



Stantec Consulting Services Inc.
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August 1, 2019
File: 2047071100

Attention: Henry Allen, PE
Project Manager
City of Spokane Valley
10210 E. Sprague Ave.
Spokane Valley, WA 99206

Dear Mr. Allen,

**Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review, Update**

The City of Spokane Valley (City) has contracted Stantec Consulting Services Inc. (Stantec) to perform an independent technical review of an application for a Conditional Letter of Map Revision (CLOMR) and related technical documents associated with the Proposed Painted Hills Development project. Under an intergovernmental agreement with Spokane County (County), the City has directed Stantec to also perform an independent technical review of County-related documents associated with the Proposed Painted Hills Development project. The proposed development is located along Chester Creek near the intersections of Dishman-Mica Road, Thorpe Road, and Madison Road to the south of the City. The subject tract of land was historically a low-lying flood-prone area that was used as a golf course. The proposed development will place a significant amount of fill in the area to facilitate construction of residential, multi-family residential, commercial, and passive open-space areas. An infiltration pond and an extensive set of drainage improvements is proposed to manage stormwater runoff and reduce associated flood risks to acceptable levels. The CLOMR application and related documents were prepared and assembled by Whipple Consulting Engineers (WCE).

Stantec reviewed the original supporting documentation provided by the City and issued a letter detailing our "*Initial Completeness Review*" on December 17, 2018. WCE responded to the Stantec Initial Completeness Review by letter dated March 8, 2019 and has provided a revised narrative and additional data for consideration. Stantec has reviewed this additional information and has prepared this letter to document our observations.

In summary, based on the scope of our review, WCE's proposed engineering design appears to be consistent with City, County and FEMA requirements. However, we did find features of the proposed design that require additional information or analysis. Also, it is understood that this review was an overall completeness and methodology-based review, while it is the responsibility of the engineer of record (WCE) to certify the design is correct, appropriate, and all applicable design and permitting requirements have been met. This letter outlines the topics Stantec reviewed, the observations that were made, and identifies a number of items the applicant (WCE) will be required to provide to the City, County and/or FEMA as a part of the continuing construction permitting process.

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In the sections that follow our signature block, you will find Stantec's documentation for the Detailed Review. The following sections are organized to follow the same outline used in the Initial Completeness Review, beginning with the CLOMR, then followed by Ordinances (including applicable Spokane County Ordinances), Hydrology, and now Hydraulics. We've also added a section following Hydraulics that addresses the detailed City comments and WCE responses in WCE's August 20, 2018 submittal and their status with respect to the March 6, 2019 WCE submittal. Responses requiring additional follow-up by project proponents are flagged with this symbol:



All other new comments -those that do not require follow-up - are flagged with this symbol:



Bolded, italicized text indicates documents referred to by the project proponents that we were unable to locate in the submitted material.

We hope this information meets your needs with respect to the Proposed Painted Hills Development and will help facilitate moving forward with an appropriate course of action for the project. Please don't hesitate to contact us should you, or WCE, have any comments or questions related to our work.

Regards,

Stantec Consulting Services Inc.

Handwritten signature of Erman Caudill in blue ink.

Erman Caudill, PE (KY #23451), CFM
Senior Engineer, Water

Handwritten signature of Alan Gay in blue ink.

Alan Gay, PE
Associate, Senior Engineer

Handwritten signature of Russ Connole in blue ink.

Russ Connole, PE
Senior Project Manager

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1 CLOMR DETAILED REVIEW

For the previous submittal, Stantec relied on the WCE “*Painted Hills Flood Control Development Narrative*” dated August 20, 2018 and “*DRAFT CLOMR Application for the Proposed Painted Hills Development*” that was prepared by West Consultants Inc. and dated August 16, 2018. Stantec had several comments during the Initial Completeness Review related to understanding the proposed conditions and relating the design to most current proposed configuration.

1. There were numerous documents provided. It was assumed that the document “CLOMR Application for the Proposed Painted Hills Development” would be the narrative provided to FEMA for the CLOMR review, but it is unclear whether or not the other information will be part of the submittal. A lot of information is provided in the “*Painted Hills Flood Control Development Narrative*”, but it is uncertain whether this document will be submitted to FEMA or not. It is recommended that a more clear and easy-to-follow narrative be submitted to FEMA. The review for FEMA will be conducted by personnel unfamiliar with the project and therefore, the information should be presented in such a way that the project narrative, purpose and details can be easily followed and understood.

WCE response: The WCE Flood Control Narrative has been revised, and included with this submittal.

- ✓ The revised CLOMR narrative has been reviewed. The revised “*Painted Hills Flood Control Development Narrative*” by WCE dated March 6, 2019 provides a slightly better explanation of the proposed configuration from a hydrologic stance and will be instrumental in FEMA’s review process for the CLOMR application. The West Consultants CLOMR Application document provides the critical support data for the FEMA review of the CLOMR. Much of the additional information is support data for the proposed design and for FEMA purposes should be indicated as such.
 - a. If both documents are to be submitted, it is recommended that language referring to the submittal as a CLOMR-F be revised. From the initial completeness review, it appears the analysis that is provided in the package will revise the floodplain mapping for three detailed studies, including the removal of Unnamed Tributary to Chester Creek. Therefore, a CLOMR is required which will establish new flood hazard mapping. With the new floodplains established, a CLOMR-F may not be required since the the properties will not be within the new, effective Base Floodplain established in the CLOMR.

WCE response: The application being provided to FEMA is a CLOMR. The WEST authored report titled: *CLOMR Application for the Proposed Painted Hills Development* is the primary explanatory report associated with the CLOMR. The MT-2 Forms included in the report also report the application as a CLOMR. Some WCE materials which are provided as CLOMR report appendices inadvertently referred to a CLOMR-F rather than a CLOMR. Rather than revising all of the supplemental WCE materials, they will provide a letter to the communities clarifying that references to a CLOMR-F should be considered as just a CLOMR. Since the primary CLOMR report and the MT-2 forms correctly reference a CLOMR, we believe this will be appropriately clear for the FEMA reviewer.

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- ✓ The WCE response provides sufficient clarification regarding the project proponents intent for the CLOMR application to FEMA.
- 2. The MT-2 Forms and the “CLOMR Application for the Proposed Painted Hills Development” indicate that no change to the hydrology was completed for this task. The CLOMR Application also does not have a detailed write-up of the hydrology. It is Stantec’s understanding that the basis of the floodplains being removed from this location is a combination of fill and new infiltration basins. Given the infiltration basins are part of the hydrologic analysis and used a hydrologic program HSPF, it is recommended that a detailed narrative be added discussing the changes to the original Flood Insurance Rate Map (FIRM). For example, initial completeness review indicates that Unnamed Tributary to Chester Creek is being removed from the Flood Hazard mapping. Is the removal based solely upon fill or has the addition of infiltration basins removed floodplain? As stated previously, the FEMA reviewer will not have previous knowledge of the project or the methodologies and procedures used for the analysis.

WCE Response: It should be noted that the FIS HSPF model was not modified for this CLOMR. The CLOMR report has been updated to better clarify this fact. The main WCE facility is designed to have a peak design outflow discharge that exceeds the 0.2% annual chance FIS inflows. Since the facility capacity exceeds the inflows, there is no remaining ponded water in the project site under the proposed design. Accordingly, no modifications were needed for the hydrologic model. The lower portion of the Unnamed Tributary is being removed from the floodplain based on the proposed infiltration facility in Storage Area (SA) 6. This is described on Page 11 of the CLOMR report. The facility (storage and infiltration) can contain the 0.2% annual chance flood. The left overbank flowpath for the Unnamed Tributary is based on failure of the levee on the left overbank between Highway 27 and the storage area. Since that portion of the channel will be conveyed via a culvert in the proposed design, there is no need for a without levee scenario. Accordingly, the removal of the left bank overflow path and the main flowpath of the Unnamed Tributary are based on a combination of a proposed culvert and the proposed infiltration facility in SA6. Additional text describing this has been added to the CLOMR report.

- ✓ The WCE response regarding the Flood Insurance Study (FIS) modeling is sufficient and is supported by the detailed review of the hydrologic and hydraulic models discussed in greater detail in sections 3 and 4 of this review letter.
- 3. CLOMRs require the submittal contain example documentation of legal notice to be sent to all affected property owners within and outside of the the City’s jurisdiction, explaining the impact of the proposed action on their property. No documentation was found.

WCE Response: Property owner notifications are required prior to submittal to FEMA and the process for this has been discussed previously with the City and County during prior submittal and reviews of the CLOMR application. This project has been going on for some time and has undergone several changes during back and forth review and discussions between WCE and the City and County. Since the design has been evolving based on these discussions, in order to avoid public confusion, we are waiting until the City and County review is complete and we have agreement upon the proposed plan. At that point the final notification text will be provided to the

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communities who will place the text on letterhead and mail to the appropriate property owners. The notifications will be mailed either prior to or coincident with submittal to FEMA.

- ✓ The proposed solution has been reviewed with City of Spokane Valley and Spokane County staff. Both communities are in agreement with this approach.
- 4. CLOMR submittal guidance states that in locations where sediment transport affects hydrology, the effects of sediment transport should be considered in the hydrology and Section F of Form 3 should be submitted. Will sediment have an impact to the infiltration basins? Documentation should be provided in the narrative stating whether or not sediment will have an impact and if so, how it will be mitigated.

WCE Response: The inflows to the Thorpe Box Culvert and the main infiltration facility flow through grassy fields, with no physical channel, at low velocities (average 1.5 ft/s). Due to the low velocities, combined with the natural filtering effects of the vegetation, it is not expected that sediment will have significant impacts to the infiltration facilities.

Additionally, the proposed design by WCE also includes sumps within Manholes, a biofiltration swale, a settling pond and overflow weirs into drywells to allow for settlement of sediment prior to entering the gravel gallery under the infiltration pond.

The inflow to the Storage Area 6 infiltration facility flows through a grassy channel, at low velocity (average ~3 ft/s). It is similarly expected that the low velocities and filtering effects of the vegetation will minimize sediment transport into the facility. A similar design with sumps in manholes and overflow weirs into the drywells allows for settlement of sediment prior to entering the drywells of the Triangle Pond.

Finally, WCE has developed a grading plan of the site that keeps the finish floor of all proposed structures 1 foot above the Base Flood Elevation (BFE). And WCE has developed an Operations and Maintenance Plan for the facility to ensure the facilities receive regular maintenance and inspections to minimize the long-term effects of sediment that may enter these infiltration systems.

- ✓ The response from WCE indicates that sediment transport, settlement, and removal has been considered. A review of the Painted Hills Flood Control Development Narrative revised March 6, 2019, indicates the elements in WCE's response paragraphs are included, and a draft Operations and Maintenance (O&M) Plan was made available for review. It is understood that a final O&M document may be held back until the Draft Environmental Impact Statement (EIS) has been released. Comments on the adequacy of the draft O&M Plan are addressed further in a later sections (2.1 and 5.4) of these comments.
- 5. No shapefiles or CAD files were provided. Spatial files representing the following are required:
 - a. New cross-sections and profile centerlines for the new hydraulic model and results;
 - b. New floodplain boundaries;

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- c. All of the data used in determining the revised floodplain boundaries, flood profiles and floodway boundaries. This includes the contours developed from the 2003 LiDAR.

WCE Response: All requested files have been included with the comment response.

- ✓ A review of the submitted documents indicates that the above information has been included or addressed as appropriate.
6. The CLOMR application states that the topography used was the 2003 LiDAR from the effective FIS. However, the person who is assigned to review the CLOMR will not have access to this information. It is recommended that not only do you provide all the LiDAR information including the spatial files, but also the survey report (if available) to illustrate the topography data satisfies the FEMA guidelines and specs (Vertical Accuracy needs to be +/- 98cm).

WCE Response: The CLOMR application will be submitted to FEMA electronically through the online LOMC website. The FEMA submittal package will include some additional electronic materials that are required for the FEMA review which are not part of the package provided to the City. The digital materials will include work map files such as LiDAR contour data and digital SFHB linework. The survey report has not been included; however the 2003 LiDAR data is the same data used for the effective FIS. The data was reviewed and approved by FEMA at the time of the effective FIS.

- ✓ The response provides sufficient indication that the underlying data used in preparing the electronic models supporting the CLOMR application are acceptable to FEMA, and therefore acceptable to the City of Spokane Valley and Spokane County.
7. The CLOMR submittal requires a certified topography map. In order for this to be completed, a registered engineer or surveyor will need to certify the topographic work map they prepared using the 2003 LiDAR data with a PE stamp.

WCE Response: A certified topographic map has been developed by WCE and will be provided with the CLOMR application.

- ✓ A review of the submitted materials includes topographic maps of the project area signed and stamped by a Washington-licensed professional land surveyor.

2 LOCAL ORDINANCE DETAILED REVIEW

This portion of our review has been organized by applicable Spokane Valley Municipal Code (SVMC) ordinance chapter and Spokane County Code (SCC) ordinance chapter. Stantec provided comments with the Initial Completeness Review and WCE responded. For brevity, only those items with outstanding issues or where Stantec has provided additional comments have been included herein.

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2.1 FLOODPLAIN ORDINANCE SVMC 21.30

- c. Watercourse maintenance, Screening comment: A watercourse operations and maintenance plan has been noted as “awaiting completion per jurisdiction comments” (p259, CLOMR application).

WCE Response: The Proposed operations and maintenance manual (O&M) for the Home Owners Association has been drafted and previously submitted (October 14, 2016). with the completion of the EIS process, the O&M will be updated and submitted as a part of the final flood control plan approval.

➔ The final version of the watercourse O&M plan must be provided for review before ordinance compliance review can be completed. The submitted documents include a section titled, “Operations and Maintenance Plan For Painted Hills PRD Flood Control System”. (PRD is defined as “Planned Residential Development”) This section of the submittal appears to address ownership, purpose, describes the general drainage facility layout and function, and includes maintenance requirements and schedule for the drainage facilities, including the box culvert, Chester Creek and levee, concrete channel, storm drain mainline, manholes and catch basins, cross culverts under Madison Road, the bio-infiltration swale, and the drywells and gravel gallery. It also includes a section addressing financing, describing the annual maintenance fund and resulting estimated cost per lot. These items address basic O&M requirements for a Home Owner’s Association (HOA). In its capacity as the entity ultimately responsible to assure continued maintenance and operability of the flood management facilities per 44 CFR Part 65.6(a)(12) and City Ordinance 21.30.070.D.7.b, the City may require the project proponents and/or their successors fund a professionally-managed maintenance and operations entity. A detailed review is also included in section 5.4 of this letter, comments 13 – 17. Once the official copy is submitted for review, it will be evaluated.

- d. Department of Ecology approval will be required for development in a floodplain.

WCE Response: Although the DOE maintains oversight of the NFIP at the state level, to our knowledge they do not need to be part of the CLOMR process. CLOMRs and LOMRs only require review and signatures from the local community’s Floodplain Administrator prior to FEMA and DOE is generally not involved in that process. Other CLOMRs and LOMRs within Washington have not required DOE specific approval provided the projects meet local community ordinances, which generally include state level NFIP requirements.

➔ The ordinance requirement in 21.30.070.D.7.a is for the City to notify adjacent communities – in this case Spokane County – and the Department of Ecology prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration. As a result, the City may require additional information from the project proponent if Ecology requests such information from the City.

2.2 CRITICAL AREAS ORDINANCE SVMC 21.40 (2010 VERSION)

- ✓ The Critical area report, titled, “Biological Evaluation, Critical Areas Report, and Habitat Management Plan” (Biology Soil & Water, Inc., updated February 28, 2019) has been reviewed

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against the version of SVMC 21.40 in effect at the time of vesting in 2014. The Critical Area Report is in conformance with the requirements in that document.

2.3 LAND DISTURBING ACTIVITIES SVMC 24.50

- ✓ The City of Spokane Valley Land Disturbance Permit Application has been reviewed and appears complete. As noted above, it is supported by the project plans and documents in the CLOMR application package.

2.4 FLOOD DAMAGE ORDINANCE SCC3.20

2.4.1 3.20.230 Critical Facilities requires “(2) Construction of new critical facilities shall be located outside the limits of the 500-year floodplain when identified on the community’s Flood Insurance Rate Map (FIRM), except when no feasible alternative site is available. Critical facilities shall have the lowest floor elevated to or above the level of the 500-year frequency flood. Floodproofing and sealing measures shall be taken to ensure that toxic substances will not be displaced by or released into floodwaters.” Critical facilities are defined as, “...a facility for which even a slight chance of flooding would be too great. Critical facilities include, but are not limited to, schools, child care facilities, hospitals, police, fire and emergency response installations, nursing homes, or installations which produce, use, or store hazardous materials or hazardous waste.”

- ✓ Reviewing the applicants’ submitted materials, it does not appear that any Critical Facilities are planned for inclusion in the 500-year (0.2% annual recurrence probability) floodplain area.

Also, item (3) states, “Access routes shall be elevated to or above the level of the 500-year frequency flood to the extent possible.”

- ✓ A review of the Revised Flood map in the Painted Hills CLOMR Draft compared with the PRD plan set, indicates that the travelled ways in Spokane County’s jurisdiction will be outside of the 500-year frequency flood area. However, a version of the proposed condition flood map with the proposed street layout would be very helpful in facilitating any future reviews.

2.4.2 3.20.300 Flood plain development permit required/3.20.310 Application for Floodplain Development Permit.

- ➔ A Spokane County Floodplain Development Permit Application is included with the March 6, 2019 submittal. A review of that document, signed 10/13/16 by Brian Walker of Black Realty, Inc., indicates the application was only for the water-related construction. It includes watercourse alteration and fill material used for water-related construction. As Base Flood Elevation has been established for the area in question, Section F requirements apply. The requirement there is for a surveyor licensed in the State of Washington to stamp and sign the site plan. The Flood Control site plan topographic maps have been stamped and signed by Jon A. Gordon, PLS. However, those maps, in particular Sheet C1.0 covering the area under Spokane County jurisdiction, do not show the floodplain boundary, nor is there a temporary benchmark with elevation shown.

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2.4.3 3.20.340(2)(c)

- ✓ The requirement for hydrologic and/or hydraulic modeling studies from development proponents showing the impact of the proposed development on the base flood elevation has been met.
- ➔ Note that 3.20.340(3) requires a certification of the actual elevations showing project compliance with floodplain development permit conditions and requirements for residential structures, stamped and signed by a licensed land surveyor registered in the State of Washington.

2.4.4 3.20.340(5) requires that maintenance be provided within the altered or relocated portion of the watercourse so that the flood-carrying capacity is not diminished. A written maintenance agreement for this purpose shall be required and the County Engineer may require the agreement to be recorded. The submitted documents include a statement in the CLOMR Application in Appendix J, “Note: O&M Plans awaiting completion per jurisdiction comments.”.

- ➔ An official O&M Plan is needed for review. However, the submitted documents include a section titled, “Operations and Maintenance Plan For Gustin Ditch Flood Control System”. This section of the submittal appears to address ownership, purpose, describes the general drainage facility layout and function, and includes maintenance requirements and schedule for the drainage facilities, including the drainage culvert, conveyance channel referred to as a 3 foot bottom width ditch, a levee along the south side of the ditch, the existing gravel pit, referred to elsewhere as Triangle Pond, and 18 drywells to be installed in Triangle Pond. It also includes a section addressing financing, describing the annual maintenance fund and resulting estimated cost per lot. It appears the required elements of an HOA-based O&M plan have been addressed. However, Spokane County, per 44 CFR Part 65.6(a)(12) and Spokane County Code 3.20.340(5)(b) may require the project proponents and/or their successors fund a professionally-managed maintenance and operations entity to maintain the proposed Gustin Ditch flood control system. Once the official version of the O&M Plan has been submitted, it will be reviewed.

2.4.5 3.20.510 Anchoring. All new development and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure or works.

- ✓ A review of the submitted flood control plans indicates engineered slope and watercourse stabilization measures for piping, infiltration areas, and embankments are to be constructed. The PRD road improvements in the flood plain are not in Spokane County’s jurisdiction.

2.4.6 3.20.520 Construction Materials and Methods.

- ✓ The same comments noted for 3.20.510 apply to this section.

2.4.7 3.20.530 Utilities.

- ✓ No water supply wells or on-site waste disposal systems are proposed. Standard construction details for water and sewer systems have been provided; if current standard construction practices are followed during construction, infiltration of floodwaters into the water and sewer systems should be minimal.

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2.4.8 3.20.540 Subdivision and Other Proposed Developments.

- ✓ The PRD plans for buildings anticipated to be in areas subject to flooding during a 1-percent-annual-chance flood event are not in Spokane County's jurisdiction,

2.4.9 3.20.550 Review of Building Permits.

- ➔ A building permit application work sheet was submitted with the March 6, 2019 submittal set. The application is for grading. 5,100 cubic yards of native soil fill are noted on the application. Under "Additional Site Information", The box for "Are there any wetlands, streams or ponds within 200 feet of the property?" Is marked, "no". However, the Unnamed Tributary to Chester Creek identified on the Flood Insurance Rate Map is on parcels 45344.9108, and 45343.9052 according to sheet P1.3 of the PRD plans. Also, on the same form, the box for "Are there slopes greater than 30% on the property? Is marked "no", but the borrow pit on parcel 45343.9052 appears to have slopes with a drop of 30-feet in 46 horizontal feet.

2.4.10 3.20.610 Residential Construction.

- ✓ No residential construction is planned for the project in the area under Spokane County jurisdiction.

2.4.11 3.20.620 Nonresidential Construction.

- ✓ No occupied structures are planned for the project in the area under Spokane County jurisdiction.

2.4.12 3.20.630 Manufactured Homes and 3.20.640 Recreational Vehicles.

- ✓ No manufactured homes or recreational vehicle parking areas are planned for siting on the project.

2.4.13 3.20.650 Encroachments.

- ✓ No increase in water surface elevation is modeled for the areas within Spokane County jurisdiction.

2.4.14 3.20.660 Floodways.

- ✓ No floodways, either existing or proposed within the project are within the project improvement area and within Spokane County jurisdiction, except the inlet to the Chester Creek culverts at Thorpe Road. The project hydrologic and hydraulic analyses include the subject culverts, demonstrating that the culverts have been designed to carry the 1-percent-annual-chance flood event, and not result in an increase in base flood discharge.

2.4.15 3.20.690 Special Requirements, Flood Storage Areas.

- ✓ The flood storage area designed for parcel 45343.9052 has a study and design prepared by a Washington-licensed professional civil engineer, that shows the proposed flood storage area will have sufficient capacity to store and infiltrate floodwaters for the 1 percent annual chance flood event.

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2.5 CRITICAL AREAS ORDINANCE SCC11.20

2.5.1 11.20.030 Allowable Uses and Activities within Wetlands, Fish and Wildlife Habitats, and Geo-Hazard Areas.

- ✓ The proposed filling of greater than 50 cubic yards (5,100 cubic yards) is classified as a limited use in all three critical area categories. The proposed use as a stormwater detention/disposal facility is also limited. Under the 11.20.030.C process flow chart, additional information is required. The project proponents have prepared a Biological Evaluation, Critical Areas Report, and Habitat Management Plan (Biology Soil & Water, Inc., February 28, 2019). Protection measures have been proposed in this document.

2.5.2 11.20.050 Wetlands.

- ✓ According to the information presented by the project proponents, no wetlands are on the project site within Spokane County jurisdiction. The project proponents concluded that the waters from the Unnamed Tributary to Chester Creek crossing Spokane County jurisdiction being piped to the borrow pit infiltration basin in parcel 45343.9052 result in no impacts to regulated waters, so no mitigation is required.

2.5.3 11.20.060 Fish and Wildlife Habitat Conservation Areas.

- ✓ No wildlife priority habitat areas are concluded to be impacted by the project within Spokane County's jurisdiction. However, an east-west 10+ acre travel corridor is to be preserved by the developer for wildlife travel across the site by white-tailed deer, elk, and gray wolf.

2.5.4 11.20.070 Geologically Hazardous Areas.

- ✓ The project's Biological Evaluation, Critical Areas Report, and Habitat Management Plan did not address geologically hazardous areas. However, several geotechnical reports and addenda have been prepared for the project and have been provided by the project proponents. Among the criteria for geologically hazardous areas are slopes greater than 30%, soils identified by the NRCS as having a severe potential for erosion, both of which are present in the project area within Spokane County jurisdiction.

2.5.5 11.20.070.C. Regulations. Spokane County Erosion Control requirements apply.

- ✓ Project proponents have prepared a Storm Water Pollution Prevention Plan/Erosion Control Plan (SWPPP/ECP) for the areas to be disturbed by the project within Spokane County jurisdiction. It does not appear that plan sheet C5.1, the site plan showing the location of the improvements, includes the locations of the selected Best Management Practices (BMPs) included in the SWPPP/ECP. C5.1 does callout side slope seeding using a grass seed specified on the plan. It is unclear if the steeper slopes of the north face of the borrow pit are intended to be seeded. It does not appear that area is intended for regrading to reduce slope steepness, calculated to be 65% (approximately 1V: 1.5H). A review of the site soils per NRCS web soil survey shows it to be "Urban land-Springdale disturbed complex. Springdale gravelly complex soils in the 11.20.090 Appendix L are shown to have a severe erosion potential. Using the universal soil loss equation

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estimate confirms a severe erosion potential. Though sediment will be trapped within the borrow pit, it may be prudent from a safety and long-term maintenance perspective for the project proponents to address the erosion potential of the north face slope of the borrow pit.

2.6 MOUNDING ANALYSIS REPORT AUGUST 22, 2017, PREPARED BY IPEC, STAMPED BY PAUL T. NELSON.

- ✓ No comment. Conclusions appear to be supported by calculations.

3 TECHNICAL REVIEW OF HYDROLOGIC DATA

- ✓ WCE's response to Stantec's Initial Completeness Review dated March 8, 2019 adequately addresses the hydrologic questions posed. A more thorough review of site hydrologic conditions, proposed stormwater management features, and the indication that all structures will be placed at least 1 foot above the base flood elevations was instrumental in resolving those questions.

Summarizing our understanding of the hydrologic design:

WCE used hydrologic discharge data from the prior effective report by West Consultants Inc. ("*Flood Insurance Study Hydrologic Analysis for Chester Creek*", West Consultants, Inc. December 8, 2004). No changes to FEMA Effective Discharge Values are proposed.

The channel and culverts along the east side of the site, generally parallel to the west side of Madison Road, are designated in the FEMA "*Flood Insurance Study for Spokane County, Washington (53063CV000A)*" dated July 6, 2010 as the "Chester Creek Golf Course Overflow" reach. The published 1-percent-annual-chance discharge for the reach is 64 cubic feet per second (cfs). WCE assumed this discharge plus a 27 cfs overflow from Chester Creek (91 cfs total) as inflow for the proposed box culvert beneath Thorpe Road and a short section of concrete channel near the intersection of Thorpe Road and Madison Road.

The existing channel that flows north along the west side of Madison Road will be replaced with a dual 48-inch pipe culvert arrangement that will convey the 91 cfs from the south plus an additional 15 cfs (106 cfs total) from five 18-inch culverts that enter from the area east of Madison Road. The bioswale and infiltration pond receive discharge from the outlet of this pipe system.

The reported capacities of these features are as follows:

- Box culvert (30'W x 3'H) beneath Thorpe Road = 216 cfs
- Dual 48-inch pipe culverts = 154 cfs
- Bioswale = 269 cfs
- Infiltration trenches in the pond = 162 cfs

WCE cites a number of geotechnical studies and reports to conclude the proposed infiltration pond, gravel gallery system, and related features can infiltrate at least as much as the existing site features. However, regarding infiltration capacity, these reports and the provided calculations all reference a single full-scale drywell test conducted by IPEC on May 6, 2016.

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WCE also cites an October 14, 2014 IPEC report using the Spokane 200 Method to calculate that the Triangle Pond drywells will each have a capacity of 1 cfs.

- ✓ The hydraulic design discharge capacity of the proposed features appears to be adequate when compared to the effective discharges. The revised narrative provides a description of the assumptions used by WCE and will be instrumental in the CLOMR application.
- ➔ The infiltration rate in the discussion contained in the revised WCE narrative on narrative page 5 of 6 under the heading “Bio-infiltration pond” doesn’t agree with the value used in the Gravel Gallery Calc Sheet in the attachments. Reviewing the backup data provided in Report 9, the Full-Scale Drywell Testing, dated June 28, 2016, and the August 21, 2017 supplement, IPEC’s data shows a drywell capacity of 0.149 to 0.151 cfs. Using the SRSM approach from Appendix 4B, IPEC proportioned the q_a , allowable flow, to be 1.15 cfs; using a factor of safety of 1.1 appropriate to the very low fines passing the No. 200 sieve, one arrives at the recommended drywell infiltration flow rate of 1.05 cfs for design, which when divided by the typical 600 square feet of drywell infiltration area yields a design infiltration rate of 1.8×10^{-3} cfs/square foot. This infiltration rate value is carried forward to the WCE Gravel Gallery Calc Sheet used to calculate the gravel gallery design capacity of 162.64 cfs, including direct infiltration in the gravel fill itself of 116.92 cfs. In the System Summary section of the narrative, the 61,000 square foot bio-infiltration pond is said to have a discharge rate of 1.6×10^{-4} cfs/sf, for a total infiltration capacity of 9.76 cfs. The difference of 105.26 cfs is the bulk of the infiltration capacity claimed for the system. Reviewing the detailed design on sheets C5.31 and C5.32, the gravel gallery section for the drywells shows gravel to 18-foot deep, with perforated 12” pipe extending 10’ from the bottom of each drywell barrel. This is consistent with the Gravel Gallery Calc Sheet parameters. Project proponents will need to reconcile the narrative with the calculations and plans.
- ➔ It is recommended that WCE validate and/or justify the assumptions that the infiltration rate from the May 6, 2016 dry well test is applicable to the gravel gallery area since the areas appear to be separated by 230 feet.
- ➔ If the project proponents wish to claim on-site storage as the backup for infiltration in handling the design flooding event, it is further recommended that WCE provide a volumetric analysis demonstrating that sufficient storage is provided to keep flood elevations below the proposed base flood elevations and that corresponding structure elevations are still appropriate if the proposed infiltration rate were to be unrealized or substantially decline.
- ➔ Though the August 21, 2017 supplement to IPEC Report 9 includes a Figure 3 map indicating the drywell location, there isn’t a reference on Figure 3 or elsewhere to locate Figure 3 in relation to the rest of the project; from Sheet P3.0 compared to sheet C1.1 of the Flood Control plan set, it appears this existing drywell was located approximately 230 feet west of the west end of the proposed Gravel Gallery.

The Completeness review letter dated December 17, 2018 requested on p7, item 1, “..please provide an annotated copy or copies of drawing sheet C1.0 and C1.3 with indications of flow directions, peak discharges, estimates of runoff volumes, and infiltration rates and volumes for a 100-year, 24 hour duration standard storm event base on FEMA Effective Data, Corrected Existing,

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and Proposed Conditions. Reference points should be placed at flow path splits, structures, significant infiltration points, and hydraulically significant points within the study area. Providing the discharge and volume values in an accompanying table with corresponding points numbers is acceptable.”

WCE Response: The proposed infiltration facility design outflows are steady state and are not assumed to be volume limited. This follows the assumptions used in the effective FIS. Since inflows to the project are being captured with infiltration facilities that exceed the peak discharges, there was no need to modify the HSPF model to model the proposed conditions. Accordingly, the requested information does not exist. Above ground storage areas included in the design are additional safety measures that are above and beyond what is needed to infiltrate the FIS discharges and remove the project site from the floodplain.

- ✓ As noted above, the infiltration capacity claimed for the project appears to be at least partially supported. The backup claim is that should infiltration prove insufficient, then the storage volume will be “additional safety measures” that would store enough flood water to prevent a rise in the flood elevation above the established BFE. See recommendation above beginning, “If the project proponents wish to claim...”
- ➔ Please note the FEMA CLOMR review team may have additional questions, comments, and or request additional data in order to better understand the existing and proposed configurations.
- ✓ The revised WCE narrative does not include discussion of the design discharges on the main body of Chester Creek. Based on the West Consultants DRAFT CLOMR application it appears these values are not being revised and are consistent with the FEMA FIS (116 cfs near Thorpe Road), but clarification to the WCE front end narrative is recommended prior to submitting to FEMA as a part of the CLOMR application. If a discharge other than 116 cfs was used to design the channel geometry near the intersection of Thorpe Road and Dishman-Mica Road, further review is warranted.

4 TECHNICAL REVIEW OF HYDRAULIC DATA

As previously mentioned, the revised “*Painted Hills Flood Control Development Narrative*” by WCE dated March 6, 2019 will be instrumental in FEMA’s review process for the CLOMR application. That narrative essentially serves as a summary for the West Consultants Inc. CLOMR Application document, which provides the critical support data for the FEMA review of the CLOMR. Much of the additional information provided is support data for the proposed design and for FEMA purposes it should be indicated as such.

- ✓ For CLOMR purposes, the screening review recommended the previously submitted “DRAFT” CLOMR Application for the Proposed Painted Hills Development” by West Consultants Inc. dated August 16, 2018 be revised to reflect the latest proposed configuration and results without extraneous information. References to options that include levees or a CLOMR-F have been removed in the currently submitted “DRAFT” CLOMR.
- ✓ The revised WCE narrative clearly explains the design assumptions and revised geometry for the proposed development. The West Consultants CLOMR Application document provides hydraulic support data. The hydraulic design data and provided CLOMR application data reviews generally

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did not identify any hydraulic design elements for the proposed development that appeared to be fundamentally flawed from a technical stance. The FEMA review team responsible for the CLOMR application may have additional comments and/or request additional clarifications.

- ✓ In the Stantec Initial Completeness Review, question 4 related consideration of sediment transport impacts on hydrology and hydraulics. WCE has provided a response related to design assumptions and the pending O&M Plan. We concur with that approach and consider this question resolved.

5 REVIEW OF AUGUST 20, 2018 WCE RESPONSES TO CITY COMMENTS

WCE provided responses to City of Spokane Valley Comments on August 20, 2018, on “Painted Hills Floodplain Review #2” provided by the City on January 4, 2017. Stantec has reviewed each request and response against the material included in the March 8, 2019 WCE Painted Hills Flood Control package.

5.1 GENERAL

1. City: Prior to construction permit release, the following needs to be accomplished:

- a. Copy of CLOMR from FEMA
- b. Plan approval

WCE Response: We acknowledge that the items listed in a. through b. need to be accomplished for construction permit release.

- ✓ As these items will follow submittal of the CLOMR Application, there is no follow-up needed at this time.

2. City: Prior to construction acceptance, the following needs to be accomplished:

- a. Copies of the Department of Ecology (DOE) drywell registrations for all new drywells (submitted with construction certification)
- b. Record drawings showing as-built condition
- c. Revisions to HEC-RAS model and reassessment of the freeboard if construction has altered the channels from that depicted in the model
- d. Letter from design engineers certifying project constructed according to approved plans and specifications
- e. Levee certifications (44 CFR 65.10 (e))
- f. Construction Certification Package

WCE Response: We acknowledge that the items listed in a. through f. need to be accomplished for construction acceptance.

- ✓ As these items will follow construction, there is no follow-up needed at this time.

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5.2 FLOOD CONTROL DEVELOPMENT NARRATIVE

3. City: General - please address the requirement for an overflow path for the 100-year storm mentioned in SRSM chapter 2.2.4, paragraph on Infiltration Facilities.

WCE Response: We appreciate that the SRSM has this requirement, but as with all standards, requirements are written to cover the majority of situations. There are always exceptions that need to be looked at differently which this site falls into. Since our site is the regional low point designated as compensatory storage, with any possible overflow route blocked by prior development, a requirement for an overflow route is setting us up for failure. The facilities in this submittal are for the relocation of the compensatory storage of floodwaters. Stormwater overflow disposal will be addressed with submittal of plans for each specific subdivision.

- ✓ The project proponents have provided hydraulic calculations and supporting geotechnical data showing that the proposed improvements for stormwater overflow management include capacity sufficient to convey and infiltrate not only the 10-year design storm event as required in SRSM chapter 2.2.4, paragraph on Infiltration Facilities, but also the 100-year storm volume to drywells and the underlying voids in Spokane Valley gravel. As a result, Stantec concludes the current submittal shows conformance with SRSM chapter 2.2.4, paragraph on Infiltration Facilities.

4. City: Background

- a. Page 1 paragraph 1- change “when no flood events occurred” to “when no significant flood events occurred”.

WCE Response: Paragraph revised to include "significant."

- ✓ The City’s request has been adequately addressed.

- b. Page 2 - since 40th is an east-west oriented street should references to "east of 40th Avenue" be changed to "north (or south) of 40th Avenue"?

WCE Response: The portion of 40th Ave adjacent to Storage Area 6 runs northwest to southeast so we have revised the reference to "northeast of".

- ✓ The City’s request has been adequately addressed.

- c. Change references to "Spokane Rathdrum" aquifer to "Spokane Valley Rathdrum Prairie" aquifer.

WCE Response: Aquifer references have been revised.

- ✓ The City’s request has been addressed.

5. Main Flow Across Thorpe Road

- a. Proposed Design

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- i. Box Culvert/Open Channel - the text refers to 2-10" culverts but our records say that they are 18". Please check pipe size.

WCE Response: We have checked the culverts in the field and there are 3-15" CMP culverts. Text revised.

- ✓ Based on WCE's statement and a review of the text, the City's comment has been addressed. Noted that there are four 18" culverts under Madison Road.

- ii. Pipe Mainline - text mentions that along Madison are manholes with sumps but, per WSDOT details, these structures are called catch basins. Please revise.

WCE Response: Manhole has been revised to WSDOT Type II catch basin.

- ✓ Based on WCE's statement and a review of the text, the City's comment has been addressed.

- iii. Gravel Gallery System -

1. Paragraph 1- please include the design outflow rates of the drywells and the pipe crosses (may need to provide calcs).

WCE Response: The outflow rate of 162.64 cfs has been documented with the new gallery design. These calculations are provided in the flood control narrative appendix.

- ✓ Based on WCE's statement and a review of the text and additional documentation, the City's comment has been addressed.

2. Paragraph 2 - The design flow of 64 cfs was at Thorpe, please revise the design flow to what it is at the gravel gallery system.

WCE Response: The design flow rate for storage area 1 has been revised to 118 cfs as documented in the flood control narrative.

- ✓ The design flow rate at Thorpe is now shown to be 91 cfs in both the text and the supporting appendix material. As discussed in more detail in Section 3, the technical review portion of this letter regarding hydrologic calculations, the hydraulic capacity of the new box culvert under Thorpe Road is to be 216 cfs.

- iv. Infiltration Rate -

1. Paragraph 1- why is this paragraph included in that TP-29 is at the south end of the site by Thorpe whereas the gravel galleries are at the north end?

WCE Response: The paragraph has been deleted.

- ✓ Based on WCE's response the City's comment has been addressed.

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2. Paragraph 2 - please show how the 1.8 x 10⁻³ cfs/sf design flow rate was derived.

WCE Response: See IPEC addendum report dated 8-22-17.

- ✓ Based on WCE's response and a review of the referenced supporting document, the City's comment has been addressed.

6. Secondary Flow Across Madison Road

a. Paragraph 1

- i. Second sentence - mention that the flow from the most northerly culvert ends up going into culvert at 30+42.

WCE Response: Sentence revised to state flows goes to the south.

- ✓ Based on WCE's response and a review of the text, the City's comment has been addressed.

- ii. Third sentence - check that the culvert stations listed match those in the table below paragraph 3.

WCE Response: Stations revised to match table.

- ➔ A review of the table shows that in addition to the culvert stations noted in the text, the table below paragraph 3 includes a culvert at Station 38+98, for which West Consultants provided a 100-year storm flow of 7 cfs. However, this particular culvert's station is not specifically mentioned in the text. One can infer that this is the most northerly culvert referred to in the second sentence of the first paragraph that does not have an outlet on the west side of Madison Road; however, please reference that culvert's station in the text as well as in the table.

7. Attachments

- a. Provide outflow rate calculations for the HDPE crosses. If the head required to achieve the outflow rate is significant then check this water surface elevation as a downstream condition in the channel and pipe hydraulic calcs.

WCE Response: After consultation with the Geotech, the crosses have been eliminated and 12" perforated pipe will be installed the entire length of the gravel gallery.

- ➔ As noted in Section 3 of this review letter, Stantec has reviewed the hydraulic calculations provided by the project proponents and concerned about the reliance on a single drywell test extrapolated to show infiltration capacity for two separate areas. There is concern related to the underlying soil infiltration rate used in the gravel gallery; please see Section 3 of this letter.

- b. Open channel calcs – the Q may be a little bit more than 64 cfs when the flow from the two pipes at the upstream end of the channel are included.

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WCE Response: The open Channel has been revised since the last submittal. The revised open channel occurs between the box culvert and headwall of the two – 48” concrete pipes. The design flow has been based upon the 103 cfs 100 yr flood assuming that the channel to the south has been breached just before Thorpe Road. The flow from the roadside swales are anticipated to occur prior to the 100 yr flood, as they have a different time of concentration.

- ✓ Based on WCE’s response and a review of the text, the City’s comment has been addressed.

c. Pipe System calcs -

- i. Hydraflow is not on FEMA's list of approved software programs. We recommend that before submitting the study you check with FEMA to see if they will accept this software.

WCE Response: So noted; Hydraflow calculations are no longer included in the analysis.

- ✓ A review of the submitted material shows that Hydraflow calculations are still included in the submitted documents; they are, however, supplemented by commentary referencing SRSM guidance and supplemented by a report of an XPSWMM model analysis conducted by Ken Puhn of West Consultants. The report of that analysis includes 100-year return event water surface elevations at several system locations.

- ii. Include the two-foot-high level spreader at the downstream end of the system.

WCE Response: A 1-foot high spreader, has been called out per the design of the hydraulic engineer (West Consultants).

- ✓ The 1-foot high spreader is consistent with the SWMM output and appears to be a feasible structure based on the design of the settling basin and gravel gallery presented in the PRD plans provided by WCE (sheet C5.30).

d. Gravel gallery -

- i. Confirm source of the infiltration rate.

WCE Response: See IPEC addendum report dated 8-22-17.

- ✓ Based on WCE’s response and a review of the submitted material, the City’s comment has been addressed.

- ii. Check totals for the sidewall area and bottom area columns. The gravel gallery calculations have been revised with the change to the design.

WCE Response: The gravel gallery calculations have been revised with the change to the design.

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- ✓ Based on WCE's response, the revised text, the inclusion of the one-page email report on SWMM modeling, and the annotations in the Hydraflow output, the City's comment has been addressed.

- e. Bio-filtration swale design - the Manning's n of 0.2 is for shallow flow conditions. What depth does King County consider to be "shallow"? The depth calculated in the analysis is over 4 feet. Use a Manning's n applicable to a 4-foot flow depth.

WCE Response: The Manning's n-value has been revised per the *Open Channel Hydraulics* book by Ven te Chow, specifically Curves for A table on Page 182. Please see the appendix of the Flood Control narrative for a copy of the referenced material.

- ✓ A review of the "Bio-filtration Swale Design" spreadsheet printouts as well as the appended reference material from Chow shows reasonably conservative values of manning's n have been used.

5.3 BIOLOGICAL EVALUATION

8. Section 4.3, paragraph 1- can a vegetative cover be greater than 100% (top of page 9)?

WCE Response: See Biology Soil and Water, Inc., letter dated June 8, 2017.

➔ ***We have been unable to locate the referenced letter in the submitted material.***

9. Section 5.3, paragraph 2 - confirm that the items mentioned (work in channel only when dry, BMP's, spill protocols, minimal peripheral impacts, construction fences) are adequately provided in the construction documents.

WCE Response: Notes have been added to plans covering these items.

- ✓ Construction documents now have SWPPP/ESCP documents covering the gravel gallery and Triangle Pond areas that adequately address the City's comment.

10. Section 5.4 – confirm that the items mentioned (BMP's, FEMA specifications) are adequately provided in the construction documents.

WCE Response: Notes have been added to plans covering these items.

- ✓ Construction documents now have BMPs and show buffer areas consistent with Section 5.4; the City's comment has been adequately addressed.

11. Section 6.2, page 26 – because the levees at the small bridges need to be raised, more than 200' of levee needs to be raised.

WCE Response: See Biology Soil and Water, Inc., letter dated June 8, 2017.

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➔ ***We have been unable to locate the referenced letter in the submitted material. However, the Biological Evaluation format and content appear to be different from what the City commented on and in-line with the infiltrative approach rather than levee enhancement.***

12. Section 6.7, paragraph 1, all of the 1% flood is being infiltrated.

WCE Response: See Biology Soil and Water, Inc., letter dated June 8, 2017.

➔ ***We have been unable to locate the referenced letter in the submitted material. However, the Biological Evaluation format and content appear to be different from what the City commented on and in-line with the infiltrative approach rather than levee enhancement.***

5.4 OPERATIONS AND MAINTENANCE PLAN

13. General:

a. This manual needs to be incorporated into the overall O&M Manual for the whole site.

WCE Response: Noted. This manual will be incorporated into an overall O&M Manual at the time of its development.

✓ Given the timing of the response relative to development of a Draft EIS, this response adequately addresses the City's comment.

b. Include the levee O&M manual from the Geotech Levee Evaluation and Certification report as an appendix.

WCE Response: As the City of Spokane Valley has formally rejected the Levee design, all levee design and documentation has been removed.

✓ The response adequately addresses the City's comment.

c. Per CFR 65.6(a)(12) mention that the City Manager or designee will be the community official responsible for assuring maintenance activities are accomplished.

WCE Response: Responsible official statement has been added on page 1.

➔ The available copy of the O&M Plan, page 1, does not reference the City Manager or designee as the community official responsible for assuring maintenance activities are accomplished. The referenced regulation is 44 CFR 65.6(a)(12), "...and the title of the local community official who will be responsible for assuring that the maintenance activities are accomplished." Under this federal regulation and City ordinance 21.30.070.D.7.b, the City may require the project proponents and/or their successors fund a professionally-managed maintenance organization to maintain the flood protection facilities.

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14. Page 1:

a. Top -

- i. Spell out what a PRD is.

WCE Response: Abbreviations section has been added on page 1.

➔ The available copy of the O&M Plan, page 1, does not include a list of abbreviations.

- iii. State the party who is responsible for O&M until the HOA is formed.

WCE Response: Responsible party section has been revised to add Black Realty as the responsible party until the HOA is formed.

➔ The available copy of the O&M Plan does not include Black Realty as the responsible party until the HOA is formed.

- b. Middle, bullet list - add bullet stating HOA is responsible for: Providing annual report each October to Spokane Valley Public Works describing the general status of sinking fund account and also specific inspections, findings and maintenance performed.

WCE Response: Bullet items have been added with regards to reporting.

➔ The available copy of the O&M Plan does not include the requested bullet items.

- c. Last paragraph before next section (1.00) - Change to say: The parties mentioned above are primarily responsible for all operations and maintenance of...

WCE Response: Paragraph has been revised to refer to the parties mentioned above.

➔ The available copy of the O&M Plan does not include the requested change to the last paragraph.

15. Section 2.00, Drainage Facilities (page 2), paragraph 1

- a. Second line - remove "possibly" and "that has historically flowed into the property and"

WCE Response: Paragraph has been revised per the comment.

➔ The available copy of the O&M Plan does not include the requested changes to the second line of paragraph 1.

- b. Provide FEMA panel number and effective date.

WCE Response: FEMA panel number and effective date have been added.

Mainline manhole callout has been revised to WSDOT catch basins.

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➔ The available copy of the O&M Plan does not include the requested additions to Section 2.00.

16. 3.00 Maintenance Requirements and Schedules:

- a. Right after this section heading include: All inspections and repairs are to be performed by or directly overseen by a qualified professional per this schedule and following major events. Maintenance tasks are to be performed soon after the need is identified and before facility is to perform unless otherwise agreed to by the City. Repairs or replacements are to be completed immediately upon their identification unless otherwise agreed to by the City. Only qualified individuals may enter confined spaces.

WCE Response: The above paragraph has been added.

➔ The available copy of the O&M Plan does not include the requested addition to Section 3.00.

- b. First paragraph, last line - change "recommended" to "minimum required"

WCE Response: Recommended has been revised to "minimum required."

Box Culvert. A table has been added identifying location and agency having jurisdiction.

➔ The available copy of the O&M Plan does not include the requested addition to the last line of the first paragraph of Section 3.00.

- c. Chester Creek and Levee -
 - i. Reference the levee O&M manual from the Geotech Levee Evaluation and Certification and include in the appendix.

WCE Response: Reference to the O&M manual has been added to this section and the manual added as Appendix B.

➔ The available copy of the O&M Plan does not include the requested additional reference or the addition of an Appendix B that includes the levee O&M manual.

- ii. Paragraph 1
 1. 3rd sentence - add to the end: "... of the creek and along the north side of Dishman-Mica to Wilbur Road."

WCE Response: This sentence has been revised to include additional language.

➔ The available copy of the O&M Plan does not include the requested revision to the third sentence of the first paragraph.

2. 4th sentence, revise to say: "... maintained to ensure flood carrying capacity is maintained and flood flows are .."

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WCE Response: This sentence has been revised to include additional language.

➔ The available copy of the O&M Plan does not include the requested revision to the fourth sentence of the first paragraph.

3. Last sentence, revise to say: "Maintenance of the channel and levee and obtaining permits to perform the maintenance shall be..."

WCE Response: This sentence has been revised to include additional language.

➔ The available copy of the O&M Plan does not include the requested revision to the last sentence of the first paragraph.

- iii. Paragraph 2, Maintenance Items -
 1. 1st bullet - Geotech O&M says grass should be 3" high or taller. Include that grass should not be taller than 12" (per the Biological Evaluation)

WCE Response: This sentence has been revised to include additional language.

➔ The available copy of the O&M Plan does not include the requested revision to the first bullet of the second paragraph.

2. 3rd bullet - at end include that only native grasses are to be on the levee.

WCE Response: A sentence has been added to allow only native grasses.

➔ The available copy of the O&M Plan does not include the requested additional sentence under the third bullet of the second paragraph.

3. 5th bullet - after this bullet add the following bullet:
* Filling out the levee checklist and include it in the annual report to the City.

WCE Response: This sentence has been added.

➔ The available copy of the O&M Plan does not include the requested additional bullet and sentence under the fifth bullet of the second paragraph.

- d. Concrete Channel, first bullet - add to the end of the sentence: "... and repair or replace damaged portions."

WCE Response: This sentence has been revised to include additional language.

Pipe lengths updated to current plan under Storm Drain Mainline section.

➔ The available copy of the O&M Plan does not include the requested addition to the first bullet under Concrete Channel.

- e. Manholes and Catch Basins

Reference: City of Spokane Valley – Painted Hills Development
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- i. 1st sentence - revise to say "... mainline pipe system has catch basins at pipe junctions and ..."

WCE Response: Sentence has been revised to replace manholes with WSDOT Type II catch basins and reference to manholes deleted in heading and throughout section. Catch basin "lids" added to annual inspection.

Cross Culverts. Reference to manholes revised to WSDOT Type II catch basins and TV inspections revised to three years.

➔ The available copy of the O&M Plan does not include the requested revision to the first sentence under Manholes and Catch Basins.

- f. Bio-infiltration Swale Maintenance -

- i. Include mowing?

WCE Response: The bio-infiltration swale is not to be mowed.

✓ The response has adequately addressed the City's comment.

- ii. Include removal of accumulated sediments.

WCE Response: A sentence has been added for removal of accumulated sediment.

➔ The available copy of the O&M Plan does not include the requested addition of a sentence added for removal of accumulated sediments under Bio-infiltration Swale.

- g. Drywells/Gravel Gallery Infiltration Field -include that every X years the pipe and crosses are inspected by camera for clogging and debris.

WCE Response: A sentence has been added for camera inspection every three years. Fencing. Signs have been added to the twice a year visual inspection.

➔ The available copy of the O&M Plan does not include the requested addition of a sentence added for camera inspection under Drywells/Gravel Gallery Infiltration Field.

17. 4.00 Sinking Fund

WCE Response: Direction has been added to update the fund calculations per contracted costs and to update each time new contracts are obtained.

- a. Regular O&M costs -

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- i. Confirm that the annual quantities represent "A comprehensive visual inspection of the complete flood control drainage facilities should be conducted twice a year." e.g. Drywell cleaning is 2x/year so annual quantity should be 24.

WCE Response: A cost has been added to cover two comprehensive system inspections. This removes the inspection element from the maintenance tasks. Therefore, drywell cleaning annually is a quantity of 12.

➔ The available copy of the O&M Plan does not include the addition of a cost to cover two comprehensive system inspections each year.

- ii. Mowing - mention which facilities are to be mowed

WCE Response: Mowing description has been revised to include levee embankments.

➔ The available copy of the O&M Plan does not include the addition of a description of what mowing is to be done.

- iii. Debris removal - mention which facilities are to have removal

WCE Response: Debris removal description has been revised to include those facilities anticipated to need debris removal.

➔ The available copy of the O&M Plan does not include the addition of a description to the debris removal line item.

- iv. Pipeline TV inspection - mention which facilities are to be TV'd

WCE Response: Pipeline TV inspection has been revised to include the facilities to be TV'd.

➔ The available copy of the O&M Plan does not include the addition of which facilities are to be TV'd.

- v. Manhole inspection - are these the Catch Basins on the trunkline along Madison?

WCE Response: Catch basin has been added to the manhole inspection description.

➔ The available copy of the O&M Plan does not include the change to add catch basin to the manhole inspection description.

- vi. Include -

1. Levee inspection and maintenance

WCE Response: Levee inspection is included in comprehensive system inspection. Levee maintenance is included in the mowing line item.

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- ✓ Though the available copy of the O&M Plan has not been updated, based on clarifications described above, the City’s comment has been adequately addressed.

2. Madison cross-culvert inspection and maintenance.

WCE Response: Culverts has been added to debris removal and pipeline inspection descriptions.

- ➔ The available copy of the O&M Plan does not include the change to add culverts to the debris removal and pipeline inspection descriptions.

3. Swale reseeding and noxious weed removal

WCE Response: A line item has been added for swale reseeding and noxious weed removal.

- ➔ The available copy of the O&M Plan does not include the additional line item for swale reseeding and noxious weed removal.

4. Fencing, access roads, parking pads, signs inspection and maintenance

WCE Response: A line item has been added for fencing, access roads, parking pads, signs inspection and maintenance.

- ➔ The available copy of the O&M Plan does not include the additional line item for fencing, access roads, parking pads, sign inspection and maintenance.

5. Cost to prepare annual report

WCE Response: A line item has been added for cost to prepare annual report.

A line item has been added at 20% of total annual costs for contingencies to cover unexpected costs.

- ➔ The available copy of the O&M Plan does not include the additional line item for cost to prepare an annual report, or the 20% contingency line item.

b. Replacement Costs -

- i. in the first line the manholes are catch basins per WSDOT,

WCE Response: Table has been revised adding line items to break out each type of manhole, catch basin, etc.

- ➔ The available copy of the O&M Plan does not include the revision for type of catch basin or manhole under “Replacement Costs”.

- ii. include trunkline along Madison and trash racks

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: Table has been revised adding line items to break out each pipe size including trunkline, culverts and infiltration field. A line item has been added for trash racks.

A line item has been added for signs.

- ➔ The available copy of the O&M Plan does not include the revision for pipe size differentiation, or the addition of trash rack or sign line items under “Replacement Costs”.

5.5 PRELIMINARY GEOTECHNICAL EVALUATION, PHASE 1

18. Analysis and Preliminary Recommendations - paragraph 2 says that soils good for gravel galleries are in the south part of the site. So, the soils in the north part of the site are not good for gravel galleries?

WCE Response: No, the first paragraph states that the site soils are suitable for subsurface infiltration. The second paragraph points out that in the southern portion of site where the alluvial soils are deeper, it may be advantageous to use gravel galleries as opposed to drywells.

Supplemental geotechnical work including borings and a drywell test at the north end of the site demonstrate that infiltration is feasible. It is important to consider all of the available reports, and geotechnical information.

- ✓ Based on the above response, the City’s comment has been adequately addressed.

5.6 FULL-SCALE DRYWELL TESTING

19. Figure 1-show where the test occurred.

WCE Response: See IPEC revised report dated 8-21-17.

- ➔ Figure 3 of the revised report shows the drywell location, but as noted in Section 3 of this comment letter, it is difficult to tell where that map is in relation to the rest of the project site.

5.7 FLOOD CONTROL PLANS

20. Please include the following City project numbers on all plan sheets:

- a. SUB-2015-0001 (Subdivision)

WCE Response: Number has been added to all sheets.

- ✓ Verified; the City’s comment has been adequately addressed.

- b. EGR-2016-0066 (Engineered Grading Permit)

WCE Response: Number has been added to all sheets.

- ✓ Verified; the City’s comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

c. FDP-2016-0007 (Floodplain Development Permit)

WCE Response: Number has been added to all sheets.

✓ Verified; the City's comment has been adequately addressed.

21. All ROW dedications and easements shall be recorded prior to the use of the frontage improvements and flood control elements. Dedications for flood control elements need to be recorded prior to LOMR submittal with their file numbers entered on the plans.

We have received and reviewed (comments sent December 15, 2016) the following for flood control elements:

- a. an access easement and a drainage easement for the flood control bioswale and infiltration areas,
- b. a temporary drainage easement (initially called a temporary construction easement) for the storm drain pipe along Madison Road, and
- c. a drainage easement along Thorpe Road.

WCE Response: As per our discussions, these easements and dedications will be completed following CLOMR review prior to LOMR submittal.

✓ A review of the plans indicates relevant easement boundaries and types are shown throughout the plan set. Given the project status is pre-LOMR, the City's comments have been adequately addressed.

City: Please provide draft legal descriptions and exhibits for the following for flood control elements:

- a. Border Easements along Dishman-Mica that involve a levee,

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

- b. Slope easements along levee slopes not covered by a border easement,

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

- c. Access easements along levees that are outside the border easement.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

- ✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

City: Please provide draft legal descriptions and exhibits for the following (non-flood control elements):

- a. ROW dedication at the NE corner of Thorpe and Dishman-Mica,

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

- ✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

- b. ROW dedication at the NW corner of Thorpe and Madison,

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal

- ✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

- c. ROW dedication to the BCR's of Roads A through D on Madison,

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal

- ✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

- d. ROW dedication to the BCR's of Road E and the multi-family driveway approach on Dishman-Mica,

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

- ✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

- e. Border Easements along Dishman-Mica that don't involve a levee,

WCE Response: As a levee is no longer part of the flood control design the need for an additional easement is being assessed. As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

- ✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

f. Border Easements along Thorpe and Madison,

WCE Response: As a levee is no longer part of the flood control design the need for an additional easement is being assessed. As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

g. Access easement for Dishman-Mica sidewalk that meanders into site.

WCE Response: As per our discussions, these easements and dedications will be submitted for review and completed following CLOMR review prior to LOMR submittal.

✓ Given the project status is pre-LOMR, the City's comments have been adequately addressed.

22. Based on the street classification and project soil types, a pavement design shall be required for Dishman-Mica, Thorpe and Madison per SVSS Chapter 8.

WCE Response: A pavement design has been provided in IPEC report dated June 26, 2017. See flood control narrative for referenced report.

➔ The referenced report has been reviewed and includes an industry standard approach to pavement design recommendations. The PRD plans have been reviewed and pavement sections are included on sheet P2.0 of that plan set. However, the plan sheet sections do not completely agree with IPEC's recommended sections for aggregate base thickness, though the thickness design parameters are within the range of standard sections for Spokane Valley.

23. Please submit a striping and signage plan for Dishman-Mica Road. Coordinate with the Traffic Impact Analysis for required left turn lanes and two-way left turn lanes. Show how the two-way left turn lane will taper at the Chester Creek crossing where the pavement section narrows.

WCE Response: Signage and striping plans for Dishman-Mica Road, Thorpe Road, and Madison Road have been provided on sheets CIO.0, CIO.1, & CIO.2

✓ The referenced drawings sheets are included in the plan set and include the requested two-way left turn lane and taper on Dishman-Mica Road.

24. Please provide a Design Deviation Request for the following:

a. Two driveway approaches for Dishman-Mica Road (SVSS 7.8.2.b)

➔ No response has been received from WCE regarding this request, or a response has not been forwarded for review.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

25. For proposed utility adjustments and relocations, the applicant/engineer is required to contact each utility purveyor impacted by the required utility relocations and:

- a. Discuss with the purveyor the proposed work including relocations and adjustments as well as the costs for these activities,

WCE Response: So Noted, with the revised plans coordination with the water and sewer purveyors will be completed.

➔ Submitted plans include water and sewer utility connections, which evidence at least some plan coordination with the utility providers. ***Costs have not been included with the materials available for review.***

- b. Obtain from the purveyor a written statement that they acknowledge and concur with or have alternatives for the needed work, and

WCE Response: So noted.

➔ ***Written statements from utility purveyors were not included in the materials available for review.***

- c. Forward a copy of the statement to Spokane Valley Development Engineering. Receipt of statements will be required prior to civil plan approval.

WCE Response: So Noted.

➔ ***Written statements from utility purveyors were not included in the materials available for review.***

- d. Show the location of any relocated utilities.

WCE Response: Relocated utilities are shown on the Water and Sewer plans.

✓ Relocated utilities have been verified to be shown on the street and Water plans.

26. Please submit a drainage report for the roadside swales. Include curb inlet and non-flooded roadway width calculations.

WCE Response: A drainage report has been prepared for the roadway frontage.

✓ A drainage report was included and reviewed. The report follows SRSM requirements for analyses and content. No further comments are deemed necessary regarding the report content.

27. Confirm there is maintenance access to all stormwater and levee facilities (SRSM 11.1.6) and provide approaches where accesses connect to a road.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: Maintenance access has been provided for storm and flood control facilities.

- ✓ A review of the provided plans verifies maintenance access has been provided for the storm and flood control facilities.

28. If flood flows varied from those modeled and they ended up exceeding system design, for instance at the infiltration/gravel gallery area, will there be any time for response between the exceedance occurring and properties being inundated?

WCE Response: As Flood Events occur over a period of days and weeks there is time to manage the flood control facilities if need be. The proposed flood control facility is designed to handle the 100-year flood event, with additional design capacity as a part of the design safety factor. In addition, a surge protection at the open channel and headwall is included that will take the surge into the lowered park area. This additional storage would eventually be channeled back into the flood system via a catch basin and pipe to the west 48" pipe.

For any Flood event beyond the 100-year event the proposed finish floor of the residences and the commercial buildings are graded above the BFE, so any flooding would be maintained in the streets, with minimal incursion into the structures.

See Flood Control Narrative for specific design information.

- ➔ Proponents' response is generally consistent with the provided design and calculations, except as noted in comments in Section 3 of this letter.

29. Incorporate into the design the recommendations mentioned in:

- a. The Biological Evaluation in sections 5.3 (e.g. best management practices, construction fences around minimized work areas, restoration of impacts) and 6.5 (signs).

WCE Response: As the Levees are no longer part of the flood control system it is proposed that the implementation of the biological evaluation and management plan be prepared after the completion and survey of the completed fill, otherwise an approved plan would have to be modified once the fill is surveyed.

- ✓ The Biological Evaluation documents submitted with March 5, 2019 package is organized differently from the comment and WCE's response. It appears that the design has incorporated the key recommendation of the current Biological Evaluation, including:
 - Buffer widths,
 - Vegetation for noxious weed control, erosion and sediment control, and habitat enhancementHowever, wetland buffer notification signs or placement were not noted in the design documents.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

b. O&M Manual, Drainage Facilities section (signs).

WCE Response: Signs are proposed to be placed upon fences.

- ✓ So noted. Drainage facility signs were found in one location in the plan set. Sheet C5.30 contains a callout for placement of sign. However, precise location is not identified.

Sheet C0.0

30. In the 'Dev. Const. Insp.' contact information section, please revise the phone number to 599-6306 and the contact name to Ken Van Dyk. In the 'Roadways' section, please change the phone number to 720-5008 and remove the contact name. Applies to Sheet C9.0 as well.

WCE Response: Contacts have been revised on sheets C0.0 and C9.0.

- ✓ Plan review verifies that this has been done.

31. Make sure all sheet titles match the titles in the Sheet Index.

WCE Response: Sheet titles and/or sheet index have been revised to match.

- ➔ Sheet index needs to be updated to include C7.X Water Utility plans and C8.X Sewer Utility plans. In addition, plan sheet references were changed in this submittal and many callouts were not updated with new numbering and sheet names.

Sheet C0.1(General Notes)

32. SV Note #6 - change should to shall.

WCE Response: Note revised to read "shall."

- ✓ Spokane Valley General Construction note #6 now reads, "shall".

Sheet C0.2 (Dishman-Mica Road Sections)

33. For the Dishman-Mica Road Widening Calculations:

- a. Provide a column that depicts the existing super-elevated cross-slopes and adjust the proposed cross-slopes to match. The minimum proposed cross-slopes shall be 2%,

WCE Response: The widening calculations have been revised and the cross slope has been matched.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- ✓ Review of Sheet C0.2 confirms WCE's response. However, the minimum proposed cross slopes are less than 2% from Station 27+00 through 32+00, then Stations 32+85.69 and 33+00. However, these variances do match the existing cross slopes as requested.

b. Check the Proposed Curb Elevations.

WCE Response: The proposed curb elevations are based upon the varying cross slope and have been checked accordingly.

- ✓ A spot check of curb elevations corroborates WCE's response and appears to match the plans..

34. For Sections 1- 3, please:

a. Label the street centerline,

WCE Response: The centerline has been labeled.

- ✓ A check of the sections verifies use of the standard centerline symbol.

b. Revise the cross-slope of the pavement widening to match the existing super- elevated cross-slopes and provide the range of cross-slopes,

WCE Response: The cross slopes have been revised to match the existing cross slope.

- ✓ A plan check verifies that the design cross slopes match the existing cross slopes.

c. Verify the pavement section with a pavement design.

WCE Response: See IPEC Geotechnical Evaluation dated June 26, 2017.

- ➔ The pavement sections generally follow the guidance of the referenced report; however, in this case on Dishman-Mica the design aggregate base is 6-inches rather than the IPEC- recommended 12-inches in depth. See comment response 22.

d. Specify PG 70-28 for the HMA pavement.

WCE Response: The HMA pavement type has been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

35. For Section 1, please:

a. Revise the planter strip width to 7' per SVSS 7.5.10.

WCE Response: The planter strip width has been revised.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Extend the border easement to the toe of the slope or provide a separate slope easement,

WCE Response: The border easement has been extended to encompass the toe of slope.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

- c. Reference SVSS Standard Plan R-103 for the 6' sidewalk.

WCE Response: The Standard Plan has been referenced.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

36. For Section 2, please:

- a. List the range of pavement widths,

WCE Response: The range of pavement widths does not vary within the cross section. The pavement width does change at the bridge crossing and becomes 19' wide.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Remove the 10' border easement.

WCE Response: Border easement has been revised to 15'

✓ A review of the plans verifies that the City's comment has been adequately addressed in a manner consistent with other comments.

37. For Section 3, please:

- a. Verify the need for the roadside swale,

WCE Response: The roadside swale along Dishman Mica Road has been reduced in size, and will capture any project flow and receive plowed snow from the road surface.

✓ The City's comment has been adequately addressed in a manner consistent with other comments and responses.

- b. Extend the border easement to the toe of the levee slope or provide a separate slope easement,

WCE Response: The border easement has been revised.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

- c. List the range of pavement widths

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: The range of pavement widths are shown. See previous response.

- ✓ A review of the plans indicates the range of pavements widths applicable to Section 3 is 19-feet to 22 feet; both values are shown on the section, with the 19-foot value included in “Pavement Width is 19’ at Chester Creek Crossing”. In that sense the City’s comment has been addressed.

d. Adjust the 34’ and 64’ dimension strings to end at the ROW.

WCE Response: Dimension strings have been adjusted.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.
- e. For the 8’ asphalt path: locate the construction line location and specify the pavement section and a cross-slope. If maintenance vehicles will utilize the asphalt path, verify the width and pavement section.

WCE Response: The asphalt path width and cross section have been revised to a 10-foot path with 1-foot shoulders. An alignment has been added and will act as the construction line.

- ➔ From the revised plans, the WCE response is accurate. However, the asphalt path pavement section is not shown.

Sheet C0. 3 (Thorpe and Madison Road Sections)

38. For Section 4, please:

a. Provide applicable stationing for this section.

WCE Response: Stationing has been added to the section.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.

b. Reference SVSS Standard Plans R-102 for the curb and gutter and R-103 for the sidewalk,

WCE Response: The standard plans have been referenced.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.

c. Verify the pavement section with a pavement design.

WCE Response: See IPEC Geotechnical Evaluation dated June 26, 2017.

- ➔ The pavement sections generally follow the guidance of the referenced report; however, in this case on Thorpe the design aggregate base is 6-inches rather than the IPEC-recommended 12-inches in depth. See comment response 22.

39. Provide a separate cross section of Thorpe Road that includes the concrete channel.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: For clarity and simplification, the cross section of Thorpe Road and the channel/box culvert has been provided on Sheet C5.1. A note has been added to this affect.

- ✓ A review of the plans indicates the response is generally correct. However, the note on plan sheet C0.3 states, “See Sheet C5.2 for details”; when looking for that sheet, the detail sheet with the referenced detail is actually numbered “C5.10” in its title block. The sheet index on C0.0 is consistent with the “C5.10” designation.

40. For Section 5, please:

- a. Provide applicable stationing for this section.

WCE Response: Stationing has been added to the section.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.
- b. Provide a pavement and gravel section for the meandering path, note that this path will be used by a vector truck to clean out drainage facilities,

WCE Response: A pavement section has been provided.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.

- c. Label the range of cross-slopes for the widening per the widening calculations,

WCE Response: The slope has been revised to be 3.00%.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.

- d. Adjust the border easement width to account for the meandering path.

WCE Response: The boarder easement has been revised to the width of the proposed tract.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.

- e. Label the varying swale widths to account for the meandering path.

WCE Response: The swale width is uniform, the cross section has been revised to reflect the uniform width with a note listing the range of widths from swale to path.

- ✓ A review of the plans verifies that the City’s comment has been adequately addressed.

- f. Label the dimension from the ROW to the centerline of the 60" storm pipe.

WCE Response: This dimension has been added to the 2- 48" pipes.

- ➔ A dimension line has been added from the ROW line to somewhere on the more easterly 48-inch pipe. However, from the detail as drafted it is unclear where that dimension is supposed to

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

intersect the pipe.

g. Verify the pavement section with a pavement design.

WCE Response: See IPEC Geotechnical Evaluation dated June 26, 2017.

- ✓ A review of the plans and the referenced report verifies that the City's comment has been adequately addressed; in this case the IPEC report and section call-out agree. See comment response 22 for additional detail.

41. For Sections 4 and 5 and the roadside swales, include the following or provide a separate swale section:

a. 3:1 maximum side slopes,

WCE Response: The slope has been labeled on a typical section.

- ✓ A review of the plans and the referenced report verifies that the City's comment has been adequately addressed.

b. 12" treatment soil zone.

WCE Response: The treatment soil has been called out on a typical section.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

c. If the following treatment soils are installed, the City of Spokane Valley does not require soil testing per SRSM: *"For swales and ponds, the top 12 inches of soil shall consist of a thoroughly blended mix of 50% compost with 50% native soils."*

WCE Response: So noted. A note has been added to the typical swale section.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

d. Note requiring swale bottoms and side slopes shall be lined with sod/hydroseed.

WCE Response: A note for hydro seeding has been added with a seeding note on Sheet C4.1.

➔ The note for hydro seeding is on C0.3. No Sheet C.4.1 was in the plan set.

e. Typical bottom dimensions and depth,

WCE Response: A typical cross section has been provided with the elements of items a through f.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- f. Show a typical drywell or catch basin section with the 6" treatment depth and minimum depth from rim to flowline.

WCE Response: A typical catch basin has been shown with call outs of 0.5' bottom to rim and 0.8' bottom to flowline.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C1.3 (Site Element Plan)

42. Coordinate the 'Madison Rd Easement Plan' section with Sheet C0.3.

WCE Response: The plan and section have been coordinated.

- ➔ The Madison Rd Easement Plan section is similar to the section 5 shown on C0.3, except the dimensions from the ROW line to the east-most pipe are different.

43. Plan view calls out 2-10" culverts under Thorpe but our records say that they are 18". Please check the pipe size.

WCE Response: We have checked and measured the culverts in the field and there are 3-15" CMP culverts. The text has been revised.

- ✓ A review of the plans and associated documents verifies that the City's comment has been adequately addressed.

Sheets C3.00-C3.23

44. Reference intersection detail sheet at all applicable intersections.

WCE Response: The intersection detail sheet was referenced with the centerline-centerline callout in the plan view.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

45. Make sure all proposed and existing ROW and all easements are labelled.

- a. Where levee is outside the ROW and Border Easements provide access and slope easements.

WCE Response: The ROW and easements have been labeled.

- ➔ A review of the plans indicates there are some sheets on which some easements have not been labeled; otherwise, the review verifies that the City's comment has been addressed.

Sheet C3.00 (Dishman-Mica Road P&P)

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

46. For the sidewalk that extends from Dishman-Mica Road to onsite:

a. Provide the station and radius of the curve,

WCE Response: A reference is made to see sheet C3.03. Sheet C3.03 has a plan and profile for the sidewalk.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

b. Provide a plan view that shows the entire alignment of the onsite sidewalk.

WCE Response: Plan view has been added on sheet C3.03.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

c. Provide finish grade spot elevations that comply with ADA guidelines and include a cross-slope for drainage.

WCE Response: Profile has been added on sheet C3.03. Cross slope callouts have been added on sheet C3.03.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

d. Show and label the access easement for all portions of the sidewalk located onsite.

WCE Response: Access easement has been added on sheet C3.03.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

47. Please identify the existing hydrant near STA 22+40 and the power pole and telephone pedestal near STA 22+60. Determine if relocations are required.

WCE Response: The existing fire hydrant has been called out. There is no relocation necessary.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

48. For the new guardrail it will need to extend farther to the south than indicated on the plan due to the posted speed limit and slopes. The curb and gutter does not provide an adequate barrier in this situation. Verify the required length of the guardrail and the clear zone requirements with AASHTO Roadside Design Guide.

WCE Response: New guardrail has been called out two feet behind the curb at the location of the existing guardrail.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

49. For Construction Note #10, specify the start STA for the guardrail and reference new guardrail only.

WCE Response: Stationing for new guardrail has been added. See construction note 9.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

50. For Construction Note #11, specify the start and end stations of the pavement taper. The required taper length shall be calculated per $L = ws$, where 'w' is the widening width and 's' is the posted speed limit of 45 mph.

WCE Response: The pavement taper south of the Dishman-Mica Rd box culvert and at the north end of the property has been calculated by $L=WS$ and the start and end stations have been called out. The taper just north of the Dishman-Mica Rd box culvert has been widened per the meeting on 6/12/17.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. However, station callouts do not have offsets, which would help verify calculation.

51. The Traffic Impact Analysis mentions streetlights along Dishman-Mica. Please show the light locations and specify that the lights will be installed with the plat. Specify necessary conduit sleeves to be installed with the frontage improvements.

WCE Response: Street lights have been called out at public intersections.

- ➔ In review of the plans, new street light location is not identified at Thorpe Road intersection where an existing light is getting removed. Conduit locations not identified in plans. However, note for Sundown Rd intersection indicates "coordinate final location and power supply with Inland Power".

52. In the profile, adjust the Top of Curb elevations to match the existing super-elevated cross slopes and the revised Road Widening Calculations from Sheet C0.2

WCE Response: The TBC has been revised to match the existing super-elevated cross-slopes.

- ➔ In review of the plans, most elevations are matching Sheet C0.2. However, TBC elevations at Stations 25+00, and 25+50 do not match table.

Sheet C3.01 (Dishman-Mica Road P&P)

53. For Construction Note #2, please reference Sheet C0.2.

WCE Response: Sheet C0.2 has been referenced in construction note 2.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

54. For Construction Note #3, please reference a 'spill' curb, similar to Sheet C3.00.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: Spill curb is now referenced in construction note 3.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

55. For Construction Note #4, reference the appropriate plan sheet and detail for the asphalt path details. The City does not have specific standards for asphalt pathways.

WCE Response: Sheet and detail are now referenced in construction note 4.

- ✓ A detail is not referenced in note 4. However, pathway section information is provided in note. Therefore, a review of the plans indicates the intent of the City's comment has been adequately addressed.

56. Since the 8' pathway will be driven on, provide adequate turning radii around the approaches.

WCE Response: With the removal of the levee the path will no longer be driven upon.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

57. Verify Construction Note #5 for this sheet.

WCE Response: Note 5 has been revised to reference a different construction item.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Note 5 is no longer being reference and noted as "Reserved".

58. For the pedestrian ramps at Road 'E', provide sidewalks on each side of the Road 'E' to down to the ramps or provide sidewalks from the top of the levees down to the pedestrian ramps. Short sections of adjacent sidewalk at the ramps will be acceptable.

WCE Response: Sidewalks and ramps are now provided at Sundown Road (road E).

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

59. Road E - show how stormwater flowing down/along Road E is captured before it gets to Dishman-Mica and is disposed of.

WCE Response: Plan has been revised to direct stormwater off Sundown Rd via under Type 2 curb inlets into roadside swales behind the sidewalk/curb. See sheet C3.03 for details.

- ➔ In review of the plans, this does not appear have been addressed. There are no Type 2 curb inlets called out on Sundown and details are not provided on sheet C3.03. In fact, although not called out anywhere in the plans, the plan view shows inlets on Dishman-Mica where the spill curb is located (which won't direct flow to the swale). A transition from spill curb to standard curb needs to occur if inlets remain on Dishman-Mica and there are no Type 2 inlets indicated on Sundown.

60. For Construction Note #10 please verify the Standard Plan R-113 reference, as it is intended for adjacent sidewalks.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: Note has been revised to reference Std Plan R-111.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

61. For Construction Note #12, please verify the sheet reference.

WCE Response: Note has been revised to reference sheet C4.2.

- ➔ In review of the plans, note #12 has been changed to "Reserved". Perhaps callout is no longer required as there is no Sheet C4.2 in plan set.

62. For Construction Note #15, specify the start and end stations of the pavement taper. The required taper length shall be calculated per $L = ws$, where 'w' is the widening width and 's' is the posted speed limit of 45 mph.

WCE Response: Taper stations have been added. Per meeting at the City, the taper length has been shortened to provide full width widening at the driveway approach.

- ➔ In review of the plans, taper occurs on sheet C3.02 and it is unclear what length the taper is supposed to be because offsets are not provided. The calculations show 175', plan view has the taper at 163' based on station callouts, and Note 9 indicates 220.5'. It is unclear which taper length is intended.

63. For the approach at STA 35+25, show the curb returns and provide pedestrian ramps. Provide sidewalks down to the ramps.

WCE Response: This is outside the match line and shows on sheet C3.02

- ✓ A review of the plans verifies that the City's comment is addressed regarding sheet C3.02.

64. Provide Type III barricades per SVSS Standard Plans R-142 at each approach and Road 'E' until they are operational.

WCE Response: Construction note 13 added to provide for barricades.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

65. Please provide centerline stations for the driveway approaches at STA 28+75 and 35+25.

WCE Response: Centerline stations have been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

66. In the profile, adjust the Top of Curb elevations to match the existing super-elevated cross-slopes and the revised Road Widening Calculations from Sheet C0.2.

WCE Response: The TBC elevations have been revised to match the super-elevated cross-slopes.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- ➔ In review of the plans, most elevations are matching Sheet C0.2. However, TBC elevation at Station 32+50 does not match table.

Sheet C3.02 (Dishman-Mica Road P&P)

67. See all applicable review comments from Sheet C3.01 for this sheet.

(53) For Construction Note #2, please reference Sheet C0.2.

WCE Response: Sheet C0.2 has been referenced in construction note 2.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

(54) For Construction Note #3, please reference a 'spill' curb, similar to Sheet C3.00.

WCE Response: Spill curb is now referenced in construction note 3.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

(55) For Construction Note #4, reference the appropriate plan sheet and detail for the asphalt path details. The City does not have specific standards for asphalt pathways.

WCE Response: Sheet and detail are now referenced in construction note 4.

- ✓ A detail is not referenced in note 4. However, pathway section information is provided in note. Therefore, a review of the plans indicates the intent of the City's comment has been adequately addressed.

(56) Since the 8' pathway will be driven on, provide adequate turning radii around the approaches.

WCE Response: With the removal of the levee the path will no longer be driven upon.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed if levee has been removed.

(57) Verify Construction Note #5 for this sheet.

WCE Response: Note 5 has been revised to reference a different construction item.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Note 5 is no longer being reference and noted as "Reserved"

(63) For the approach at STA 35+25, show the curb returns and provide pedestrian ramps. Provide sidewalks down to the ramps.

WCE Response: The plan has been revised.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. A commercial driveway per R-111 is now being proposed.

(64) Provide Type III barricades per SVSS Standard Plans R-142 at each approach and Road 'E' until they are operational.

WCE Response: None given. (addressed in comment 73)

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Barricades are provided in Note 11.

(65) Please provide centerline stations for the driveway approaches at STA 28+75 and 35+25.

WCE Response: Centerline stations have been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

(66) In the profile, adjust the Top of Curb elevations to match the existing super-elevated cross-slopes and the revised Road Widening Calculations from Sheet C0.2.

WCE Response: The TBC elevations have been revised to match the super-elevated cross-slopes.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

68. Please remove the extraneous hextag #1 near STA 39+75.

WCE Response: The Hex tag has been removed.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

69. For levee and 8' path to be installed on church property from STA 35+82 to 39+80:

a. Please provide evidence of granted permission from the church to build on their property.

WCE Response: With the removal of the Levee from the flood control system the levee on the church property has also been removed

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

b. Provide access, slope and construction easements.

WCE Response: A slope and construction easement has been shown. See sheet C4.0.

- ➔ In review of the plans, a 36' border/levee access and maintenance easement is indicated on the sheet, it is unclear if this is still the case based on comment #69. No easements are indicated on Sheet C4.0. Sheet C5.0 has a note indicating "Temporary access & drainage easement to be

Reference: City of Spokane Valley – Painted Hills Development
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altered at final plat". Temporary access, slope and construction easements should be established prior to construction, not at final plat.

70. For Construction Note #9, specify the start and end stations of the pavement taper. The required taper length shall be calculated per $L = ws$, where 'w' is the widening width and 's' is the posted speed limit of 45 mph.

WCE Response: Stations have been added.

➔ In review of the plans, it is unclear what length the taper is supposed to be because offsets are not provided. The calculations show 175', plan view has the taper at 163' based on station callouts, and Note 9 indicates 220.5'. It is unclear which taper length is intended or required.

71. Any relocated utilities shall be located outside of the clear zone.

WCE Response: Construction note 7 required relocations to be outside the clear zone. Additional utility items have had hextags added.

✓ In review of the plans, there are no hextags added to plan view. However, the note covers the possibility and directs contractor to coordinate with the appropriate agency prior to relocation.

72. For Construction Note #10 please verify the Standard Plan R-113 reference, as it is intended for adjacent sidewalks.

WCE Response: Note has been revised to reference Std Plan R-111.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

73. Provide Type III barricade per SVSS Standard Plans R-142 at the approach until it is operational.

WCE Response: Construction note 11 added to provide for barricades.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C3.10 (Thorpe Road P&P)

74. In the Left Top of Curb Profile, show all text for the vertical curves.

WCE Response: Profile adjusted to show all text.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

75. In the profiles, the minimum 'k' value for sag vertical curves is 50 per SVSS Table 7.1.

WCE Response: As requested in the 6/12/17 meeting the difference in elevation between a VC with $K=50$ and a VC with a $K=40$ has been calculated. The difference is 0.59'. Due to the lack of room to lengthen the existing VC the grades had to be changed to calculate the VC with $K=50$.

Reference: City of Spokane Valley – Painted Hills Development
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- ✓ A review of the plans verifies that the City's comment has been addressed based on information provided. However, WCE response intended to convey that the grades had to be changed to calculate the VC with $K=40$ (not 50).

76. In the profiles, the minimum 'k' value for crest vertical curves is 30 per SVSS Table 7.1.

WCE Response: The length of room provided in this area of Thorpe allowed for the VC to be lengthened and meet the K value of 30.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

77. For Construction Note #2, please reference Detail 4 on Sheet C0.3.

WCE Response: Reference revised to Detail 4 on sheet C0.3.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

78. For Construction Note #6, reference the roadside swale section in the detail sheets, in addition to S-130.

WCE Response: Reference has been revised to Detail A on sheet C0.3 and Std Plan S-130.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

79. Label existing sidewalk to remain between STA's 15+00 and 17+00.

WCE Response: Label with stations has been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

80. Construction Note #7 at STA 11+53.78 should reference a driveway approach with a separated sidewalk. See Standard Plans R-110 through R-112.

WCE Response: Construction note 19 added to reference Std Plan R-110.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

81. Identify hextag #10 at each end of the existing sidewalk near STA 15+00 and 17+00.

WCE Response: Hextag 10 added with stationing.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

82. For the change in direction of the sidewalks near STA's 13+90, 14+75, and 16+75, please limit the maximum angle of change to 30 degrees.

WCE Response: The angle has been revised to 30 degrees.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
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83. For Construction Note #17, please locate the drywell near the low point. Maintain 5' of horizontal clearance from the nearest curb inlet. Verify that the drywell rim will be 0.25' minimum below the adjacent flowline elevation.

WCE Response: The Catch Basin has been moved to the lowest pond level.

- ✓ Profile shows Top of Curb LT at Sta 12+93.40. Catch basin callout is located at Sta. 12+78.5, so this is not the low point of the swale. However, curb inlet is shown near 12+91 so flow gets to the drywell and swale will function as designed, maintaining minimum 5' of clearance from nearest inlet. Based on these parameters, the intent of the City's comment has been addressed.

84. Please provide stationing for all curb inlets. Limit maximum spacing of curb inlets to 100', or less depending on curb inlet calculations. Locate the curb inlets to maximize swale treatment.

WCE Response: Curb inlet location table added to sheet C3.11 per note on this sheet. Spacing has been revised per 100 ft maximum and/or to maximize treatment.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

85. Roadside swales are considered flat for volume calculations where the swale bottom slope is 1% or less. Address all roadside swales where the street grades exceed 1%.

WCE Response: Check dams have been added where slope exceeds 1%. See sheet C0.3 for check dam detail.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C3.11(Thorpe Road P&P)

86. See all applicable review comments from Sheet C3.10 for this sheet.

(77) For Construction Note #2, please reference Detail 4 on Sheet C0.3.

WCE Response: Reference revised to Detail 4 on sheet C0.3.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

(78) For Construction Note #6, reference the roadside swale section in the detail sheets, in addition to S-130.

WCE Response: Reference has been revised to Detail A on sheet C0.3 and Std Plan S-130.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

87. Please provide a Construction Note for the 6' wide sidewalk at the box culvert.

WCE Response: Construction note 18 added for 6 ft sidewalk

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

88. Drainage easement to be labeled as permanent.

WCE Response: Easement label has been revised.

- ✓ A review of the plans verifies that the intent City's comment has been adequately addressed. Labels do not say permanent, but they do not say temporary either.

89. How will large debris lodged in the middle of the concrete channel get removed {say, at station 9+00)? Will equipment need to get down into the channel? If so, how? Provide access road and easement {include file number) along full length of channel?

WCE Response: With the revised design, large debris that fits through the box culvert would flow straight through the open channel and would be pushed against the angled trash racks of the headwall as flood waters rise the debris would float/rise up the trash rack, thus clearing the inlet of debris. Additionally, a maintenance road and gate are placed above the headwall. With a mini-excavator any piled debris can be removed safely. See sheet C5.1 for more detail. Per previous discussions, easements will be recorded and file numbers added after the CLOMR is received.

- ✓ A review of the plans verifies that the intent City's comment has been adequately addressed, with proposed trash rack and access to channel being provided.

90. Please provide a curb inlet at low point STA 19+56.36 and near STA 22+75. Provide stationing for all curb inlets. Limit maximum spacing of curb inlets to 100', or less depending on curb inlet calculations. Locate the curb inlets to maximize swale treatment.

WCE Response: Inlets have been added. Curb inlet location table added to sheet C3.11. Spacing has been revised per 100 ft maximum and/or to maximize treatment.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

91. For Construction Note #14 and the existing drywell to be abandoned, please specify that decommissioning drywells shall comply with WAC 173-218-120 and WSDOT Specs 7- 05.3{2) Abandon Existing Manholes. The following is required:

- a. Remove any structure within three feet of the land surface,
- b. Backfill up to three feet below the land surface with material that is uncontaminated, chemically and biologically inert, and that drains equal to or more slowly than the native material surrounding the UIC well, and
- c. Fill the remaining three feet directly below the land surface with native soil or other structurally sound material common with current engineering practices.

WCE Response: Construction note revised and decommissioning notes added to sheet C3.11.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
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92. For Construction Note #16, please provide Thorpe Road stationing and offsets for each catch basin for construction clarity.

WCE Response: Construction note directs to sheet C5.1 for location info.

➔ In reviewing the plans, there is no Sheet C5.1. The note refers to Sheet C5.01, there is no Sheet C5.01 either. The detail appears to be on Sheet C5.10, but there are no callouts for the catch basin and piping locations on the Box Culvert Detail. There are similar issue with Note 17.

93. In the Centerline/Sawcut Profile, please provide the missing grade break elevations for STA's 23+35.57 and 23+55.57.

WCE Response: Grade break elevations have been added.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C3.12 (Chester Creek Culvert Extension)

94. Please revise the sheet title and Section 'A' title to match the Sheet Index on Sheet C0.0.

WCE Response: Titles have been revised to match.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

95. Please label Thorpe Road.

WCE Response: Thorpe Road has been labeled.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

96. For Section 1,

a. Verify the ROW/easement dimensions. Sheet C0.3 shows a ROW width of 55'.

WCE Response: ROW width revised to show 55 feet.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

b. Reference Std. Plan R-102 for the curb and gutter,

WCE Response: Reference added to Std. Plan R-102.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

c. Reference Std. Plan R-103 for the sidewalk,

WCE Response: Reference added to Std. Plan R-103.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
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d. Specify how the curb and gutter will be secured to the precast panels,

WCE Response: Curb and gutter will be doweled to the precast culvert sections.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

e. Set the top of sidewalk flush with the top of curb and gutter,

WCE Response: Top of sidewalk revised to be flush with top of curb.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

f. The 4" HMA is the minimum thickness, it will need to vary to get the cross-slope.

WCE Response: Note revised for 4" min thickness and thickness varies to achieve cross slope.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

g. Specify a tack coat shall be applied to the precast panel decking prior to placing the asphalt paving,

WCE Response: Note added to tack coat prior to paving.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

h. Provide a guardrail at the north end of the box culvert extension.

WCE Response: A guardrail has been called out on the north end of the box culvert extension.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

97. For Section 2,

a. Provide construction details for the precast panel and footings

i. How will precast panel be secured to the existing culvert?

WCE Response: The panel has been revised to a precast box culvert and the details are provided on sheet C5.21. Shop drawings to be provided at time of construction.

➔ In review of the plans, the box culvert detail is located on Sheet C5.11, not C5.21. Otherwise, the city's comment is adequately addressed.

ii. Footings need to be at or below elevation of existing culvert footings.

WCE Response: Note added to install new footing at or below existing footings.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

b. Why is the FG@CL lower than the top of the precast panel?

WCE Response: Section revised to show FG above culvert deck.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C3.20 - C3.23 (Madison Road P&P)

98. In public meetings, street lights were promised along Madison Road. Please show the light locations and specify that the lights will be installed with the plat. Specify necessary conduit sleeves to be installed with the frontage improvements.

WCE Response: Street lights have been added at the future street intersections. See construction note 19.

➔ In reviewing the plans, street lights were added at the future street intersections, and notes were added to sheets. However, the location appears to be outside of the Madison Road ROW, and west of the intersections. The City will need to verify if the location of the future lights meets the intent of the request.

Sheet C3.20 (Madison Road P&P)

99. See all applicable review comments from Sheet C3.11 for this sheet.

(78) For Construction Note #6, reference the roadside swale section in the detail sheets, in addition to S-130.

WCE Response: Reference has been revised to Detail A on sheet C0.3 and Std Plan S-130.

➔ In reviewing the plans, note refers to sheet C.03 (not C0.3), this typo is on remaining Madison Road sheets as well.

100. Please provide stationing for all curb inlets. Limit maximum spacing of curb inlets to 100', or less depending on curb inlet calculations. Locate the curb inlets to maximize swale treatment.

WCE Response: Curb inlet location table added to sheet C3.20. Spacing has been revised per 100 ft maximum and/or to maximize treatment.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

101. Roadside swales are considered flat for volume calculations where the swale bottom slope is 1% or less. Address all roadside swales where the street grades exceed 1%.

WCE Response: Check dams have been added where slope exceeds 1%. See sheet C0.3 for check dam detail.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

102. For Construction Note #9, utilities shall not be located in sidewalks per SVSS 6.2.2 & 6.2.3.

Reference: City of Spokane Valley – Painted Hills Development
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WCE Response: Construction note 9 has been revised to have utilities relocated outside of sidewalk. Relocation to be coordinated with utility company.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

103. Construction Note #14 - channel access may need to be shown for the full length of the channel.

WCE Response: With the design change, channel access has been relocated to another sheet

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Note has been changes to "Reserved".

104. Construction Note #16 at STA 10+75 should reference a driveway approach with a separated sidewalk. See Standard Plans R-110 through R-112.

WCE Response: With the design change the driveway has been removed.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C3.21 (Madison Road P&P)

105. See all applicable review comments from Sheet C3.20 for this sheet.

(78) For Construction Note #6, reference the roadside swale section in the detail sheets, in addition to S-130.

WCE Response: Reference has been revised to Detail A on sheet C0.3 and Std Plan S-130.

- ➔ In reviewing the plans, note refers to sheet C.03 (not C0.3). Similar reference errors throughout the plan set.

(100) Please provide stationing for all curb inlets. Limit maximum spacing of curb inlets to 100', or less depending on curb inlet calculations. Locate the curb inlets to maximize swale treatment.

WCE Response: Curb inlet location table added to sheet C3.20 per note on this sheet. Spacing has been revised per 100 ft maximum and/or to maximize treatment.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

(101) Roadside swales are considered flat for volume calculations where the swale bottom slope is 1% or less. Address all roadside swales where the street grades exceed 1%.

WCE Response: Not applicable on this section of Madison Rd as grades do not exceed 1%.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
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(102) For Construction Note #9, utilities shall not be located in sidewalks per SVSS 6.2.2 & 6.2.3.

WCE Response: Construction Note 9 has been revised to have utilities relocated outside of sidewalk. Relocation to be coordinated with utility company.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C3.22 (Madison Road P&P)

106. See all applicable review comments from Sheet C3.21 for this sheet.

(78) For Construction Note #6, reference the roadside swale section in the detail sheets, in addition to S-130.

WCE Response: Reference has been revised to Detail A on sheet C0.3 and Std Plan S-130.

(100) Please provide stationing for all curb inlets. Limit maximum spacing of curb inlets to 100', or less depending on curb inlet calculations. Locate the curb inlets to maximize swale treatment.

WCE Response: Curb inlet location table added to sheet C3.20 per note on this sheet. Spacing has been revised per 100 ft maximum and/or to maximize treatment.

(101) Roadside swales are considered flat for volume calculations where the swale bottom slope is 1% or less. Address all roadside swales where the street grades exceed 1%.

WCE Response: Not applicable on this section of Madison Rd as grades do not exceed 1%.

(102) For Construction Note #9, utilities shall not be located in sidewalks per SVSS 6.2.2 & 6.2.3.

WCE Response: Construction Note 9 has been revised to have utilities relocated outside of sidewalk. Relocation to be coordinated with utility company.

➔ This sheet was not included in the submittal, verifications cannot be made on comments. It can be assumed that similar incorrect sheet references as indicated on prior and following sheets will apply to this sheet as well.

Sheet C3.23 (Madison Road P&P)

107. See all applicable review comments from Sheet C3.22 for this sheet.

(78) For Construction Note #6, reference the roadside swale section in the detail sheets, in addition to S-130.

WCE Response: Reference has been revised to Detail A on sheet C0.3 and Std Plan S-130.

➔ In reviewing the plans, note refers to sheet C.03 (not C0.3)

Reference: City of Spokane Valley – Painted Hills Development
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(100) Please provide stationing for all curb inlets. Limit maximum spacing of curb inlets to 100', or less depending on curb inlet calculations. Locate the curb inlets to maximize swale treatment.

WCE Response: Curb inlet location table added to sheet C3.20 per note on this sheet. Spacing has been revised per 100 ft maximum and/or to maximize treatment.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Table is located on sheet C3.23.

(101) Roadside swales are considered flat for volume calculations where the swale bottom slope is 1% or less. Address all roadside swales where the street grades exceed 1%.

WCE Response: Not applicable on this section of Madison Rd.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

(102) For Construction Note #9, utilities shall not be located in sidewalks per SVSS 6.2.2 & 6.2.3.

WCE Response: Construction Note 9 has been revised to have utilities relocated outside of sidewalk. Relocation to be coordinated with utility company.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

108. In public meetings, it was mentioned that the project sidewalk would extend and connect to the sidewalk by the school to the north. Please investigate.

WCE Response: The sidewalk has been shown and called out to extend to the existing sidewalk to the north approximately 300'. The meandering path ends at the property line. A 5' walk has been called out per construction note 21.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

109. For the pedestrian ramp at the southwest corner of Madison Road and Road 'C', please connect the ramp to the 10' asphalt path.

WCE Response: Ramp has been revised to connect to path

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C3.24 (Madison Road Storm Pipe Crossings)

- ➔ This sheet appears to have been switched to sheet C5.22. It is incorrectly referred to throughout the plan set. It is also now called Madison RD Culvert Plan.

110. For Sections 'A' & 'C', provide a 0.10' min. drop through the catch basin per SRSM 8.5.2.

WCE Response: A 0.1' drop has been added to the catch basins.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

➔ In review of the plans, catch basins do not appear to have a 0.1' drop. This is the case for all catch basins.

111. For Sections 'C' & 'D', the soil cover over the culvert appears to be less than 1'. SRS 8.4.2 requires culverts with soil cover less than 2' to be ductile iron. Soil cover is measured from top of pipe to bottom of asphalt pavement. Increase the soil cover to 1' and provide pipe data supporting the shallow soil cover for a CMP material.

WCE Response: The pipe has been revised to call out DI.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

112. Please specify the type of CMP.

WCE Response: A note specifying the CMP has been added. WSDOT STD. 9-05.1(2).

✓ A review of the plans verifies that the City's comment has been adequately addressed.

113. Provide trash racks at the inlets of all the cross-culverts since the outlet of the 60" pipe has a trash rack.

WCE Response: Trash racks have been added. See sheet C3.24 for details.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

114. Structures at the 60" RCP should be catch basins not manholes (per the narrative). Please show the sump.

WCE Response: Manholes have been revised to catch basins with sumps. See construction note 3 on sheet C5.3.

➔ A review of the plans verifies that the City's comment has been adequately addressed. However, there is no Sheet C5.3. This could be referring to Note 3 on C5.20. It is incorrectly referred to throughout the plan set.

115. Please revise the sheet title to match the Sheet Index on Sheet C0.0.

WCE Response: The sheet title has been coordinated with the sheet index.

➔ A review of the plans verifies that the City's comment has been adequately addressed. However, Sheet C3.24 was switched to C5.22 and the references to this sheet needs to be updated throughout the plan set.

Sheet C3.30 (Intersection Details)

116. For all details, label existing and proposed ROW's.

WCE Response: Existing and proposed ROWs have been labeled.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

117. For the Curve Table, please specify that the data is taken at the back of curb.

WCE Response: A note has been added to this affect.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

118. For Detail 1:

- a. Provide a widened border easement per SVMC 20.20.090,

WCE Response: The border easements have been revised

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Provide curve data and spot elevations for the south edge of pavement,

WCE Response: A radius length and spot elevations have been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- c. Adjust the separated sidewalk location to the back of the ramp,

WCE Response: The sidewalk has been revised to meet the back of the ramp.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- d. Label the gutter slope at the base of the ramp.

WCE Response: The gutter slope has been labeled.

➔ In reviewing the plans, the gutter slope is labeled on both sides of the base of the ramp, but the base of the ramp is not labeled. The TP elevations labeled at the base of the ramp indicate a slope of 6.0%. Max slope at the base of the ramp should be 2% or less.

➔ New Comment: Thorpe is mis-spelled (Thopre) in Details 1 and 2.

119. For Detail 2:

- a. Rename 'Dishman-Mica Road' to 'Madison Road',

WCE Response: The road name has been revised.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Provide a widened border easement per SVMC 20.20.090,

WCE Response: The border easements have been revised

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- c. Revise the BCR top of curb spot elevation on Thorpe Rd to match the profile,

WCE Response: The BCR has been revised to match the road profile.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- d. Verify that the gutter slope at the base of the pedestrian ramp is 2% or less.

WCE Response: The gutter slope has been labeled and a max of 2% slope in front of the pedestrian ramp has been called out.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Max slope of 2% is not called out. However, the gutter slope is 1.16%, meeting the intent.

120. For Details 3-6:

- a. Revise the BCR top of curb spot elevations on Madison Rd to match the profile,

WCE Response: The BCRs have been revised to match the profile.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Verify that the gutter slopes at the base of the pedestrian ramps and the cross- slope along the crosswalk are 2% or less,

WCE Response: The gutter slope has been labeled and a max of 2% slope in front of the pedestrian ramp has been called out.

- ➔ In reviewing the plans, the gutter slope is labeled on both sides of the base of the ramp, but the base of ramp is not labeled. In detail 2, the TP elevations labeled at the base of the ramp indicate slopes of 17%+ at base of ramps. Max slope at the base of the ramp should 2% or less per SP R-107.

- c. The longitudinal slope of Madison Rd at each intersection is less than 0.8%. Adjust the Madison Rd BCR top of curb spot elevations to create a 0.80% minimum longitudinal slope without a cross gutter or a 0.50% minimum longitudinal slope with a cross gutter (SVSS 7.5.4) or lower the BCR spot elevations on Roads 'A' - 'D' so the intersections slope to the west.

WCE Response: The elevations have been kept so that water flows around the intersections to the east and will enter the roadside swales for treatment.

- ➔ In reviewing the plans, Details 5 and 6 do not provide a 0.50% minimum longitudinal slope on the southwest curb returns.

121. For Detail 7:

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- a. Verify that the gutter slope at the base of the pedestrian ramps and along the cross walk are 2% or less,

WCE Response: The gutter slope has been labeled and a max of 2% slope in front of the pedestrian ramp has been called out.

- ➔ In reviewing the plans, Details 7 provides a max of 2% slope. However, the southeast curb return does not provide a 0.50% minimum longitudinal slope.

- b. Provide the future design of Road 'E', provide curb inlets on Road 'E' at the east BCR's.

WCE Response: See sheet C3.03 for the plan and profile of Sundown Rd (Road E). Type 2 curb inlets have been called out on the east BCRs.

- ➔ In reviewing the plans, this is not the case. Top of Curb elevations are not labeled on Sheet C3.03. However, the intersection design indicates flow goes to the east around the curb returns to Sundown. Sundown flows toward the west to the same location. There are no curb inlets at this low spot indicated on the plans for the east BCRs.

For Items 122 through 146 the Levee has been removed from the flood control plan including the referenced sheets

Sheet C4.0 (Grading Plan)

- ➔ It is unclear what the intent of this sheet is, as nothing is identified outside of overall quantities.

Sheet C5.0 (Storm System Overview)

147. Include titles for profiles.

WCE Response: Titles have been added to the profiles.

- ➔ In reviewing the plans, there is only one profile. Title is not shown. In addition, none of the sheet callouts are correct on this sheet. Sheets C5.1 to C5.5 do not exist.

148. For upper profile provide stations for all structures.

WCE Response: Stationing has been added for structures.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. There is only one profile, structures have stations.

149. Construction Notes:

- a. Provide all applicable details sheets for all notes.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: The brief construction notes have been removed since the sheet is intended as an overview of the flood system. Detailed construction notes are on the storm sheets following C5.0.

➔ In reviewing the plans, there are no construction notes on this sheet. Construction notes are on C5.20 and C5.21.

- b. Note 5 - "manhole" should be "catch basin". Revise standard plan callout and specify depth of sump. Check spelling of "labelled".

WCE Response: The construction notes have been removed but where this item shows up on other sheets, the notes have been revised to indicate WSDOT catch basins with 2 foot sumps.

- ✓ In reviewing the plans, there are no construction notes on this sheet. However, sheets with construction notes have Catch basins labeled in notes (Sheets C5.20 and C5.21).

Sheet C5.1(Concrete Channel P&P)

➔ In reviewing the plans, this appears to now be Sheet C5.10, and it is now called Box Culvert-Channel-Pipe Plan

150. Plan View:

- a. Invert elevation of pipe from SD-CB #1 at the channel wall doesn't match the elevation in C5.2. Please verify the pipe slope from SD-CB#1 to the concrete channel.

WCE Response: IE's have been verified.

➔ In reviewing the plans, this is now shown on sheet C5.20. Pipe slopes are labeled 0.0025. Calculating slopes based on box culvert to CDCB #1 inverts (2007.18 and 2006.05) over 451.40', slope is .0027.

- b. Include the 100-year stormflow in the system calcs from the pipes originating from SD-CB #1 and SD-CB #2.

WCE Response: The peak for the flow through the catch basins will occur much sooner than the peak for the channel flow, therefore, the catch basin flows have not been included.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- c. Show the fence located north of the channel in cross section A.

WCE Response: The fence has been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed, the detail being referenced is now Detail 4.

151. Construction Notes:

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

a. Note 1 - include C5.21

WCE Response: Note revised to include C5.21.

➔ In reviewing the plans, this no longer appears to be applicable on this sheet. However, Sheet C5.20 has headwall referenced to Sheet C5.1, should be Sheet C5.10.

b. Note 4 - include S-121

WCE Response: Note revised to include C-121.

✓ In reviewing the plans, this no longer appears to be applicable on this sheet. However, Note 4 on sheet C5.20 references 18" culvert with rubber gasket indicates see sheet C5.22 for details. Which has a rubber gasket detail.

152. Profile -

a. Include slope down to culvert inlet.

WCE Response: See revised slope callout on sheet C5.1

✓ In reviewing the plans, this no longer appears to be applicable on this sheet. Slope is provided on sheet C5.20

b. Check stationing on axis.

WCE Response: Stationing has been verified.

✓ In reviewing the plans, this no longer appears to be applicable on this sheet. Again, this applies to sheet C5.20 and appears to have been addressed.

153. Please provide structural calculations and details for the fence, retaining walls and footings in Section 'A' (loads, dimensions, reinforcing, connections, etc.).

WCE Response: See sheet C6.0 and C6.1 for structural details for retaining walls and footings. See separate package for calculations.

➔ In reviewing the plans, structural details are provided. A separate review of these details and calculations from a licensed structural engineer is recommended.

Sheet C5.2 (Box Culvert and Channel Details)

➔ In reviewing the Plans, this also appears to be Sheet C5.10

➔ New comment, there are many callouts to sheets that no longer exist or that have been changed.

154. Box Culvert Detail:

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- a. General - Provide design details for box culvert and wing wall (design loading, dimensions, elevations, thickness, reinforcing, connections, etc.)

WCE Response: See note 2. The contractor will supply shop drawings and design calculations when they pick a supplier of the pre-cast structure.

➔ ***The city will need to decide if this approach is an acceptable solution.***

- b. Plan View –
 - i. Drainage easement is permanent not temporary,

WCE Response: The note has been revised.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.
 - ii. For culvert alignment line provide a bearing and a station equation where this alignment crosses the Thorpe alignment

WCE Response: See sheet C5.1 for bearing and station equation.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Although there is no sheet C5.1, this is on Sheet C5.10.
 - iii. Check stationing of wing walls.

WCE Response: Stationing of wing walls are from the culvert alignment and not Thorpe Rd and have been verified.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- c. Section 1-
 - i. Label the ROW

WCE Response: The ROW has been labeled.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- ii. Reference Std. Plan R-102 for the curb and gutter,

WCE Response: Standard plan R-102 has been referenced.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- iii. Reference Std. Plan R-103 for the sidewalk,

WCE Response: Standard plan R-103 has been referenced.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- iv. Specify how the north curb and the south curb and gutter will be secured to the precast panels,

WCE Response: The curb and gutter will be cast onto the deck with dowels epoxied into the deck. The curb will be cast into the box section per the detail on C5.10.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- v. Set the top of sidewalk flush with the top of curb and gutter,

WCE Response: The top of sidewalk has been set flush with the top of curb and gutter.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- vi. Specify a tack coat shall be applied to the precast panel decking prior to placing the asphalt paving,

WCE Response: A note specifying a tack coat shall be applied has been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- vii. Provide guardrails at both ends of the box culvert.

WCE Response: A guardrail at the south end of the box culvert has been provided. On the north end of the culvert there is a 7.5' sidewalk and there will also be a 6' chain-link fence for channel access control. There is no room to place a guardrail with these limitations.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed if the city agrees with WCE Response.

- viii. Adjust the 12' dimension to start at the face of the 6" curb.

WCE Response: The dimension has been revised to 14.5 feet to accommodate standard precast box sections.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- ix. Verify the precast panel deck thickness with Section 2.

WCE Response: The thickness has been revised so sections 1 and 2 match at 1.5 feet.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- x. The 4" HMA is the minimum thickness, it will need to vary to get the cross-slope.

WCE Response: A note has been added specifying a varying thickness.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

xi. For slope down into the culvert inlet –

1. What is the stormwater velocity?

WCE Response: Per the Capacity calculation of the box culvert, at a depth of 2 feet and an area of 56.66 sf the velocity of 216.4 cfs (which is twice the 100-year storm rate) has a projected velocity of 3.82 ft per second. Per Open Channel Hydraulics, Chow section 7-9 The Maximum Permissible Velocity Figure 7-3 of the U.S.S.R. Data shows that a 200 mm or 8" particle or rock surface can withstand a velocity of 13 ft per second +/- before scour occurs.

- ✓ A review of the provided documents verifies that the City's comment has been adequately addressed.

2. Is erosion protection needed?

WCE Response: Erosion protection has been added. 1'-2' angular rip-rap 3' deep has been called out. The erosion protection extends up the slope to the right-of-way. Based upon the information of item 1 with the erosion protection there is no scour anticipated.

- ✓ A review of the provided documents verifies that the City's comment has been adequately addressed.

d. Section 2 - bottom of box is alluvial bed. Calculate scour and set footings below scour.

WCE Response: The bottom of the box is rocked as well as the approach within the ROW. See response above.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

155. Channel and Pipe Connection:

a. General - Provide design details for channel and trash rack (loads, dimensions, reinforcing, connections, etc.)

WCE Response: Structural details have been provided on sheet C6.0 and C6.1. Trash rack details have been provided on sheet C5.6.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

b. Plan View –

i. There are two set of lines where the channel turns, remove lines that do not represent the channel geometry.

WCE Response: The line has been removed and the channel has been hatched to more clearly show where the channel bottom is.

ii. Provide channel alignment details and location of pipe inlet.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: The alignment location in the channel bottom is centered

- iii. Drainage easement is permanent not temporary,

WCE Response: The drainage easement label has been revised.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C5.3 (Madison Pipe P&P)

➔ This is now Sheet C5.20

➔ In review of the plans, many sheet and detail callouts are incorrect because of the sheet numbering\naming change, continuous issue throughout the plan set.

156. Construction Notes:

- a. Note 3 - Structures at the 60" RCP should be catch basins not manholes (per the narrative). Call out standard plan for catch basins and specify depth of sump.

WCE Response: Note revised to catch basins with 2 ft sump.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Note 5 - is the concrete outlet a pad or slab (see C5.4)?

WCE Response: Construction note 4 on sheet C5.3 revised to pad.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Take into account that all sheets being referenced are incorrect, the note is on Sheet C5.21.

- c. Note 7 - specify frame and grate type and include S-121 reference.

WCE Response: Construction note 7 has been revised to include Type 1 Frame and Grate and to reference SVSS S-121.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. Take into account that all sheets being referenced are incorrect, the note is on Sheet C5.21.

157. Plan view:

- a. Make sure all structures are accessible for cleaning and have a construction note,

WCE Response: Meandering path to be used for access.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. In 60" pipe why is there a structure at 22+45?

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: The pipes and structures have been revised.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

158. Profile:

- a. Provide stations for all structures on concrete pipe,

WCE Response: Stationing has been provided for all structures.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Make sure all pipes have length and slope information,

WCE Response: Pipe information has been verified for all pipes.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- c. Provide offset at 60" pipe outlet.

WCE Response: A station and offset from Madison Rd has been provided.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

159. For the culverts under Madison Road, Spokane County GIS shows that there may be a 24" pipe near station 23+50. Please check.

WCE Response: All Madison Rd culverts have been surveyed and verified with no evidence of a 24" culvert.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

160. Include the 100-year stormflow in the system calcs from the pipe originating from SD-CB #6.

WCE Response: The 100-year flood has been added, please see the flood control narrative

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C5.4 (Bioswale P&P)

➔ This is now Sheet C5.30 (Bioswale/Settling Pond P&P)

➔ In review of the plans, many sheet and detail callouts are incorrect because of the sheet numbering\naming changes, continuous issue throughout the plan set.

161. Include a short wall at the downstream end of the bioswale as a last trap for sediment.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: The design has been revised to include a 1' deep settling pond at the bottom of the bioswale, with a 20' wide rock weir overflow into a 2' deep infiltration pond with a field of drywells set at 1' above the pond surface. This is the design that prevents sediment from entering the gravel gallery.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

162. Plan View:

- a. Clean up overlapping info,

WCE Response: Labels have been revised.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- b. Provide dimensions/alignment/geometry information for fence, channel and pipes to locate them in space.

WCE Response: Station and offset has been provided to Madison Rd to give reference of location in space.

➔ In reviewing the plans, the alignment for the bioswale needs horizontal reference information (PCs, PTs, and Curve data).

➔ 15' access roads (locations and elevations) are not defined.

➔ Locations of drainfield pipes, structures, and limits of drywell rock are not defined.

➔ Fence location is not defined.

- c. Confirm all structures can be accessed for maintenance.

WCE Response: An access maintenance road has been provided.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

- d. Provide all dimensions for hammerhead turn around.

WCE Response: Dimensions have been provided.

➔ There does appear to be a hammerhead turn around. 15' access roads (locations and elevations) are not defined.

- e. Provide file number for easement.

WCE Response: Space has been provided for inserting file number once easement is recorded after receipt of CLOMR-F comments prior to LOMR submittal per our discussions.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

163. Construction Notes:

- a. Make sure all notes have pertinent detail sheets referenced.

WCE Response: Verified.

➔ There are references to Detail B that does not exist on Sheets C5.31 and C5.32.

➔ Detail A has seed mix reference to a sheet that does not exist.

- b. Note 3 - gate should be wider than road.

WCE Response: Double swing gate width has been revised and is called out to be 16'.

➔ In reviewing the plans, double swing gate does not appear to be called out and it is not evident where the gate is located.

- c. Note 9 - specify frame and grate type and include S-121.

WCE Response: Construction note 9 has been revised to include Type 1 Frame and Grate and to reference SVSS S-121.

➔ A review of the plans verifies that the City's comment has been adequately addressed. However, this is note 6.

- d. Include note for infiltration head wall.

WCE Response: The infiltration headwall has been removed from the design

✓ A review of the plans verifies that the City's comment has been adequately addressed.

164. Bioswale Inlet Cross Section:

- a. Provide design details (dimensions, elevations, thickness, reinforcing, connections, etc.).

WCE Response: See sheet C6.0 and C6.1 for structural details.

➔ Structural details are provided on these sheets. It is recommended structural calculations and details be reviewed by a licensed structural engineer.

- b. Provide details for trash rack.

WCE Response: See sheet C5.3 for trash rack details.

✓ A review of the plans verifies that the City's comment has been adequately addressed. Although these are located on Sheet C5.30.

- c. In upper drawing check the orientation of the section arrows.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: Revised.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.
 - d. Include the concrete level spreader in the hydraulic calcs.

WCE Response: The level spreader has been added to the west consultants' calculations.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

165. Typical Bioswale Section A

- a. Call out minimum depth of section.

WCE Response: The minimum 7 foot depth of the section has been added.

- ➔ Minimum depth of section is noted as 6' to bottom of treatment soil for this section. Treatment soil is identified as 1.5' deep, indicating 4.5' of depth to bottom of swale. If 7' is the intended minimum depth of the bioswale, it is not identified correctly.

- b. The O&M manual says the side slopes are 3:1, please correct.

WCE Response: Manual has been revised to 2:1 side slopes.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

166. Narrative says bioswale will be seeded not sodded, please revise.

WCE Response: Note revised to seed the bio-swale.

- ➔ Note to be seeded was added, but it is referring to a seed mix on a sheet that does not exist.

167. Profile - show proposed grade.

WCE Response: The proposed grade of 1.00% has been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

168. Include the 100-year stormflow in the system calcs from the pipe originating from SD-CB #7.

WCE Response: The peak for the flow through the catch basin will occur much sooner than the peak for the mainline flow, therefore, the catch basin flow has not been included.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C5.5 (Infiltration P&P)

- ➔ This sheet is now broken up into Sheets C5.31 and C5.32.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

➔ Construction notes refer to a Detail B, that does not exist. They also refer to Section C on the incorrect sheet.

➔ References on previous sheets have not been updated to reflect new sheet numbers and details.

169. Plan View:

a. Provide alignment information for pipes and structures to locate them in space.

WCE Response: Station and offset of Madison Rd has been provided at corners to locate them in space.

➔ This only shows location of pond bottom, not structures within the pond. Locations of pipes and structures are not adequately identified within the drainfield.

b. Confirm all structures –

i. Have rim and inlet elevations and that elevations match those in profile

WCE Response: Rim and invert elevations have revised and verified.

➔ Invert elevations are not noted anywhere in plan or profile.

➔ Detail F on Sheet C5.32 has pond bottom noted at 1996.8. Infiltration pond notes indicate a bottom elevation of 1995.80 and minimum berm elevation of 2002.80 (7' depth). Typical sections shown 6' minimum from top of berm to bottom of treatment soil. Together, this information would make a depth of 4.5'. Overall, there is no consistency in callouts and the intended design is unclear.

➔ Section F on sheet C5.32 shows both Drywell Rims and Pond Bottoms to be 1996.80, with 1.0' between them. Notes indicate pond bottom of 1995.8. It is not clear which one is correct.

ii. Can be accessed for maintenance (especially by Vactor per the project narrative).

WCE Response: Distance has been verified.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

c. Provide structure numbers to relate structures to those in the profile.

WCE Response: Structure numbers have been provided in plan and profile views.

➔ Structure numbers are not provided in plan or profile.

d. Provide file number for easement.

WCE Response: Space has been provided for inserting file number once easement is recorded after receipt of CLOMR-F comments prior to LOMR submittal per our discussions.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

170. Profile:

- ➔ Typical sections are used in lieu of plan and profiles. This is acceptable if a reference location is provided to each row of drywells.

- a. Provide stations at structures.

WCE Response: Stationing has been provided for structures.

- ➔ Stations are not provided. As noted above, a reference location could be used in lieu of stationing, if one was provided.

- b. Show proposed grade.

WCE Response: The proposed grade matches existing grade.

- ➔ It appears that it is the existing grade that is not shown, rather than proposed. Unless this pond already exists and happens to be at the exact location as the proposed cross-section throughout the entire pond.

171. Construction Notes:

- a. Make sure all notes have pertinent detail sheets and standard plans referenced.

WCE Response: Verified.

- ➔ Notes refer to sections that do not exist as well to details on incorrect pages; some are not even called out.

- b. Note 7 - specify drywell type.

WCE Response: The drywells are per City of Spokane Valley standards with additional barrels to achieve added depth.

- ➔ Triple Depth Drywell per COSV Standard plan S-101 is referenced. Type 'B' drywells only go to double depth in S-101, so this is not a standard drywell installation. In addition, these are quadruple depth because of the added section for perforated pipe and extended gravel gallery at the bottom of the drywells. Additional detail is required for drywell installing.

- c. Note 8 - specify fabric class.

WCE Response: The fabric class has been specified.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed. It is called out in the standard plan reference.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

d. Note 9 - provide standard plan.

WCE Response: Note 9 has been revised.

➔ Note 9 does no longer exists, it is not known which note this would be referring to, therefore which standard it should call out.

e. Include note for infiltration head wall.

WCE Response: The infiltration headwall has been removed from the design.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

➔ New comment. The City is concerned about the erodability of fill due to the very large volume proposed for fill material, and its proximity to flood plain areas between the proposed alignment of 43rd Street and Painted Hills Street. The entire set of submittal documents has been scanned for mention of a fill specification for the material to be used to construct embankments and particularly roadway embankments throughout the project site. No mention was found. Please provide.

Sheet C6.6 (Infiltration Headwall Details)

172. Provide design details for headwall, channel and trash rack (loads, dimensions, elevations, thickness, reinforcing, connections, angles, etc.).

173. Call out spacing between pipes.

174. Provide stations at end of channel and at pipe inverts.

WCE Response: The infiltration Headwall has been removed from the design.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C6.7 (Infiltration Headwall Details)

175. Drain field cross section - provide complete spec reference.

176. 24" HOPE Cross Detail - specify filter fabric and how it is attached to pipe.

WCE Response: The design has been revised.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheet C9.0 (SWPPP Cover)

177. Legend - there isn't a storm drain pond, please revise.

WCE Response: "Pond" revised to "facility" as we don't want washout at the bio-swale.

✓ A review of the plans verifies that the City's comment has been adequately addressed.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

178. Provide protection at infiltration headwall.

WCE Response: Protection at the infiltration headwall has been added.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheets C9.0 (SWPPP Cover)

179. Legend - there isn't a storm drain pond, please revise.

WCE Response: "Pond" revised to "facility" as we don't want washout at the bio-swale.

- ✓ A review of the plans verifies that the City's comment has been adequately addressed.

Sheets C10.0 to C10.2 (Signing and striping plans)

- ✓ New Comments: These are added sheets to the plan. Based on a review of signing and striping plans: Below are items of note.

➔ MUTCD standards should be identified in addition to any Spokane Valley Standard plans identified.

➔ Per COSV Street Standards 4.10: TEMPORARY TRAFFIC CONTROL PLAN: A temporary traffic control plan shall be included with the right-of-way permit. The plan shall be in detail appropriate to the complexity of the project per MUTCD Chapter 6 B.

- Comment: This will be required prior to issuing permit for work within public right-of-way.

➔ Per COSV Street Standards 4.11.3 SIGNING PLAN:

➔ The permanent signing plan shall: Show the longitudinal location of each sign (horizontal offset and station)

- Comment: Only station has been noted, offsets are not provided in plan set.

➔ Specify the sign legend and sign type (from MUTCD and International Fire Code);

- Comment: Street name signs are not indicated in the plan set (existing or proposed).

➔ Specify the sign size and applicable standard plan;

- Comment: Sign sizes are not indicated in the plans.

➔ Refer to Standard Plan R-140 for post and base dimensions and installation plan;

- Comment: This is not noted in the plans.

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

- ➔ Specify the blank gauge of the sign; and,
 - Comment: This is not noted in the plans.
- ➔ Note the reflectorization provided.
 - Comment: This is not noted in the plans.
- ➔ Per COSV Street Standards 4.11.4 STRIPING PLAN:
- ➔ The striping plan shall show: Color and type; Lane widths, taper lengths, storage lengths, etc.; Striping/skip interval;
 - Comment: Lane widths are not provided on sheet C10.2
- ➔ Any construction or application notes, (e.g., application temperatures, surface cleaning methods to be used prior to application, etc.);
 - Comment: Not addressed in plan set.
- ➔ Typical treatments for acceleration/deceleration lanes, turning lanes, and crosswalks;
 - Comment: Not addressed in plan set.
- ➔ Station and offset or dimensions to all angle points, symbol locations, and line terminations.
 - Comment: Offsets not identified in plan set. Radii needs to be identified for all radial transitions.

6 CLOMR APPLICATION

The City's comment as of 8/20/18: "The CLOMR Application has been revised since the City's rejection of the Levee Design. A CLOMR-F application has been provided." The application has been further revised to a CLOMR Application, recognizing the proposed flood plain alteration. References to a CLOMR-F has been deleted.

6.1 NARRATIVE

180. Page 9 & page 14 paragraph 1- mentions that the infiltration facility maximum design flow is 84 cfs. Where was that flow rate obtained?
181. Page 13, end of 2nd paragraph - may want to also reference the Geotech investigation for the latest drywell design which is the document titled "Full-Scale Drywell Testing ...".
182. Please include page numbers for all the narrative's pages. HEC-RAS model
183. Proposed Madison concrete pipe is initially 4 feet in diameter then goes to 5 feet in diameter but the second pipe in the model is 6 feet in diameter, please revise and update the text in the narrative.
184. At the outlet of the 5-foot pipe include the concrete level spreader (sheet C5.4).

Reference: City of Spokane Valley – Painted Hills Development
CLOMR, Ordinance, & Hydrology / Hydraulics Detailed Review

WCE Response: WCE did not provide responses to these comments.

- ✓ The above comments have been superseded by a detailed review of the updated CLOMR Application. All the above comments are either no longer relevant or they have been addressed.

6.2 FORMS

185. Riverine Structures Form - does the new culvert under Thorpe need to be included in one of the C. BRIDGE/CULVERT sections?

WCE Response: WCE did not provide response to these comments.

- ✓ A Riverine Structures Form has been included in the revised CLOMR submittal, including hydraulic analyses of the box culvert proposed under Thorpe Road; the culvert at Highway 27 for the entry to the proposed pipe in the Gustin Ditch, and the concrete channel at the golf course.