



# Conceptual Engineering & Drainage Narrative for ABW Technologies Site Development Arlington, Washington

Prepared for: ABW Technologies, Inc. 6720 191<sup>st</sup> Place NE Arlington, Washington 98223-4666

Prepared by: John Cherry, P.E.

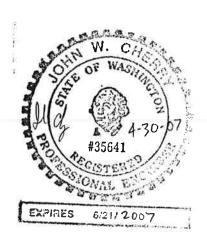
April 30, 2007



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## INTRODUCTION

ABW Technologies proposes to replace two existing temporary buildings on its 4.9-acre industrial site with a permanent 24,750 sq. ft. administration and manufacturing building in two phases. The accompanying Preliminary Site Civil Plan (HBA Design Group, 4/30/07) illustrates conceptually the proposed changes. In addition to the new building, the plan includes minor drainage conveyance realignments, a water main loop extension and suggested future frontage improvements by others on 191<sup>st</sup> Place NE.

# PROPOSED DEVELOPMENT AND DRAINAGE PLAN

The 4.9-acre site currently is occupied by a 52,000 sq. ft. manufacturing plant and two temporary administration buildings, surrounded by paved parking, fire lanes and storage areas. Except for a landscape fringe around the perimeter, the entire site is impervious.

# Stormwater management

The existing stormwater management system, designed in 1997 by Diversified Engineering Services, consists of two infiltration trenches (north and south) and several oil separator catch basins within the conveyance systems. Each of the trenches is four feet deep, 10 feet wide and 200 feet long, with a perforated 24-inch distribution pipe running the entire length between access manholes at either end. The underlying soil is Everett gravelly sandy loam with a projected infiltration rate up to 20 in/hr (SCS Soil Survey). There have been no reported problems with the existing stormwater system during the 10 years it has been in operation.

Because the proposed site development will not significantly alter total impervious area, no change in the existing infiltration system is proposed. The conveyance system for the south trench will be realigned as necessary to accommodate the new building and redesigned parking areas. All new catch basins in pavement areas will have oil separator tees. The roof downspouts for the new building will be tightlined through a manifold to the infiltration facility. A belowgrade loading dock ramp will have a gravity drain tightlined to the conveyance system. Elevations have been checked to verify that this is feasible.

## Water service

An existing 8-inch water main that currently terminates along the south boundary of the property will be extended to the southeast corner and then north to complete a loop with an existing main on adjacent property to the east. An existing hydrant will be relocated and another hydrant will be added near the southwest entrance to the site.

### Sewer service

A sewer manhole currently exists near the southwest corner of the site close to the existing and proposed buildings. An existing side sewer will be relocated to more efficiently serve the proposed new building.

100.3 100.4 100.4 100.4 100.5 100.5 100.6 100.7 100.7 100.8 100.8 100.9 100.9 101.0 101.1 101.1 101.2 101.2 101.2 101.2 101.3 101.4 101.4 101.5 101.5 101.6 101.6 101.6 101.7 101.8 101.8 101.9 102.0 102.0 102.1 102.1	0.017 0.017	0.001 0.002 0.002 0.002 0.003 0.003 0.003 0.003 0.004 0.004 0.004 0.005 0.005 0.005 0.005 0.005 0.005 0.006 0.006 0.006 0.007 0.007 0.007 0.007 0.007 0.007 0.008 0.008 0.008 0.008 0.008 0.009 0.009 0.009 0.009 0.010 0.011 0.011 0.011 0.012 0.012	0.000 0.000	0.056 0.056
102.2 102.3 102.3 102.4 102.4 102.5 102.6 102.6 102.7 102.8 102.8 102.8 102.9 102.9 103.0 103.1 103.1 103.2 103.2 103.2 103.3 103.3	0.017 0.017	0.012 0.013 0.013 0.013 0.013 0.014 0.014 0.014 0.015 0.015 0.015 0.015 0.016 0.016 0.016 0.016 0.017 0.017 0.017 0.018 0.019 0.020 0.020 0.021 0.023 0.023	0.000 0.000	0.056 0.056

103.5	0.017	0.025	0.000	0.056
103.5	0.017	0.026	0.000	0.056
103.6	0.017	0.027	0.000	0.056
103.6	0.017	0.027	0.000	0.056
103.6	0.017	0.028	0.000	0.056
103.7	0.017	0.029	0.000	0.056
103.7	0.017	0.030	0.000	0.056
103.8	0.017	0.030	0.000	0.056
103.8	0.017	0.031	0.000	0.056
103.9	0.017	0.032	0.000	0.056
103.9	0.017	0.033	0.000	0.056
104.0	0.017	0.033	0.000	0.056
104.0	0.017	0.034	0.000	0.056

Name

: Basin 1

Bypass: No

GroundWater: No

Pervious Land Use A B, Forest, Flat Acres .33

Impervious Land Use

Acres

Element Flows To:

Surface

Interflow

Groundwater

MITIGATED LAND USE

### ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)			
2 year	0.000094			
5 year	0.000214			
10 year	0.00035			
25 year	0.000623			
50 year	0.00093			
100 year	0.001358			

Flow Frequency Return Periods for Mitigated

Return Period	Flow(cfs)		
2 year	0		
5 year	0		
10 year	0		
25 year	0		
50 year	0		
100 year	0		

Yearly Peaks for Predeveloped and Mitigated

Year	Predeveloped	Mitigated
1950	0.000	0.000
1951	0.000	0.000
1952	0.000	0.000
1953	0.000	0.000
1954	0.000	0.000
1955	0.000	0.000
1956	0.001	0.000
1957	0.000	0.000
1958	0.000	0.000
1959	0.000	0.000

# Ranked Yearly Peaks for Predeveloped and Mitigated Rank Predeveloped Mitigated

Rank	Predeveloped	Mitigated
1	0.0022	0.0000
2	0.0012	0.0000
3	0.0012	0.0000
4	0.0006	0.0000
5	0.0005	0.0000
6	0.0004	0.0000
7	0.0003	0.0000
8	0.0003	0.0000
9	0.0002	0.0000
10	0.0002	0.0000
11	0.0001	0.0000
12	0.0001	0.0000
13	0.0001	0.0000
14	0.0001	0.0000
15	0.0001	0.0000
16	0.0001	0.0000
17	0.0001	0.0000
18	0.0001	0.0000
19	0.0001	0.0000
20	0.0001	0.0000
21	0.0001	0.0000
22	0.0001	0.0000
23	0.0001	0.0000
24	0.0001	0.0000
25	0.0001	0.0000
26	0.0001	0.0000
27	0.0001	0.0000
28	0.0001	0.0000
20	0 0001	0 0000

30	0.0001	0.0000
31	0.0001	0.0000
32	0.0001	0.0000
33	0.0001	0.0000
34	0.0001	0.0000
35	0.0001	0.0000
36	0.0001	0.0000
37	0.0001	0.0000
38	0.0001	0.0000
39	0.0001	0.0000
40	0.0001	0.0000
41	0.0001	0.0000
42	0.0001	0.0000
43	0.0001	0.0000
44	0.0001	0.0000
45	0.0001	0.0000
46	0.0001	0.0000
47	0.0001	0.0000
48	0.0001	0.0000
49	0.0001	0.0000

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail	
0.0000	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0 =	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0001	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0002	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0003	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0004	0	0	0.0	Pass	
0.0005	0	0	0.0	Pass	
0 0005	n	Λ	0 0	Dagg	

0.0009 0 0 0.0 Pass 0.0009 0 0 0.0 Pass 0.0009 0 0 0.0 Pass
0.0009 0 0 0.0 Pass

Water Quality BMP Flow and Volume for POC 1.
On-line facility volume: 0 acre-feet
On-line facility target flow: 0 cfs.
Adjusted for 15 min: 0 cfs.
Off-line facility target flow: 0 cfs.
Adjusted for 15 min: 0 cfs.

0

0.0

Pass

0.0009

0

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