



Stantec Consulting Services Inc.
621 W. Mallon Avenue, Suite 309, Spokane, WA 99201

December 17, 2018
File: 2047071100

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

Dear Mr. Allen,

Reference: City of Spokane Valley – Painted Hills – CLOMR, Ordinance & Hydrology Initial Completeness Review

Stantec has contracted with the City of Spokane Valley (City) to conduct an extensive review of the Conditional Letter of Map Revision (CLOMR) submittal for the Painted Hills development submitted to the City. The first task of the review is to conduct an initial completeness review of the submitted material to verify that all documents, models, data, etc. required for the CLOMR submittal review have been provided. This letter provides a summary of the initial completeness review. This letter will not provide any statement regarding the quality or adequacy of the submitted material. Following the initial completeness review, a detailed review will be conducted.

In general, the submittal appears to be near complete; however, Stantec has not estimated the effort required to address identified deficient items. If any item is found to be missing during the detailed review that was not discovered during the initial completeness review, Stantec will notify the City of Spokane Valley at that time.

Below our signature block, you will find Stantec's comments for the Initial Completeness of the CLOMR, Ordinance and Hydrology reviews with respect to FEMA requirements. For a more complete breakdown of the CLOMR review, please refer to the attached CLOMR Checklist.

Regards,

Stantec Consulting Services INC.

A handwritten signature in blue ink, appearing to read "Alan Gay".

Alan Gay
Associate, Senior Engineer

A handwritten signature in blue ink, appearing to read "Russ Connole".

Russ Connole
Senior Project Manager



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cc: Zak Whitten, PE, Water Resources Engineer

Erman Caudill, PE, Civil Engineer

Attachments: CLOMR Initial Completeness, Ordinance Initial Completeness, Hydrology Initial Completeness

CLOMR Initial Completeness

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 personal 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.
 - 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.
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 additional 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.



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3. CLOMR's 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.
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.
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;
 - 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.
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)
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.

Ordinance Initial Completeness

This portion of our review has been organized by applicable Spokane Valley Municipal Code (SVMC) ordinance chapter.

1. Flood Plain Ordinance SVMC 21.30
 - a. Plans. Screening Comment: Plans drawn to scale showing the general nature, location, dimensions, and elevations of the area in question have been provided.

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- b. Application made for all relevant federal, state, and local permits. Screening Comments:
- i. A draft application has been prepared for a Conditional Letter of Map Revision (CLOMR) for FEMA. Pending detailed review, it appears to be unnecessary to submit a CLOMR-F (CLOMR-Fill) application. Please see the completeness review specific to the CLOMR. The letter from Todd Whipple addressed to Henry Allen dated August 20, 2018, states that a CLOMR-F is being sought, but the submittal package includes only a CLOMR application.
 - ii. Plan title blocks imply that permits issued by the City of Spokane Valley will also be sought, and presumably permits will also be sought from Spokane County for portions of the project under Spokane County jurisdiction. However, a review of the submitted material does not include a draft or final version of a permit application to either entity. It appears that applications for the following local permits are missing:
 1. Spokane Valley: Grading permit for placement of more than 50 cubic yards of fill.
 2. Spokane County: Grading Permit for placement of more than 50 cubic yards of fill prior to issuance of a building permit.
 - iii. The erosion and sediment control plan inclusion in the plan set indicates that the project proponents intend to comply with the requirement under the Washington Statewide Construction Stormwater General Permit to apply for coverage as a site disturbing more than one acre. This application process is generally done on-line within 60–90 days before construction is scheduled to begin, so application is premature at this time. We recommend written assurance that this is the project proponent's intent.
 - iv. Drywell registration documentation to the Washington Department of Ecology will be needed since part of the flood control strategy includes drywell installation. A table included in the project documentation would provide assurance of intent to comply with this requirement.
- c. Watercourse maintenance, Screening comment: A watercourse operations and maintenance plan has been noted as "awaiting completion per jurisdiction comments" (p259, CLOMR application).
- d. Public utility plans for water and sewer are included in the project package.

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- e. Department of Ecology approval will be required for development in a floodplain.
 - f. Demonstration that the project will not interfere with infiltration capacity is inherent in the design intent.
 - g. Note that per SVMC 21 30.090, in the event the base flood elevation is increased by any amount, affected adjacent property owners must be notified, and provide their notarized approval. The detailed review will check if this provision applies; if it does apply, the applicants will be responsible for addressing this provision and they may be required to demonstrate compliance prior to any City approvals.
2. Critical Areas Ordinance SVMC 21.40
- a. A critical area report is required. The document in the CLOMR application package includes a report titled, "Painted Hills PRD, Biological Evaluation, Buffer Averaging, and Habitat Management Plan" that has many elements of a critical area report. However, it does not conform with the requirements of a critical area report included in SVMC 21.40. Specifically, a statement in the document that it was prepared to conform to SVMC 21.40 appears to be missing.
 - b. As impacts to the critical areas within the project limits are part of the project action, mitigation measures will be required. The report titled, "Painted Hills PRD, Biological Evaluation, Buffer Averaging, and Habitat Management Plan" includes many components of a mitigation plan. Its contents need to reflect the requirements for a mitigation plan included in SVMC 21.40. Specifically, a cost estimate appears to be missing. The Erosion and Sediment Control Plan (ESCP) and what appears to be the critical areas mitigation plan are consistent.
 - c. A monitoring plan is required as part of the ordinance. It appears that a mitigation monitoring plan is included in the report titled, "Painted Hills PRD, Biological Evaluation, Buffer Averaging, and Habitat Management Plan" includes many components of a monitoring plan. The monitoring plan must comply with SVMC 21.40.
 - d. Sureties. A surety is to be supplied. Typically, a surety is negotiated once the critical area report, maintenance plan, and monitoring plan have been accepted.
 - e. Special Flood Hazard Area additional requirements must be included in the submittal package in accordance with SVMC 21.40. Many of these requirements apply to content in the CLOMR application package. However, an index directing the reviewer and future users of the documents would make the package easier to use.

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3. Land Disturbing Activities SVMC 24.50
 - a. A grading permit is required under this ordinance, consistent with the requirement under Flood Plain Ordinance SVMC 21.30. Components of the grading permit application include:
 - i. A completed permit application form; this is not included in the documents reviewed to date.
 - ii. Two sets of plans, and two copies each of reports, specifications, and reporting documents. However, noting that the reviewed materials are all on electronic media, the requirement for a second set of documents is mitigated.
 - iii. Erosion and Sediment Control Plans area included, as are geotechnical reports, a drainage report, and a SEPA checklist.

The outline above is not intended to be a comprehensive review of the submitted documents with respect to the referenced ordinances. This review letter is intended to alert the project proponents to missing documents. Once all missing documents are supplied, a comprehensive and complete review can commence.

Hydrology Initial Completeness

From a **Hydrology** standpoint, the fundamental question formulated based on a first pass review is this: A large pervious area currently allows infiltration in a distributed fashion into an underlying sand and gravel layer. The proposed development concentrates that flow and increases the volume by converting pervious to impervious, while allowing infiltration only at distinct locations. A series of dry wells and gravel galleries are incorporated into the development to try to promote similar overall infiltration characteristics as the previously more pervious tract. The test pits and borings indicate a cover soil with silt, clay, etc. that might slow down surface infiltration. However, there seems to be a continuous and more pervious sand and gravel layer below that can accept anything that infiltrates through that top layer (assuming it doesn't have a limited capacity).

The geotechnical report alludes to the underlying groundwater being much deeper, but a full geologic section isn't provided. The proposed condition will likely have the same silt to clay type surface cover with the sand and gravel underlayment at a modest depth. In the absence of a more thorough regional hydrogeologic report, all of this leads me to conclude the infiltration approach can function, but the entire system is based on the assumed surface infiltration rates, the infiltration measures penetrating sufficiently through the surface to the underlying sand and gravel, and the assumption that the underlying more permeable layer is not confined and has excess capacity. I'm assuming the last point has been proven moot in this area, so the following questions are presented to get a better understanding of the importance of that infiltration rate



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and how it relates to the design assumptions and so we can compare those assumptions to the previous work prepared for the effective FEMA study:

1. To help facilitate the review and to assure we aren't misinterpreting the design intent, please provide an annotated copy or copies of drawing sheet C1.0 and C1.3 with indications of flow directions, peak discharges, estimates of total runoff volumes, and infiltration rates & volumes for a 100-year, 24-hour duration standard storm event based on FEMA Effective Data, Corrected Existing, 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 point numbers is acceptable.
 - a. The purpose for the request is to help us perform a basic mass-balance and infiltration rate type review of the stormwater runoff with and without development.
2. An XP-SWMM model is provided for culverts under Madison Road. We request that this model be exported to EPA-SWMM format. The discharge values within the SWMM model will help with the hydraulic review.
3. Several proposed storm water facilities on the site are designed with dry wells and gravel galleries to promote infiltration. The geotechnical data indicates these features may be effective if properly designed, installed, and maintained. For FEMA CLOMR purposes they seem to be assumed to fully function as designed and infiltration is not affected by antecedent conditions. For City review and long-term maintenance considerations, what happens if these facilities fail and sufficient infiltration no longer occurs? This could be due to excessively wet antecedent conditions, accumulation of sediment and debris, bioaccumulation and clogging, or other causes. Are any structures at risk? Do any of the proposed or existing roadways overtop? Any downstream impacts due to additional discharge leaving the site?
 - a. If this information is contained in the provided data, it was not readily apparent from the initial review; in the response cover letter for the revised submittal, please highlight where this information is located within the submittal
4. It appears the proposed infiltration pond at the northern boundary of the site has been sized to contain a 50-year storm based on simplified runoff assumptions using the rational method. Fundamentally, what happens during a 100-year, 24-hour storm event with a higher peak discharge and runoff volume? Have discharge hydrographs been developed and routed? Are the conveyance structures adequate to control that overflow? Similarly, if the basin does not provide sufficient infiltration, what structures are at risk?



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- a. The same question would apply for the modifications to Storage Area #6.

The questions above are pertinent to the initial completeness review and our overall understanding. During the detailed review phase of the project, we're planning to review the HSPF model in greater detail and will document that review.

Initial Completeness Summary

The applicant shall address all initial completeness questions and comments listed in the CLOMR, Ordinance and Hydrology Sections above and submit an updated floodplain permit application that includes all elements to the City of Spokane Valley for review.