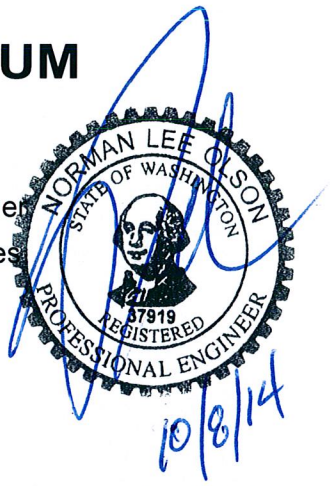
N.L. OLSON & ASSOCIATES, INC.
Engineering, Planning & Land Surveying

2453 Bethel Avenue
Port Orchard, WA 98366
P. 360-876-2284 / F.360-876-1487
www.nlolson.com

TECHNICAL MEMORANDUM

Project:	**BGH, LLC, Rolling Sunrise Preliminary Plat**
To:	Alan Wallace – Attorney at Law, Williams Kastner
From:	Norman L. Olson, P.E. – N.L. Olson & Associates
Subject:	**Comments as Allowed by 3RD Continuance**
cc:	Pat Ebert
Date:	October 8, 2014



N.L. Olson & Associates, Inc. (N.L. Olson) provides this Technical Memorandum (TM) to supplement review comments provided in the prior TMs prepared by N.L. Olson dated September 10, 2014 and September 22, 2014. These additional comments are allowed by the Hearing Examiner's issuance of a Third Notice of Continuance dated September 26, 2014. This TM provides further comments in regards to Stormwater Management as allowed by the Order.

In regards to disagreement whether the plat development must strictly comply with the Minimum Requirements stated in the WDOE 2005 Stormwater Manual for Western Washington, please see attached email communication with Ed O'Brien from WDOE. Mr. O'Brien is recognized as an authority in regards to interpretation of the 2005 WDOE Manual. He was the Technical Lead responsible for authoring and development of the 2005 Manual and he is referenced on the WDOE website as a point of contact for questions regarding both the prior and current Manuals (2005 and 2012 Manuals). Note: Copy of WDOE contact list for questions regarding the Manuals is attached as well as a copy of the Acknowledgment page from the 2005 Manual.

Mr. O'Brien emphatically states that the impervious surface thresholds cannot be permissibly waived to exempt the project from compliance with Minimum Requirements in the manner proposed by the applicant. He notes to do so would subvert the regulatory intent of the Manual.

Therefore, regardless of the strategies employed to control runoff from the site, whether the standards, requirements and BMPs in the 2005 WDOE Manual or LID techniques in the Kitsap County LID Manual, the feasibility to infiltrate runoff to the ground and/or regulate runoff surface discharge must be fully ascertained. A comprehensive computer model using Western Washington Hydrological Model (WWHM) of the entire site, with all surfaces and proposed BMPs included, must be developed to demonstrate compliance with MR#7. Surfaces may be omitted or changed in nature from the model and possibly the thresholds but only as specifically allowed and infiltration facilities are not included. Appropriate and approved water quality measures must also be employed.

It is true that downstream drainage systems from the site do not meet current design standards and essentially are nonexistent. It is also true that the Rolling Sunrise Project must be designed such that runoff from the project will not further impact the downstream properties adversely. The 2005 WDOE is clear in regards to runoff discharge restrictions when downstream closed depressions and flooding are involved. These restrictions can be quantified through the use of WWHM. When these restrictions are applied to this project, one will find that essentially all stormwater must be retained on-site through infiltration.

Studies and data are thus needed to ascertain the feasibility to infiltrate stormwater to the ground at the project site. Demonstrating such feasibility should be accomplished based on the following:

- Geotechnical assessment and report of the subsurface conditions, native soils and groundwater conditions.
- Preliminary civil engineering analysis and design for storm control facilities based on computer modeling using WWHM with site and project specific parameters entered such as:
    - Existing site conditions including existing topography, soils, groundwater, etc.
    - Historic forested conditions and parameters for modeling
    - Post development site conditions including proposed clearing and landscaping, grading, structures, septic drainfields, surfacing, etc.

It is important to note that not only do the proposed impervious surfaces need to be recognized within the WWHM model, but all surfaces associated with the project must be included. Surfaces such as landscaping and grass (potential surfaces over septic drainfield areas) are not to be omitted from the model. Although relatively pervious compared to roofs or asphalt, these surfaces must also be included in the model and compared to the historic forested conditions (old growth forest) for runoff contribution and compliance with MR #7. All off-site roadway improvements that are required must also be included and recognized within the same model. Off-site improvements cannot be separated from the project in regards to stormwater mitigation.

Norman Olson

From: O'Brien, Ed (ECY) <eobr461@ECY.WA.GOV>
Sent: Tuesday, October 07, 2014 10:07 AM
To: Norman Olson
Subject: RE: Avoiding Compliance with Minimum Requirements 6 - 10

Mr. Olson,

Thanks for the question.

It was not the intent of the 2005 West. Wash. Stormwater manual to use the infiltration exemption imbedded within M.R. #7 when making the threshold determinations. To make a claim that it should be used, and then to allow engineers to use whatever methods they want to make that claim is preposterous. It subverts the regulatory intent.

So, don't use the infiltration claim for the threshold determination. Once the project has triggered MR #7, then they have to use the approved engineering methods to demonstrate that they can remove certain surfaces from the modeling requirement. For instance, proper application of BMP T5.10A would allow a roof to be removed from the WWHM calculations for demonstrating compliance with MR #7. Also, use of BMP T5.30 allows the designer to remove all of the area that drains to the preserved area from the computer model. However, other LID BMPs, such as bioretention (BMP T5.14B), permeable pavements (BMP T5.15), downspout dispersion (BMP T5.10B), must still be entered into the model so that the model predicts their performance.

For the threshold determination, the 2005 manual (see "supplemental guidelines" on page 2-11 of Volume 1) does allow surfaces to be considered as recommended in the LID modeling credits – where those credits allow modeling as landscaped area, 50% landscaped area, or pasture. It does not refer to infiltration facilities. Please note that the guidance concerning use of the modeling credits when making the threshold determination was purposefully deleted from the 2012 manual.

Ed O'Brien

From: Norman Olson [mailto:nlolson2@nlolson.com]
Sent: Friday, October 03, 2014 2:28 PM
To: O'Brien, Ed (ECY)
Subject: Avoiding Compliance with Minimum Requirements 6 - 10

Hello Mr. Obrien:

I know you are very busy but I have a question needing clarification and I'm not sure who else I would ask. I am reviewing a preliminary drainage plan for a project and have a question about the developer's interpretation of the threshold determination.

Although the 3.5 acre project will create significant amounts of impervious surface, well beyond 5000 sf, the developer's engineer believes that, *"Since the runoff from the entire roadway and lot improvements is directed to 100% infiltration facilities, those areas can be removed from the threshold determination. Therefore, our report states that there is no new impervious area over thresholds and only Minimum Requirements (MR) 1-5 are applicable".* On this basis, their proposed design of infiltration facilities and the infiltration rate testing protocol does not comply with the requirements of the 2005 manual that is adopted by the governing jurisdiction, i.e., MRs 6 & 7 are avoided.

The reason they say this is allowed is because they believe the governing jurisdiction has adopted a policy that impervious areas conveyed to facilities that infiltrate 100% can be given the same credit for threshold determination as impervious areas managed by Low Impact Development practices. If indeed this is the jurisdiction's policy, it would seem to be unwritten.

The 100% infiltration storm system they propose is simply directing storm runoff from gravel roadways through a narrow grass shoulder (2 or 3ft wide) and into an infiltration ditches. They do also propose the use of bioretention cells for individual lots. Because they are avoiding MRs 6 & 7, the subsurface soil and groundwater assessment, design analysis and design criteria is far below the standard required by the 2005 manual. In fact, I don't know that any soil assessment has been conducted. The downstream constraints from this project are considerable so this is even more important.

The question: If one simply proposes to infiltrate 100% of runoff, can the associated impervious areas be credited from threshold determination and thus avoid MR's 6-10?

Thank you for your time.

Norman L. Olson II, P.E.
N.L. Olson & Associates, Inc.
2453 Bethel Avenue
Port Orchard, WA 98366
360-876-2284 Office
360-620-3438 Cell
nlolson2@nlolson.com

DEPARTMENT OF ECOLOGY State of Washington http://www.ecy.wa.gov

Who to Contact for Technical Information

General Questions

Amanda Heye Department of Ecology PO Box 47600 Olympia WA 98504-7600	360-407-6457

Volume I - Minimum Technical Requirements

Ed O'Brien Department of Ecology PO Box 47600 Olympia WA 98504-7600	360-407-6438

Volume II - Construction Stormwater Pollution Prevention

Doug Howie Department of Ecology PO Box 47600 Olympia WA 98504-7600	360-407-6444

Volume III - Hydrologic Analysis and Flow Control BMPs

Foroozan Labib Department of Ecology PO Box 47600 Olympia WA 98504-7600	360-407-6439

Volume IV - Source Control BMPs

Dan Gariepy Department of Ecology PO Box 47600 Olympia WA 98504-7600	360-407-6470

Volume V - Runoff Treatment BMPs

Ed O'Brien Department of Ecology PO Box 47600 Olympia WA 98504-7600	360-407-6438

Acknowledgments

The individuals listed below volunteered their time and knowledge to aid in the 2001 update of this volume of the Department of Ecology's Stormwater Manual. The department thanks the members of the Volume I Committee for their efforts and advice.

Name	Affiliation
Lisa Austin	Department of Ecology
Peter Birch	Washington Department of Fish & Wildlife
Mark Blosser	Olympia Public Works Department
Bert Bowen	Washington Dept. of Transportation
Randy Brake	Pierce Co. Water Programs
Paul Bucich	Pierce Co. Surface Water Management
Dana Carlisle	Geoengineers, Inc.
Robert Chandler	Seattle Public Utilities
Michelle Cramer	Washington Department of Fish & Wildlife
Bruce Dodds	Dodds Consulting Engineers
Darla Elswick	Seattle Public Utilities
Nathan Graves	Kennedy/Jenks Consultants
Terra Hegy	Washington Department of Fish & Wildlife
Doug Hennick	Washington Department of Fish & Wildlife
Julie Howell	Kennedy/Jenks Consultants
Tom Holz	SCA Engineering
Gary Kenworthy	City of Port Angeles
Nancy Malmgren	Carkeek Park Watershed
Dan Mathias	Everett Public Works Department
Ralph Nelson	Entranco, Inc.
John Rogers	CH2M Hill
Jeffrey Stern	King Co. Department of Development and Environmental Services
Steve Worley	Spokane County Public Works
Bruce Wulkan	Puget Sound Water Quality Action Team

Department of Ecology Technical Lead

Ed O'Brien 

Technical Review and Editing

Economic and Engineering Services, Inc. – for the 2001 update
Charlene Witczak – 2005 update
Kelsey Highfill – 2005 update