

IPEC

Inland Pacific Engineering Company
Geotechnical Engineering and Consulting

June 28, 2016
Project No. 16-249A

NAI Black
c/o Mr. Bryan Walker
107 South Howard
Suite 500
Spokane, WA 99201

Re: **Full-Scale Drywell Testing**
Proposed Stormwater Management Facility
4403 South Dishman-Mica Road
Spokane Valley, WA

Dear Mr. Walker:

As you authorized, we have completed a full-scale drywell test on the drywell installed at the above-referenced site in Spokane Valley, Washington. The purpose of the testing was to establish a design flow rate. This report summarizes the results of our site investigation, engineering analyses and recommendations.

AVAILABLE INFORMATION

We were provided a topographic survey for the project site by Whipple Consulting Engineers, Inc. (WCE). This topographic survey showed the existing roadways, existing structures, property lines, and existing ground surface elevation contours. This plan was prepared by WCE and was dated November 7, 2013. The site was used as a golf course prior to our evaluation. The site is relatively level with some elevated golf greens and excavated areas for water hazards. The site is primarily grass-covered with scattered trees along the fairways and pine trees in the undeveloped area to the northwest. The clubhouse building is present at the southwest corner.

In addition, we performed a preliminary geotechnical evaluation for the property in December 2013. The results of that evaluation, along with our opinions and recommendations, are summarized in our Preliminary Geotechnical Evaluation dated December 31, 2013.

We also performed a geotechnical evaluation for certification of the existing levee along Chester Creek in April 2014. The results of that evaluation are summarized in our Geotechnical Evaluation report dated February 12, 2015.

Lastly, we performed a geotechnical evaluation in July 2015 consisting of ten 50-foot borings in the south half of the property. The results of that evaluation are summarized in our Geotechnical Evaluation Phase 2 report dated July 23, 2015.

FIELD EVALUATION

A geotechnical engineer from Inland Pacific Engineering Company (IPEC) performed a full-scale drywell test on the Type 2 drywell on May 6, 2016. The drywell test was performed in accordance with the Spokane Regional Stormwater Manual, Appendix 4B procedures.

ANALYSIS AND RECOMMENDATIONS

We calculated a design outflow rate for the existing drywell using the results of the recent and previous laboratory tests and the procedures described in the SRSM manual, Appendix 4B (Full-Scale Drywell Test Method). Based on the test performed, we recommend using a design flow rate of 1.05 cfs for design. This recommended design outflow rate includes a safety factor of 1.1 as required by the SRSM.

REMARKS

This report is for the exclusive use of the addressee and the copied parties to use in design of the proposed project and to prepare construction documents. In the absence of our written approval, we make no representations and assume no responsibility to other parties regarding this report. The data, analyses, and recommendations may not be appropriate for other structures or purposes. We recommend that parties contemplating other structures or purposes contact us.

Services performed by the geotechnical engineers for this project have been conducted in a manner consistent with that level of care ordinarily exercised by members of the profession currently practicing in this area under similar budget and time restraints. No warranty, expressed or implied, is intended or made.

GENERAL REMARKS

It has been a pleasure being of service to you for this project. If you have any questions or need additional information, please do not hesitate to call me at (509) 209-6262 at your convenience.

Sincerely,
Inland Pacific Engineering Company



Paul T. Nelson, P.E.
Principal Engineer

Attachments: Figure 1, Site Location Map
Figure 2, NRCS Map
Laboratory Test Results
Full-Scale Drywell Test Results



FIGURE 1





| Site Location Map | | |
|--|---|---------------|
|  Inland Pacific Engineering Company Geotechnical Engineering and Consulting | Project No. 16-249A | June 28, 2016 |
| | Painted Hills Golf Course 4403 South Dishman-Mica Road Spokane County, WA | |

FIGURE 2



| | | |
|---|---|---------------|
| NRCS Map | | |
|  IPEC Inland Pacific Engineering Company Geotechnical Engineering and Consulting | Project No. 16-249A | June 28, 2016 |
| | Painted Hills Golf Course 4403 South Dishman-Mica Road Spokane County, WA | |



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 Spokane Valley, WA 99216
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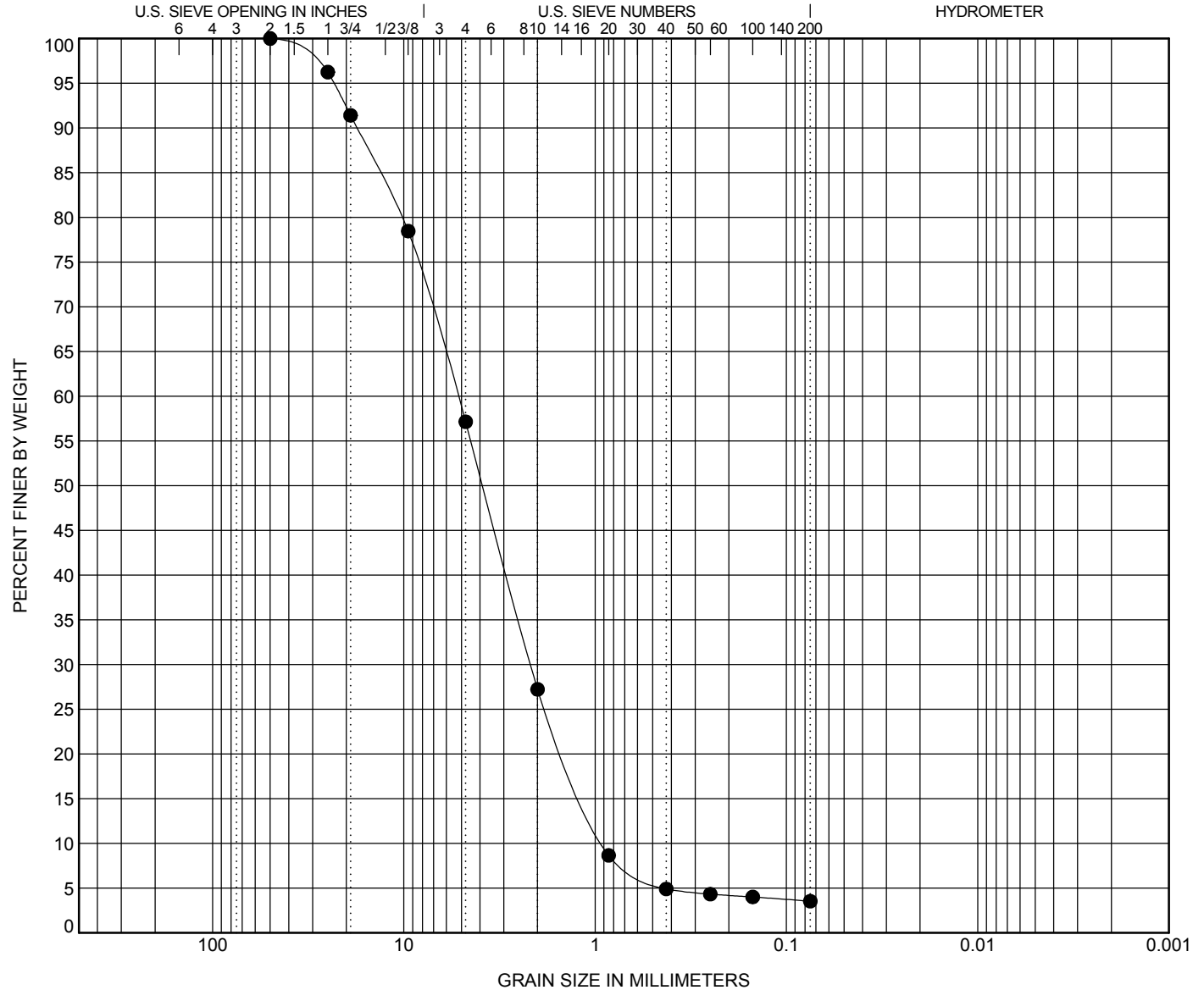
GRAIN SIZE DISTRIBUTION

CLIENT NAI Black

PROJECT NAME Painted Hills Drywell Test

PROJECT NUMBER 16-249A

PROJECT LOCATION 4403 South Dishman-Mica Road



| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
| | coarse | fine | coarse | medium | fine | |

| BOREHOLE | DEPTH | Classification | | | | | LL | PL | PI | Cc | Cu |
|-----------|-------|--|-------|-------|-------|---------|-------|-------|-------|------|------|
| ● L16-057 | 20.0 | SP Poorly Graded Sand with Gravel | | | | | | | | 1.00 | 5.76 |
| | | | | | | | | | | | |
| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay | | |
| ● L16-057 | 20.0 | 50 | 5.212 | 2.167 | 0.904 | 42.9 | 53.6 | 3.5 | | | |
| | | | | | | | | | | | |

GRAIN SIZE - GINT STD US LAB.GDT - 6/28/16 15:32 - J:\IPEC PROJECTS\2016 PROJECTS\16-249A PAINTED HILLS DRYWELL TESTING\GINT\16-249A PAINTED HILLS DRYWELL TEST.GPJ



Inland Pacific Engineering Company
Geotechnical Engineering and Consulting

Full-Scale Drywell Test Results

Project Name: Painted Hills Drywell Test

Test Date: 5/6/2016

Project Number: 16-249A

Test Location: Existing Drywell

Client: NAI Black

Depth: 20'

| Time | Elapsed Time (seconds) | Depth to Water (feet) | Flow Meter Reading (ft ³) | Volume of Water (ft ³) | Flow Rate (cfs) |
|-------|------------------------|-----------------------|---------------------------------------|------------------------------------|-----------------|
| 10:00 | 0 | 19.5 | 596.6 | | |
| 11:00 | 3600 | 18.2 | 1171.5 | 574.90 | 1.60E-01 |
| 11:10 | 600 | 18.2 | 1261.0 | 89.50 | 1.49E-01 |
| 11:20 | 600 | 18.2 | 1350.7 | 89.70 | 1.50E-01 |
| 11:30 | 600 | 18.2 | 1441.1 | 90.40 | 1.51E-01 |
| 11:35 | | 18.3 | | | |
| 11:40 | | 18.6 | | | |
| 11:45 | | 19.1 | | | |
| 11:50 | | 19.5 | | | |

Average Flow Rate: 1.50E-01

