

# Memorandum

To: Matt Giese- Village Administrator, Erin Ruth- Planning Director, Mike Maloney- Village Engineer, Lee Boushea- Village Attorney, Lisa Kalata- Village Clerk

From: Tomás A. Toro, PE, PLS- JSD Professional Services, Inc.

Re: Shady Grove Subdivision Preliminary Plat Submittal

JSD Project #: 19-9170

Date: July 22, 2019

cc: Harry and Mary Sharata- Owners, Jessica Vaughn- JSD, Robert Procter- Attorney (Axley Brynelson)

---

Below, in red, are JSD's responses to review comments provided by the Village of Cottage Grove on July 3, 2019.

## I. Planning Staff Review Comments (Preliminary Plat)

1. Lot 18 falls a few square feet short of the minimum 10,000 sq. ft. lot area. Shift the northern lot line further north as needed to ensure that both Lots 18 and 19 comply with minimum lot size and lot dimension requirements.  
**The North property line of Lot 18 was adjusted further north to increase the lot's square footage to 10,000 SF, as requested.**
2. Buss Road south of Morning Star Way is incorrectly labeled as a 66' ROW, while it is correctly labeled elsewhere as a 100' ROW width. Edit or remove the 66' label.  
**Right of Way width labels have been corrected to show 100'.**
3. Update the signature line for the Village President on Sheet 2 of the plat to show current Village President John Williams.  
**Signature line has been updated to show Mr. Williams name, as requested.**
4. Note 6 on Sheet 1 references Outlot 4 as the site of a lift station. There is no Outlot 4 in the proposed plat. Update note to reference Outlot 2.  
**Outlot 4 was added to the Plat.**
5. Note 7 on Sheet 1 references Outlot 5 as the site of the Koch pipeline easement. There is no Outlot 5 in the proposed plat. Update note to reference maintenance requirements for owners of Lots 1 to 11 and coordinate with covenants.  
**Note 7 has been updated, as requested.**
6. Note 10 references lots affected by pipeline setback. Update to list the correct lots (Lot 1 – 11 and Outlot 2).  
**The lots affected by the gas pipeline easement and setback requirements are now referenced in Note 9.**

7. Note 13 on Sheet 1 references Lots 4 – 6 and 8 – 12 having a 34.5' rear setback. Based on previous lot numbering it appears this note should apply to Lots 52 to 55, 58, 60, and 61.  
**Note 13 has been removed from the plat. Note 11 makes correct reference to the lots affected by the Environmental Corridor.**
8. The title block on Sheets 1 and 2 reference the 'City of Cottage Grove.' The title block should name the location as the 'Village of Cottage Grove.'  
**The title block has been corrected, as requested.**
9. Resubmit the neighborhood covenants dated 10/19/17 with the following updates: a) update the lot numbers in the title, b) rewrite section 8.4 pertaining to the maintenance of the Koch pipeline easement (formerly in an outlot, now on located on Lots 1 to 11 and Outlot 2), and c) update section 8.5 to update the lots that contain part of the CARPC designated environmental corridor.  
**The neighborhood covenants have been updated as outlined above and re-submitted to the Village for review.**
10. The following information shall be added to the plat: a) information about the proposed land use and zoning shall be added to the plat per 274-25(B) and (P), b) contours shall be added to the plat per 274-25(D), c) proposed building lines/setback lines shall be added to the plat per 274-25(Q), and d) approximate depth to groundwater shall be added to the plat per 274-25(U).
  - a) **See Land Use Summary table added to sheet 2.**
  - b) **Elevation Contours were added to the plat, as requested.**
  - c) **Building setback line was added to the plat, as requested.**
  - d) **See Note 12 on Sheet 1 of the plat for approximate depth to groundwater.**
11. Show the boundary of the CARPC designated environmental corridors, and update note 12 to correctly list affected lots.  
**The Environmental Corridor is now shown in the Plat and Note 11 makes reference to the lots affected by the 37.5' building setback associated with the corridor.**
12. A minimum 4' high chain link fence shall be installed by the developer along the entire length of the eastern boundary of the Salem Cemetery.  
**The required road cross section for Buss Road leaves only 6 inches between the back of the sidewalk and the shared property line with the cemetery. This will create encroachments on to the cemetery property. Further clarification and direction is needed regarding this item.**
13. The amount of dedicated park land in the proposed plat accounts for the dedication requirement for 7 units. A fee in lieu of park land dedication shall be paid by the applicant for the remaining 50 single-family units and any subsequently approved duplex or multi-family units.  
**The Owners have been informed of this requirement.**
14. All required improvements described by Article VIII of the Subdivision Ordinance shall be detailed and located per the ordinance and to the satisfaction of the Village Engineer and relevant Village Staff. Such details shall be included in a developer agreement between the Village and the developer as described by 274-10 of the Subdivision Ordinance.  
**The Owners and their attorney are working towards producing a draft Developer's Agreement for Village review.**

## II. Comments from Village Engineer (Plat and Construction Plans)

### Preliminary Plat

1. Provide a table of lot that includes net lot area. All remaining land areas not intended for sewer service or street use will be set into environmental corridor.  
See Land Use Summary table added to sheet 2 of the Plat.
2. List minimum building opening elevations and minimum first floor elevations for lots within the plat.  
These elevations have been added to the construction plans as the Plat is not an instrument containing vertical relief information.

### Master Site Plan

1. Intersection curb for Buss Road and Fundamental Way shall be designed to meet the future back of curb at 30 feet from the dedicated ROW line.  
Intersection curb has been moved to be 30 feet from dedicated ROW line, as requested.
2. Buss Road from Drumlin Ridge to Cottage Grove Road shall be four lane, no parking.  
Driving lanes have been modified to show four lanes of traffic and no parking between the intersection of Cottage Grove Rd. (BB) and Drumlin Ridge, as requested.
3. Buss Road from Drumlin Ridge to the south shall be two lane with parking lanes for on-street parking.  
Driving lanes have been modified to show one lane of traffic and curbside parking on each direction from the intersection of Buss Rd. and Drumlin Ridge, and extending south to the end of Buss Rd., as requested.

### Mass Grading Plan

1. Complete Erosion Control Checklist and Land Disturbance Permit Application prior to site disturbance.
  - a. As a part of this process the developer will need to provide an opinion of probable costs for erosion control and stormwater management.  
Erosion control checklist and Land Disturbance Permit Applications have been completed and will be submitted shortly. The opinion of probable cost will be included in the application.
  - b. Developer will need to provide a recorded Stormwater Maintenance Agreement.  
See draft Stormwater Maintenance Agreement in the SWMP. This will be recorded once we receive and correct all other comments in the permit submittal and Stormwater plan is finalized.
4. Disturbance area is anticipated to be greater than one acre. Obtain and provide copy of DNR NOI Permit.  
A DNR NOI is in the process of being submitted for review. A copy of the submittal will be provided as soon as available.
5. Storm sewer shall be extended to provide connections for Cottage Grove Road at Buss Road, midblock in up to two locations and at Fundamental Way.  
Stubs have been added, as requested.
6. Retaining wall will be required on the south side of the bike path along Cottage Grove Road, east of Fundamental Way. Show the "future multi-use trail" and "retaining wall" on the plan.  
The future improvements to Hwy. BB are under design and still largely undetermined. The Village engineer anticipates that the road in this specific area will be lowered between 3 to 5 feet. If that is the

case, a retaining wall would not be necessary. Therefore, this request was retrieved pending final design of Hwy BB improvements.

7. Refer to the stormwater management comments. Raise the elevation of incoming storm sewer to the main detention basin to 916.0 or greater. This will affect the grading for the main detention basin.  
All incoming storm sewer inverts have been raised to 916.0 for the main detention basin.

### **Plan and Profile Sheets**

1. C9.10 – Station 101+14 shall be the high point in the watermain at the hydrant location. Adjust the watermain profile.  
The watermain has been designed with a highpoint at the hydrant location.
2. C9.11 and others. Align the forcemain note with the pipe in profile view. Please verify the purpose of the added depth selected in the design. Typically, seven to eight feet of depth is adequate with verification of sewer and water lateral crossings.  
Forcemain depth has been modified to a typical seven to eight feet in depth in areas where conflicts are not expected.
3. C9.12 – MH A-1, provide an additional outlet invert and one pipe length of 18 feet as a future outlet at 0.40% to the south. Install a plug in the manhole.  
Stub has been added as requested.
4. Provide information on private utility crossings and street lighting locations as they become available and prior to final plan approval.  
JSD is has contacted Alliant Energy regarding light pole and “dry” utility locations. Feedback on this matter has not yet been provided but will be provided as soon as available, as requested.
5. The Developer will fund the LED street lighting as supplied by Alliant Energy.  
The Owners have been made aware of this requirement.

### **Street Cross Sections**

1. No Comments.

### **Stormwater Management**

1. Extend the Cottage Grove Road culvert pipe for the large drainageway to a point south of the Cottage Grove Road right of way line. The distance shall allow for a 5 foot bike path shoulder (6:1 max slope) and a 4:1 back slope to the endwall invert.  
The future improvements to Hwy. BB are under design and still largely undetermined. The Village engineer anticipates that the elevation of the road in this specific area will change. It was also shared that the existing culvert will be replaced as well. Therefore, this request was retrieved pending final design of Hwy BB improvements.
2. The area between lot 9 and 10 is a sump that requires protection from fill. Provide a twenty-foot wide drainage easement for the maintenance of pass-through drainage.  
A 20' wide easement has been added between Lots 9 and 10, as requested.

### **HydroCAD modeling:**

1. Off-Site Areas
  - a. The HydroCAD modeling includes 135.7 acres of off-site area to the north. Rate control comparisons are made inclusive of this area, and the large flows coming off this area are overwhelming the contribution of on-site runoff and obscuring the effects of proposed detention facilities. For example, 1-yr peak flows from the 135.7 acre north off-site area are predicted to

be 67 cfs; yet cumulative flows from the entire 146.7 acre area discharging to the wet is only 68 cfs.

Additionally, the north off-site area is actually closer in size to 164.3 acres and does not include only agricultural land, but 28.8 acres of development associated with Westlawn Estates 4th Addition.

Modeling of conveyance facilities responsible for passing regional flows through the site should include off-site areas; modified as above. MSA can provide regional watershed boundaries as well as model data for the Westland subdivision. Modeling for demonstration of on-site rate control should include the only the (entire) development site plus off-site areas passing through proposed BMPs.

MSA provided regional watershed boundaries, as well as the HydroCAD model for the Westlawn subdivision. A new HydroCAD model was created from the Westlawn model with the adjacent watershed boundaries added in as separate subcatchments. This provided a total drainage area to the existing culvert to be 162.3 acres with a flow of 126.93 cfs in the 100-year storm. This new flow was used to confirm the proposed culvert under Buss Road and proposed drainage channels are sufficient to convey this existing flow while maintaining a minimum 1' of freeboard in the channels. The new HydroCAD model and all relevant culvert sizing calculations can be found in Appendix 8 of the revised stormwater management report.

The north offsite area was removed from HydroCAD models since it did not affect any of the proposed BMPs.

- b. Off-site areas to the east are handled differently under existing and proposed conditions. Off-site (sub) watersheds should be evaluated under both existing and proposed conditions in identical ways so as to prevent unintentional changes in runoff rates/volumes due to aggregation of model input data.

Watersheds separated into offsite and onsite areas in both existing and proposed models.

- c. The southern ½ of CTH 'BB' east of Fundamental Way drains to a roadside ditch and comes onto the project site. This is not accommodated in either existing or proposed conditions. Additionally, while the Village has plans to improve CTH 'BB' to a curb-and-gutter cross-section which would eliminate overland flow to the roadside ditch, the previous plans for this project had accommodated collection of runoff from at least a portion of this road.

Area added to modeling, existing and proposed. Eastern offsite watershed boundaries set to match those provided by MSA.

2. Landlocked Area. Additional detail should be provided for the partially landlocked basin within subwatershed B. The precise bottom elevation and overflow elevation should be identified and existing conditions modeling revised to include the effects of this storage area which may reduce low flows from this area to near zero.

Bottom and overflow elevations labeled in proposed watershed map. Landlocked area modeled as a kettle pond in existing conditions. Proposed conditions revised to meet revised, lower peak flows for all storms.

3. Selection of Runoff Curve Numbers

- a. Soil maps show the study area to be predominantly HSG B soils; with only a small portion of HSG C soils on site; however, off-site areas to the north are modeled as containing cropland with a runoff curve number of 78 which corresponds to HSG C soils. Additionally, there is no accommodation for HSG C soils on site.

Areas split between existing on-site HSG B and C soils. In proposed conditions, heavily disturbed areas are set to HSG C and HSG D soils in existing HSG B and C areas, respectively.

- b. Subcatchment A-4 under proposed conditions is classified entirely as cropland; however, only a small off-site portion is cropland. Other land uses include residential land (on- and off-site) and areas where the infiltration basin will be constructed (off-site areas should be separately modeled per comment 1b above).

Unsure how A-4 only had cropland in it. The adjacent residential areas and grassland in the infiltration basin area were included and are included in the revised A-4 Offsite subcatchment. All off-site areas modeled separately.

#### 4. Calculation of times of concentration

- a. There are several instances where times-of-concentration are based on very long sheet-flow paths. Post-development subcatchment A-4, A-6, and B-1 include 300 feet, 42 feet, and 260 feet respectively. Sheet flow lengths should not exceed 100 feet.

All sheet flow lengths maximized at 100 feet.

- b. Post-development subcatchment B-2 contains no sheet flow component, beginning with shallow concentrated flow.

Sheet flow section added to beginning.

- c. Pre-development subcatchments 5S (off-site North), and post development subcatchments A-2, A-3, and A-5 all manually entered values which need to be explained.

Description altered in HydroCAD notes to explain that these tc lengths originate in the storm sewer sizing spreadsheet. Storm sewer sizing TC length table included in resubmittal.

#### 5. Pond overflow weirs. Are all modeled in HydroCAD as sharp crested weirs,

All were changed to broad crested weirs.

### **WinSLAMM Modeling**

1. Off-Site Areas. Off-site areas need to be modeled as separate source areas 'treated' by another device such that TSS and TP loads are reduced to zero. On-site practices need to be shown to achieve appropriate reductions for site-generated TSS and TP loads.

Other devices added to filter all offsite TSS and TP to zero.

2. TP-modeling. Total Phosphorus pollutant loads should be turned on in the model to verify that the site achieves necessary TP reductions in accordance with Village Ordinance standards.

Total phosphorus loads turned on in Winslamm.

#### 3. Infiltration Basin Outlet Pipes

- a. The infiltration basin is modeled as having the primary outlets at the basin bottom (i.e. no 'infiltration storage'). Because of limitations in the models calculation routine, this is almost certainly resulting in an overestimation of infiltration performance.

The infiltration basin does have storage volume in the rock storage layer. Below the lowest pipe invert (underdrain at 913.25), we are modeling all stormwater exiting the basin system via infiltration at the bottom of the rock layer. To achieve this, we used a maximum of 24-hour surface ponding and 72-hour max subsurface ponding. Due to the limitations of the Winslamm modeling system, and the unique nature of our discharge from the wet pond (which discharges to the bottom of the infiltration basin rock layer), we included the 1-year hydrograph output table from HydroCAD to show that we did not exceed either of those time periods. There wasn't a page separation between the majority of the proposed HydroCAD report and the separate 1-

year infiltration basin output, so that may have been missed during review. We added a page separation to clarify that these are two distinct report pieces.

- b. The infiltration basin model input data does not include the dual 18" pipes at elevation 915.5 (6" above pond bottom).

Secondary outlet pipes added as "Other Outlet" with custom stage and discharge rates as defined by HydroCAD discharge output for those pipes.

### **Wet Pond Design:**

1. The low-flow outlet for the OL2 wet pond is to be installed at elevation 912.0 – which is below the floor of the downstream infiltration basin which is set at elevation 915.0. The effective normal water level for the pond will then be controlled either by infiltration or by the elevation of the lowest gravity outflow pipe from the infiltration basin which is elevation 915.0. This will have large effect on the water quality and rate control performance of the wet pond and it is likely to cause more frequent overflows of the wet pond containment berm.

As explained in the above response, we modeled this infiltration basin to be partially controlled by infiltration. Due to elevation constraints, we needed to lower the wet pond in order to capture as much of the street runoff as possible. This is also why we had to lower the wet pond to elevation 912.00, in addition to needing more volume to control the stormwater. To quell MSA/Village concerns, we raised the bottom of the wet basin and bottom of the infiltration basin system to 913.00 and lowered the infiltration basin underdrain to 913.25 to reduce the possibility of the basins not draining properly. The underdrain is run flat to the existing lot line at the center of the ROW of the future expansion of Buss Road. When Buss Road is extended in the future, this outlet pipe and the secondary outlet pipes can be collected in new storm sewer to direct the pond stormwater under the future Buss Road. As stated in the comments above though, the infiltration basin has a surface and subsurface ponding time less than the maximum of 24-hours and 72-hours, respectively. So while this stormwater system is not typical, our modeling suggests that it will work and will only have overflows from the wet pond to the infiltration basin in the 100-year storms.

2. The construction plans include a 'secondary outlet structure' which suggests that there will be two outlet risers; which isn't supported by other plan data or modeling.

Stormwater plan detail corrected to "primary outlet structure".

### **Infiltration/Biofilter Design:**

1. Construction details (and modeling) for the biofiltration basin shows only 0.5 foot of engineered soil, which is less than the minimum 2-feet required by WDNR Conservation Practice Standard 1002. Additionally, the placement of the underdrain within the cross section puts it within the engineered soil, as opposed to within the rock storage area where it should be. This further reduces the effective depth of filtration provided by the engineered soil.

The infiltration basin is not a biofiltration/bioretenion basin so WDNR tech standard 1002 does not apply. The engineered soil in the infiltration basin is merely for vegetation growth. The new bioretention basin that replaces the wet pond in Outlot 1, however, is designed to meet WDNR tech standard 1002, with a 2' engineered soil layer and native sand to be used for storage. The wet basin provides the needed 60% TSS pretreatment (in residential areas) for the infiltration basin per WDNR tech standard 1003. In the Winslamm model, the entry in the Biofiltration Control Device titled "Percent solids reduction due to Engineered Media (0 – 100)" is set to 0 because we are not claiming credit for TSS filtering through the engineered soil.

The underdrain is as low as we are able to set it (inv. 913.25) due to the fact that the lowest elevation at the property line is only 913.10 at the center of the Buss Road ROW. We changed the outlet structures

from mere culverts to have manholes with weir controls for both primary and secondary outlet structures.

2. The construction detail for the biofilter makes it appear as though there is a depth of infiltration storage; however, invert data provided indicates that the primary outlet pipes will be on the bottom of the infiltration basin.

As stated in the Winslamm section above, the infiltration basin does have storage volume in the rock storage layer. We lowered the underdrain to 913.25 and raised the bottom of the rock layer to 913.00 so that there is only 3" of storage that has no other option than to infiltrate. Based on the HydroCAD model, we are not exceeding a maximum of 24-hour surface ponding or 72-hour max subsurface ponding.

### **Lift Station & Forcemain**

1. Lift Station and forcemain shall comply with all provisions of Section 505-519 of the Village of Cottage Grove Standard Specifications for Public Works Improvements (called standard specifications herein). The review included herein does not comment specifically on all requirements included in that section. Plans shall provide enough detail to verify that they are consistent with the standard specifications.  
**Noted.**
2. 12" Grinder pumps are not acceptable. Pump shall be a non-clog submersible pump as specified in Section 506.2.2 of the standard specifications. Pumps shall be resistant to clogging/plugging due to non-woven wipes; recessed/vortex impeller, single-vane back-swept impeller (e.g. Flygt Nimpeller) or similar. Recommend for a full size impeller with minimal or no trimming to limit gap between impeller and volute.  
**New 4", non-clog pumps were selected to substitute the originally proposed grinder pumps.**
3. Provide all start-up commissioning services as specified in Section 506 of the standard specifications.  
**A note to this effect has been added to plan set. See sheet C14.0.**
4. A field pump test (i.e. drawdown test) shall be completed by the Contractor and witnessed by the Village Engineer. See 506.3.4  
**A note to this effect has been added to plan set. See sheet C14.0.**
5. Electrical (power, instrumentation, and control) design is incomplete. Provide one-line diagram, P&IDs, electrical site plan, and network/telemetry architecture drawings. Plans shall complement the Section 507 through 516 of the standard specifications.  
**More detailed power, instrumentation and controls design information has been added to the plans, as requested. One-line diagrams have also been added to the plans.**  
  
**Network/telemetry architecture drawings are not yet included, but will be incorporated in the Plans as soon as available and prior to final approval. This information has been requested to the entity in charge of coordinating said information (LW Allen, LLC). LW Allen will also figure as the supplier for all pump station related items.**
6. Generator plan is incomplete. Design information shall be shown on drawings requested in Comment #6. Generator shall be Cummins to match Village's generator fleet. Automatic transfer switch and associated control shall be provided for standby generator.  
**Additional information regarding the generator has been incorporated in the plans, as requested.**
7. Confirm power supply is compatible with specified pumps.  
**Please see electrical site plan. Power supply will be 3 PH at 480V.**

8. The vertical 4" pipe with flanged connection in the wet well is not acceptable. Provide a tee (or cross) in valve vault with extended flanged pipe. Flanged pipe shall be equipped with quick connect for connection to Village-provided trash pump stationed at-grade. Vault door shall be located above quick-connect for easy access from surface w/o vault entry. See Section 506.3.1(C).
  - a) The 4" vertical pipe referenced above has been removed from the plans.
  - b) A 4" flanged pipe with a quick connector has been added to the valve vault detail, as requested.
  - c) The quick-connect is located directly under the vault hatch for easy access, as requested. See valve vault detail.
  
9. Provide an odor control vent scrubber on the end of the vent pipe. Syneco Systems Peacemaker vent scrubber, or equal. Provide a spare case of scrubbers to the Village.
 

Odor control vent scrubber has been added to the details with a callout, as requested.
  
10. A minimum wet well diameter of 6-feet shall be provided for adequate maintenance access. In addition, fall protection (i.e. safety grating) is required. This will require a larger hatch frame in order to maintain the same clear opening identified on the plans. There needs to be a minimum of 12" clearance between the corner of the hatch and the edge of the concrete manhole top/edge. Therefore, a >6-foot diameter top is necessary.
 

Wet well diameter has been increased to 6 feet, as requested.
  
11. Provide fire hydrant and adequately sized hydrant lead in lieu of ¾" yard hydrant shown.
 

Fire hydrant has been added in place of yard hydrant, as requested.
  
12. Steps into wet well are prohibited (Note #6, Sheet C14.0)
 

Steps have been removed, as requested.
  
13. Epoxy coated steel pipe supports shall be utilized in all locations (wall and floor)
 

Epoxy coated steel pipe has been add to detail with note, as requested.
  
14. Valve vault drain design is unacceptable as the stainless steel flap valve does not provide effective barrier from sewer gases migrating to the valve vault. At minimum, pipe should be extended in the wet well to below the low water level to provide a hydraulic break to minimize gas migration. It is recommended, that the pipe be cast into the valve vault base, and terminated in a center sump. In addition, it is recommended that a ball valve be cast into the base as well with an access cover.
 

The vault drain has been re-designed as outlined above, as requested. See valve vault detail.
  
15. Warning sign is unacceptable. Sign shall comply with Section 506.2.10(2) of the standard specifications\*\*\*
 

Warning sign has been updated to meet specifications as requested.

**Planning Commission Meeting Comments**

1. Provide a rounded median end at the south end of Buss Road even with the north lot line of Lot 31 (formerly Lot 40).
 

Median has been rounded and pulled back to match Lot 39's north line, as requested.
  
2. Shorten the south end of Buss Road by 10 feet to provide room to storm sewer discharge.
 

Buss Road has been shortened on the south end.