighboring property flows south to the shared property line. The culvert under the neighboring driveway flows from north to south. This combined runoff flows east along the property line to the eastside of the existing garage of the neighboring property. Then the flow is directed north through an existing ditch to the wetland depressional area.

The retention volume will be provided in the stormwater management facility below the outlet pipe at elevation 937.00 to the bottom of the basin at 936.00. Additionally, there will be a stone infiltration bed to a depth of 1 foot. The requirement is for the volume of the first 1.0" of rainfall over the impervious area to be retained within the stormwater management facility. The volume required for the additional 37,553 square feet is 3,129 cubic feet or 0.072 acre-feet. The retention volume provided within the open bottom of the proposed stormwater management facility is 4,936 cubic feet. The stone infiltration bed will add an additional volume of 225 cubic feet which results in a total retention volume of 5,161 cubic feet. This area will be drained through an under drainpipe which will run along the side of the pond. The underdrain will discharge into the control structure.

In the event that the restrictor is blocked, the 100-year storm event would discharge through the emergency overflow at the design high water level elevation 938.60. The discharge through the 10 feet would be 0.16 cfs. This discharge is less than the existing discharge of 0.71 cfs for the same rainfall event. The pond would rise to the maximum height of 938.83, which is 0.23 feet above the stormwater management facilities high-water level. If only the restrictor is blocked than the stormwater management facility would still drain through the underdrain piping and the overflow in the control structure.

The proposed plan will include silt fence to further protect the existing vegetation and to prevent construction activity erosion effects.

There are no water wells located within the vicinity of the project.