CITY OF ARLINGTON
ENVIRONMENTAL CHECKLIST

BARTON PROPERTY GRADING

June 28, 2002

SHOCKEY
BRENT, INC.

Project

Barton Property Grading

Applicant

Miller Shingle Company
P.O. Box 29
Granite Falls, Washington 98252

Project Representative

SHOCKEY/BRENT, INC.
Rick McArdle
2716 Colby Avenue
Everett, Washington 98201
Phone: 425.258.9308

June 28, 2002

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ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. **Name of proposed project, if applicable:** **Barton Property Grading**

2. **Name of applicant:** **Miller Shingle Company**

3. **Address and phone number of applicant and contact person:**

Applicant Contact:
Miller Shingle Company
Attn.: Brian Abbott
P.O. Box 29
Granite Falls, WA 98252
Phone: (360) 435-3631

Representative:
Shockey/Brent, Inc.
Attn.: Rick McArdle
2716 Colby Avenue
Everett, WA 98201
Phone: 425.258.9308

4. **Date checklist prepared:** June 25, 2002

5. **Agency requesting checklist:** City of Arlington

6. **Proposed timing or Schedule (including phasing, if applicable):**

Miller Shingle plans to commence construction upon approval from the City of Arlington. The project completion date would depend on the availability of a suitable disposal site for soil removed from the site.

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

Future activities will include construction of industrial and/or commercial buildings, parking and other associated improvements on the flat portion of the re-graded site. The buffer area adjacent to Portage Creek would be retained as a permanent native growth protection area (NGPA). The cut bank on the north portion of the site would not be further developed.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

Environmental documentation prepared for the project, submitted with the project application, and incorporated either by reference or as appendices to this checklist, consist of the following:

Drainage Report ..... Evergreen Engineering
Site Civil Plans (6 sheets) ..... Evergreen Engineering
Geotechnical Evaluation ..... Cornerstone Geotechnical
Critical Area Analysis and Mitigation Plan ..... Shockey/Brent, Inc.

9. **Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

No proposals are currently pending.

10. **List any government approvals or permits that will be needed for your proposal, if known.**

SEPA review and Threshold Determination.....City of Arlington
Grading/Site Construction Permit.....City of Arlington
Demolition Permit.....City of Arlington
NPDES.....WSDOE
HPA.....WDFW

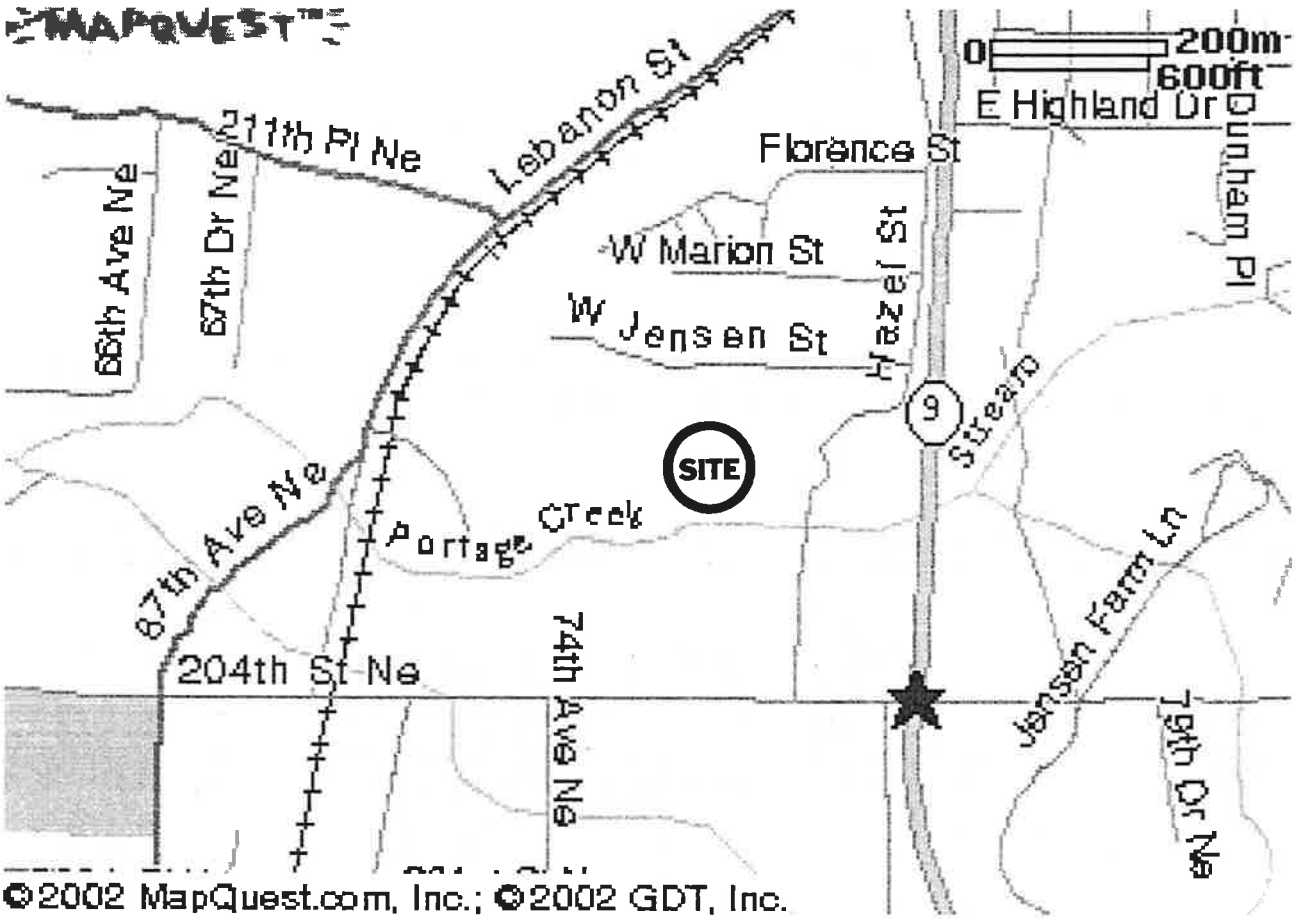
11. **Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.**

Miller Shingle Company is proposing to grade and prepare the 5-acre Barton property for future industrial and/or commercial development. See submitted Site Civil Plans. The existing hillside located on the northern quarter of the site would be regraded by removal of approximately 65,000 c.y. of earth to create additional level developable area on the site at approximately the same elevation as the adjacent Miller site to the west. Approximately 15,000 c.y. of that material would be utilized on-site and for construction of 72nd Avenue NE (see below) and 50,000 c.y. exported from the site. Construction would also include 700 lineal feet of new city street (72nd Avenue NE) constructed from 204th Street NE, across Portage Creek at the south edge of the adjacent Miller Shingle property, approximately 150 feet west of the southwest corner of the Barton parcel. Road improvements would include a bridge across Portage Creek, and a new 12-inch gravity sanitary sewer main extension from 204th to the Miller property for future service to commercial and/or industrial uses on the Miller and Barton parcels. The sewer extension would be a City-sponsored element of the project, in accordance with the settlement agreement in Snohomish County Superior Court Cause No. 91-2-05555-4. A stream buffer with planted berm would be constructed on the north side of Portage Creek.

12. **Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

The approximately five acre site is located north of 204th St. NE and east of the BNSF Railroad and the existing Miller Shingle properties in the City of Arlington. The site is located within the southwest quarter of Section 11, Township 31 North, Range 5 East, W.M. (see *Figure 1 – Vicinity Map, Figure 2 Parcel Map* and *Appendix A – Legal Description*). The new city street would run north/south between 204th Street NE and the Miller Shingle properties *(see Figure 2 Parcel Map)*

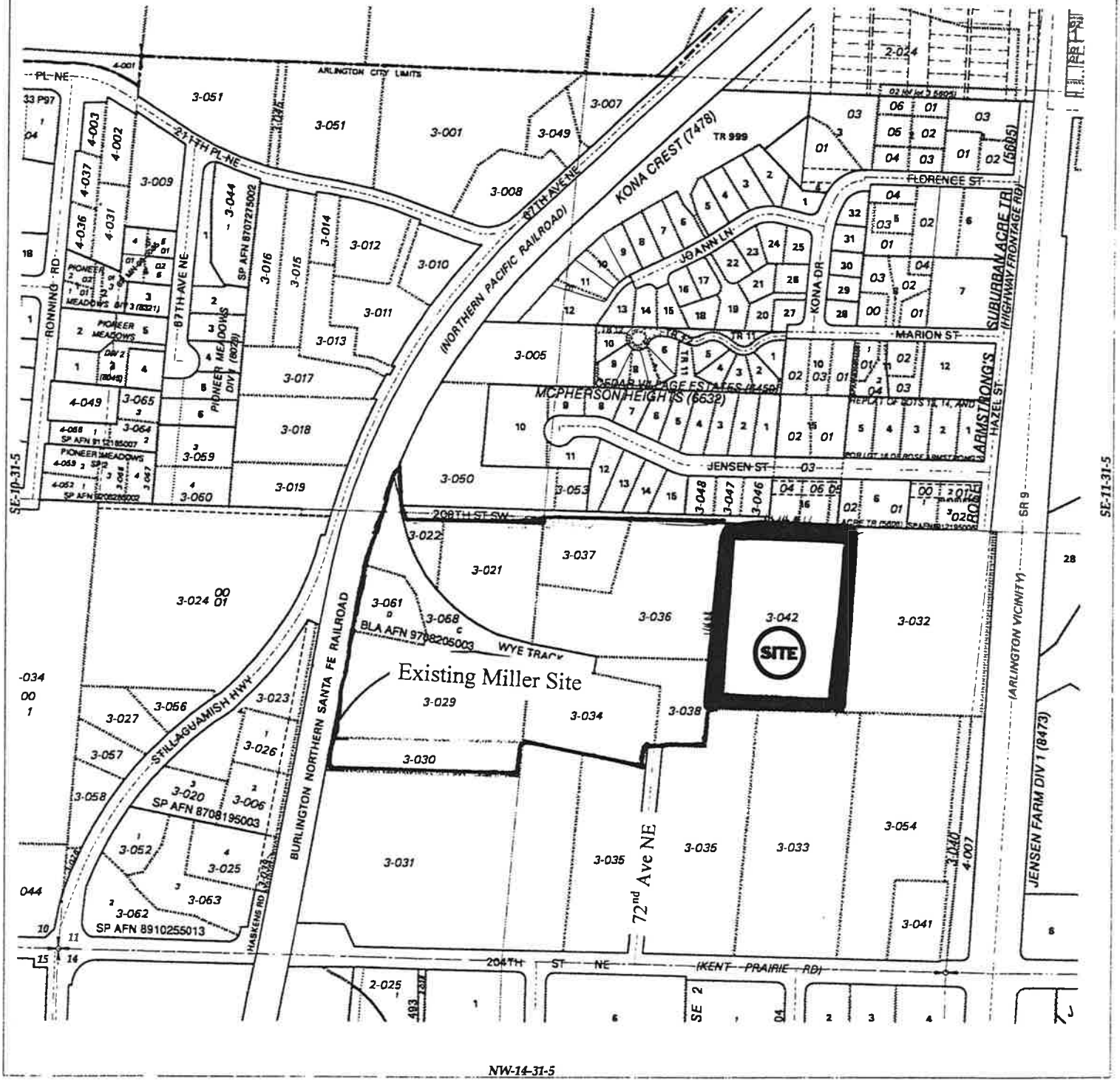
Figure 1 – Vicinity Map



QUARTER	SECTION	TOWNSHIP N.W.B.L.	RANGE E.W.M.
SW	11	31	5

A product of the Snohomish County Assessor's Office
Map produced on February 15, 2002

NW-11-31-5



NW-14-31-5

B. ENVIRONMENTAL ELEMENTS

1. EARTH

a. General description of the site (circle one): Flat, Rolling, hilly, steep slopes, mountainous, other.

The northern portion of the site contains a steep hillside, while the remainder of the property is relatively flat and gently slopes towards the northwest.

b. What is the steepest slope on the site (approximate percent slope)?

The steepest slopes on the site are approximately 25% on the average. These slopes occur in the northern portion of the site. The topography of the remainder of the site is generally flat and gently slopes towards the northwest.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

The USGS Soil Survey of Snohomish County mapped the majority of the site as Marysville Sand Member, with the upper terrace at the northeast corner of the site mapped as Arlington Gravel Member. In the Geotechnical Evaluation of the site prepared by Cornerstone Geotechnical (see *Appendix B*) the entire site was found to be covered by the Arlington Gravel Member.

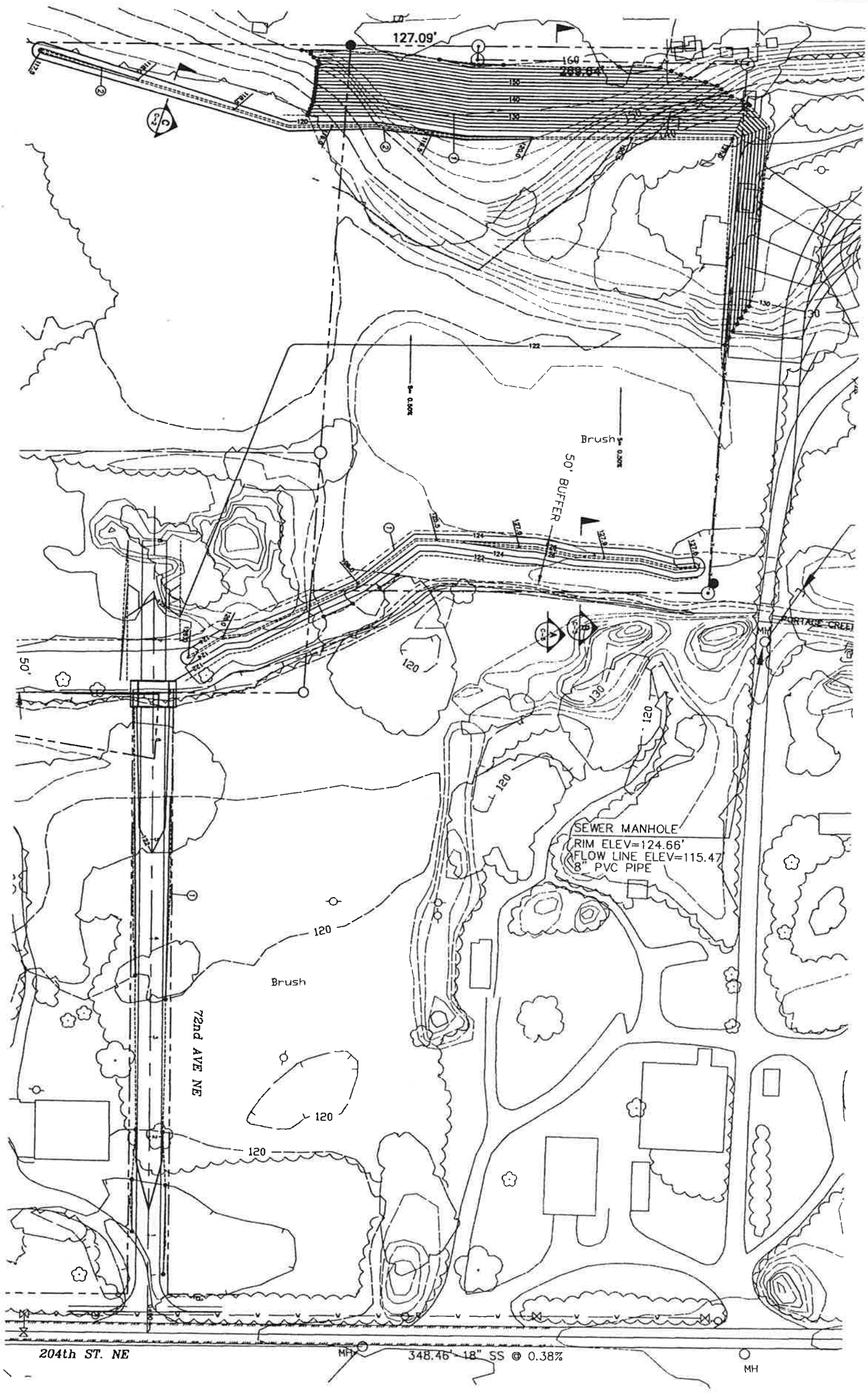
d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No indications.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Approximately 65,000 cubic yards of topsoil and pit run would be excavated from the site (*Figure 3 - Grading Plan*). Approximately 1,300 c.y. of the topsoil would be used to replant the stream berms and landscaping areas and 13,700 c.y. of excavated pit run will be used on site to re-grade the development site and to prepare the roadbed and bridge areas for 72nd Avenue NE. The net export from the site would be approximately 40,000 c.y. of pit run and 10,000 c.y. of topsoil. A buyer and site location for the exported material has not yet been identified.

J:\EES Projects\2823 Miller Shingle Co\14607(2)r14\2823GRD.dwg Tue Jun 25 13:11:48 2002 MPI



CONSTRUCTION NOTES

① HYDROSEED BERM AND/OR SLOPES

② BIOSWALE TO BE USED WITH FUTURE INFILTRATION POND

SW. 1/4, SEC. 11, TWP. 31 N., RGE. 5 E., W.M.

N

0 25 50 100 200

SCALE: 1" = 50'

EXPIRES 4/29/03

6/25/02

BARTON GRADING PROJECT

GRADING PLAN

Developer: Brian Abbott, Miller Shingle Co., Inc., P.O. Box 29, Granite Falls, WA 98252 360-691-7727

Drawing C-4 of 8 Drawings

Project Number 2823

EVERGREEN ENGINEERING SERVICES INC.

LAND USE PLANNING • CIVIL ENGINEERING

8625 Evergreen Way, Suite 104
Everett, WA 98208

Phone: 425-513-2500
Fax: 425-355-1307

R. ALAN MURRAY, P.E.

Designed by: RAM	Drawn by: MPI	Checked by: RAM	Issue Date: 6-25-02	
No.	ISSUE A Revision		By	Date
1				
2				
3				
4				
5				

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

There could be a short-term increase in the potential for on-site erosion where soils are exposed during site preparation and construction. Erosion could occur during the grading phase of the project. Exposed areas would be protected using erosion control measures described on the submitted T.E.S.C. Plan (Sheet 3 of the Site Civil Plans).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 17,600 square feet would be covered with new impervious surfaces. All impervious surfaces would be associated with the roadway and bridge construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The TESC Plan would be approved and control measures installed on the site prior to any construction activities. The flat grades and relatively high infiltration rate of the soils on the Barton site and street corridor reduce the risk of erosion and sedimentation to Portage Creek. The cut slope resulting from excavation activities would be permanently stabilized utilizing measures described on the TESC Plan.

2. AIR

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Short-term emissions to air from construction could occur. Dust emissions from construction activities and vehicle emissions from automobiles and construction equipment would generate suspended particles. Dust could occur during grading/construction operations. These impacts should be minimal. Long-term emissions to air would be typical of current conditions and are not anticipated to have an impact to the area.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site emissions or odors that affect the proposed site development.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

The Washington Clean Air Act requires the use of all known, available reasonable means of controlling air pollution, including dust. Construction impacts would not be significant and could be controlled by measures such as washing truck wheels before

exiting the site. In addition, dirt-driving surfaces would be watered during extended dry periods to control dust and to prevent tracking or flowing sediment onto adjacent roads. There are no long-term impacts to air anticipated.

3. WATER

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Portage Creek, a Type 3 stream, flows from east to west along the southern boundary of the Barton parcel. The creek flows within an approximately 8-foot wide channel with an associated riparian zone consisting primarily of reed canary grass, Himalayan blackberry, and snowberry (*see Appendix C – Critical Area Analysis and Mitigation Plan*).

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The new street would cross over Portage Creek using a pre-cast 3-sided concrete panel box system spanning 25 feet. The bridge deck would be placed on support piers located approximately 8-10 feet beyond the stream bank on the north and south sides of the creek. See submitted Site Civil Plans. In conjunction with the road and bridge construction, a new sewer main would be installed under the creek by directional boring. No construction activities would occur within the creek. The existing channel would not be diverted, altered, or impacted by the project.

To mitigate for impacts to the creek buffer resulting from construction of the bridge and road, the remainder of the required 50-foot buffer on the Barton parcel would be enhanced to increase its functional value. A 5-foot high earthen berm would be constructed 50-feet north of Portage Creek, to match a similar treatment both upstream and downstream of the project site. The berm and the buffer between the berm and the creek itself would be planted with native trees and shrubs to create wildlife habitat, discourage human intrusion, and to restore the natural vegetation to the stream corridor. (*see Appendix C – Critical Area Analysis and Mitigation Plan*).

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill material would be placed or removed from surface waters. Approximately 5000 s.f. of creek buffer would be impacted by the bridge approach and roadway.

4) **Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

The proposal does not require surface water withdrawals or diversions.

5) **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

Portage Creek does not have an identified 100-year floodplain.

6) **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

No direct discharge of waste materials to surface waters would occur.

b. **Ground:**

1) **Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

No groundwater withdrawal or discharge is proposed with the project.

2) **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

No waste material would be discharged into the ground.

c. **Water Runoff (including storm water):**

1) **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

Storm runoff will occur from the new road and bridge surfaces. These surfaces are designed with a crowned cross-section, which would direct runoff as sheet flow onto the adjacent ground surface. The on-site soils will provide rapid infiltration of runoff. No sheet or channel flow of storm runoff is anticipated from project improvements (*see Appendix D – Drainage Report*).

2) **Could waste materials enter ground or surface waters? If so, generally describe.**

Oils, grease and other pollutants from the new roadway could potentially enter the ground or downstream surface waters through surface water runoff.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

No work is proposed within Portage Creek. TESC measures shown on the Site Civil Plans and described above will prevent impacts to the creek during construction.

The granular texture of on-site soils will allow for rapid infiltration of runoff, recharging the underlying water table (at least 10 feet below the ground). Finished grades on the southern portion of the Barton parcel would slope away from the creek, towards a natural infiltration area to the northwest.

4. PLANTS

a. Check or circle types of vegetation found on the site:

_X_ deciduous tree: **alder**, **maple**, aspen, other:
_X_ evergreen tree: **fir**, **cedar**, pine, other: _____
_X_ shrubs
_X_ grass
___ pasture
___ crop or grain
___ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other: _____
___ water plants: water lily, eelgrass, milfoil, other: _____
other types of vegetation:

b. What kind and amount of vegetation will be removed or altered?

The site contains primarily reed canary grass, Himalayan blackberry and snowberry bushes. All onsite vegetation will be removed within construction areas.

c. List threatened or endangered species known to be on or near the site, if any:

There are no known threatened or endangered species existing on the site or in the near vicinity. There is limited native vegetation on-site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Enhancement plantings will be provided within the 50-foot buffer adjacent to Portage Creek. (*see Appendix C – Critical Area Analysis and Mitigation Plan*).

If feasible using volunteer labor, onsite snowberry will be transplanted to the graded slope at the north end of the property to protect from bank erosion. If it is not feasible to transplant existing snowberry, nursery starts will be used.

All exposed areas will be seeded following grading.

5. ANIMALS

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, **songbirds**, other:
mammals: **deer**, bear, elk, beaver, other: **small rodents**
fish: bass, **salmon**, **trout**, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

Portage Creek provides bull trout and coho salmon habitat. Bull trout are a listed species and coho are a candidate species under the Federal Endangered Species Act.

c. Is the site part of a migration route? If so, explain.

No.

d. Proposed measures to preserve or enhance wildlife, if any:

Due to the urban industrial nature of the site and surrounding developments, upland wildlife existing in the area are generally more tolerant of urban uses.

Habitat value within the riparian zone adjacent to Portage Creek will be increased with enhancement plantings provided within the 50-foot buffer. (*see Appendix C – Critical Area Analysis and Mitigation Plan*).

6. ENERGY AND NATURAL RESOURCES

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The only sources of energy used on the site would be during construction and would be related to construction equipment.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List of other proposed measures to reduce or control energy impacts, if any:

None are required. There would be no energy impacts associated with the completed project.

7. ENVIRONMENTAL HEALTH

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so describe.

There are no toxic chemicals or hazardous waste products stored or used on the existing site, nor would there be in the future.

1) Describe special emergency services that might be required.

No special services would be required.

2) Proposed measures to reduce or control environmental health hazards, if any:

The proposal would not generate any health hazards.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, aircraft, other)?

Various noise sources (traffic, industrial and domestic use sources) exist within the immediate area. Traffic noise on existing roads near the site would be audible. Traffic noise and uses in the vicinity have no affect on the proposed development.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Short-term noise impacts would result from construction activities and the use of construction equipment. At 200 feet from the area of construction, the typical range of noise levels for construction equipment would be approximately the following:

Activity	Hourly Leq (in decibels)
Clearing	71
Grading	63-76

Types of Equipment	Range of Noise Levels At 200 feet
Bulldozer	65-84
Dump Truck	70-82
Generators	59-70
Compressors	62-69

Source: EPA 1971

These noise levels would be short-term and in many cases of short duration. Long-term impacts would be those associated with the completed project and would be negligible.

3) **Proposed measures to reduce or control noise impacts, if any:**

Construction activities and hours of operation would comply with the City's noise control ordinance and other applicable codes. Once completed, noise generated from the site would be consistent with existing conditions.

8. LAND AND SHORELINE USE

a. What is the current use of the site and adjacent properties?

The site is undeveloped except for one older rental house near the northeast corner of the Barton parcel. The site abuts industrial uses to the east and west, industrial uses and undeveloped land to the south, and single family residences to the north.

b. Has the site been used for agriculture? If so, describe.

No.

c. Describe any structures on the site.

One older rental house with a detached garage is located near the northeast corner of the property. Current assessed value of all structures on site is $2000.

d. Will any structures be demolished? If so, what?

The existing rental house and garage would be removed.

e. What is the current zoning classification of the site?

The Barton parcel and 72nd Avenue NE corridor are currently zoned Industrial.

f. What is the current comprehensive plan designation of the site?

The Barton parcel and 72nd Avenue NE corridor are currently designated Industrial.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

Portage Creek is classified an environmentally sensitive area.

i. Approximately how many people would reside or work in the completed project?

Nobody would live or work on the site following completion of construction activities.

j. Approximately how many people would the completed project displace?

One family in the existing rental residence would be displaced.

k. Proposed measures to avoid or reduce displacement impacts, if any:

No measures are proposed.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposal is consistent with the Industrial designation on the comprehensive plan and complies with the Industrial zoning regulations. Treatment of the Portage Creek corridor and bridge crossing are consistent with City sensitive area regulations. Land use impact on the adjacent residential uses would be negligible, since following completion of site construction, the intensity of use of the site would be no more than the existing condition.

Construction of 72nd Avenue NE would provide for traffic circulation within the industrial designated area north of 204th Street NE and west of SR9.

9. HOUSING

a. Approximately how many units would be provided, if any?

No housing units would be provided.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

One rental residence would be removed.

c. Proposed measures to reduce or control housing impacts, if any:

None.

10. AESTHETICS

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No buildings are proposed on the site.

b. What views in the immediate vicinity would be altered or obstructed?

The existing vegetation on the northern sloped portion of the site would be removed, opening views to the south from some existing residences north of the site. Because it would be substantially lower in elevation, the regraded site itself would not be visible from the residences.

The cleared and graded portions of the site would be visible from Industrial zoned properties to the east and west.

c. Proposed measures to reduce or control aesthetic impacts, if any:

No specific mitigation measures are proposed. Because of distinct elevation differences and its low visibility from adjacent residences, the project would not result in significant aesthetic impacts to those properties. Views of the project from adjacent developed and undeveloped Industrial properties would be consistent with expectations for those type land uses.

11. LIGHT AND GLARE

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

No artificial lighting is proposed on the site.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Light and glare would not be increased above the existing level. The finished project would not be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal?

Light and glare from the adjacent properties would not have an impact on this proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:

There would be no impacts associated with light and glare.

12. RECREATION

a. What designated and informal recreational opportunities are in the immediate vicinity?

No recreational opportunities exist on or near the property.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No recreational facilities would be displaced.

c. Proposed measures to reduce or control impacts on recreation, including opportunities to be provided by the project or applicant, if any:

The proposal would have no impact on recreation, and therefore no measures to reduce or control impacts on recreation are proposed.

13. HISTORIC AND CULTURAL PRESERVATION

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

There are no known objects of preservation on or next to the site.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site?

There are no known historical landmarks on or next to the site.

c. Proposed measures to reduce or control impacts, if any:

None proposed. If any archeological artifacts are discovered during construction, activity in that area would be halted and the State Historic Preservation Office would be contacted.

14. TRANSPORTATION

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Access to the site is currently provided off 67th Avenue NE, through the existing Miller Shingle property. For the initial site work this will remain the primary construction access. However, once the new 72nd Avenue NE is sufficiently improved from 204th Street NE, it would be used for construction access.

A private driveway to Hazel Street currently serves the existing residence. This driveway would not be utilized for project construction.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

The site is not directly served by public transit.

c. How many parking spaces would the completed project have? How many would the project eliminate?

No parking spaces would be constructed or eliminated.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

A new city street, 72nd Avenue NE, would be constructed from 204th St. NE on to the property within an existing 40-foot right-of-way. The street would be constructed to an interim standard of 24 feet of paved width, expandable in the future to 30 feet width. The Portage Creek bridge crossing would be constructed with a full span bridge and a

completed road section consisting of 30 feet of paved width with concrete curbs and sidewalks both sides. Additional right-of-way would be deeded to the city in the vicinity of the new Portage Creek bridge, at the northern terminus of 72nd Avenue NE.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

BNSF rail lines and spur serve the Miller property immediately to the west.

h. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

Following completion of construction activities, no traffic would be generated.

g. Proposed measures to reduce or control transportation impacts, if any:

Except short term construction-related traffic, the project would cause no negative transportation impacts. The new 72nd Avenue NE would provide a long term benefit to traffic circulation in the industrial area north of 204th Street NE and west of SR9.

15. PUBLIC SERVICES

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe:

There would be no increase in the need for public services due to the project. The City of Arlington Fire and Police Departments currently serve the property.

b. Proposed measures to reduce or control direct impacts on public services, if any.

There would be no impacts to public services as a result of the project.

16. UTILITIES

a. Circle utilities currently available at the site: **electricity**, natural gas, **water**, **refuse service**, **telephone**, sanitary sewer, septic system, other:

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

A 12-inch gravity sewer main would be constructed in 72nd Avenue NE from 204th Street NE to the north side of Portage Creek, approximately 700 feet. The sewer extension would be a City-sponsored element of the project, in accordance with the settlement agreement in Snohomish County Superior Court Cause No. 91-2-05555-4.

The existing well serving the residence would be retained to use for irrigation. The existing septic tank and drainfield would be removed.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Date submitted: 6-27-02

APPENDIX A - LEGAL DESCRIPTION

The West half of the following described tract:

Beginning 1302.25 feet North of the Southeast corner of the Southwest quarter of Section 11, Township 31 North, Range 5 East, W.M.;
Thence West 792 feet;
Thence South 550 feet;
Thence East 792 feet;
Thence North 550 feet to the True Point of Beginning;
EXCEPT County Road.

Situate in the County of Snohomish, State of Washington.

APPENDIX B – GEOTECHNICAL EVALUATION

Geotechnical Evaluation
Proposed Commercial Site
Arlington, Washington
For
Mr. Brian Abbott

Cornerstone
Geotechnical, Inc.

17625-130th Ave. NE, C102, Woodinville, WA 98072
Phone: 425-844-1977
Fax: 425-844-1987

January 17, 2001

Mr. Brian Abbott
c/o Miller Shingle Co., Inc.
PO Box 29
Granite Falls, WA 98252

Geotechnical Evaluation
Proposed Commercial Site
Arlington, Washington
CG File No. 1232

INTRODUCTION

This report presents the results of our geotechnical evaluation at the planned development at the Miller Shingle site in Arlington, Washington. The project is located northeast of the intersection of 67th Avenue NE (Lebanon Street) and 204th Street NE, as shown on the Vicinity Map in Figure 1.

For our use in preparing this report, we have been provided with a topographic plan sheet of the site and the nearby surrounding area. This sheet was prepared by Evergreen Engineering Services, dated November 14, 2001. The site consists of two properties. The western and central portions of the site consist of the recently closed lumber yard that is currently used to store freight cars and houses a propane fuel tank facility. A large portion of the lumber yard area is paved. The eastern portion is a recently purchased five-acre property that contains a single-family residence. Portage Creek flows from east to west along the south side of the property.

PROJECT DESCRIPTION

We understand that the property is planned to be developed for industrial and/or commercial use. We have not been provided with a development plan for the project. We understand that slope in the northeast corner of the site may be cut steeper to create more level area and to generate usable fill material for use on the site and possibly for export.

An access road may be constructed off the site to the south, connecting the project with 204th Street NE. This access road will extend about 600 feet from the site. A bridge or culvert is planned to cross the creek for the access road. Shockey Brent, Inc. requested that we provide recommendations for construction of bridge abutments. We understand that you are considering infiltration of storm water at the site. You indicated that the most likely place for storm water infiltration would be near the north property line. The development plan ultimately chosen may include leaving some or all of the existing asphalt in place.

SCOPE

The purpose of this evaluation is to explore subsurface conditions and provide recommendations for site development. Specifically, our scope of services will include the following tasks:

1. Review available geologic maps of the area.
2. Explore the subsurface conditions at the site with a subcontracted trackhoe.
3. Explore the proposed emergency access route with the trackhoe.
4. Install temporary piezometers in six to eight holes to use to record depth to ground water.
5. Use the trackhoe and/or hand tools to explore conditions at the planned bridge abutments.
6. Visually evaluate the grain-size distribution of soil types encountered and comment on suitable infiltration rates.
7. Provide recommendations for site grading and fill placement.
8. Provide a recommended cut slope angle for the northeast corner of the site.
9. Complete grain-size analysis on three samples for use in classifying the fill type expected from the large cut slope.
10. Provide recommendations foundation subgrade preparation, and geotechnical design parameters for building foundations and retaining walls.
11. Prepare a written report to document our conclusions and recommendations.

SITE CONDITIONS

Surface Conditions

The site is bordered by the Burlington-Northern-Sante Fe (BNSF) Railroad tracks on the west, and by industrial and undeveloped land to the south and east. The west half of the site is bordered by undeveloped land to the north and the east half of the site is bordered by a residential development to the north.

The majority of the site is level or very gently sloping with occasional fill piles and small berms on the east half of the site. Some of these piles appear to be the result of striping of topsoil from portions of the site; other piles contain lumber and other debris. The northeast corner of the site has a steep slope that drops from the adjacent residential community down to the general site grade. A single-family home is located on a mid-slope bench near the east property line. The site is generally cleared of vegetation except the slope in the northeast corner, which is covered with mostly 6- to 8-inch diameter deciduous trees and scattered groups of large firs.

A side spur off of the main BNSF rail track turns into the site from the northwest corner and extends to the center of the site. This track is currently used for temporary storage of railway tank cars. A second side spur track that enters from the southwest corner of the site has been partially demolished and is no longer used. Much of the west half of the site is paved and contains several structures. The paved areas of the site direct surface water flow to pond areas where infiltration appears to be occurring. One of these pond areas is shown near the north property line on Figure 2. Other surface water at the site is directed into small ditches that carry water to the creek along the south property line. We did not observe significant cracking in the pavement. Cold joints where different generations of paving were completed, local asphalt patch areas, and "bird bath" low spots were observed. We do not know the thickness of the asphalt but expect that it varies across the site.

The creek along the south property line is shown on some maps as Portage Creek. At the time of our explorations, the creek was on average about 6 feet across and 2 feet deep. A somewhat wider, grass-covered, low-bank area along the creek was between 8 and 14 feet across. It appeared that the creek may at times rise another 6 to 12 inches to fill this wider area. We do not

know the higher water level of the creek. Outside of the low-bank area described above, there is a 2- to 3-foot-high slope up to the surrounding grade.

The east half of the site is mostly undeveloped. An existing residence is located in the northeast corner of the site near the east property line. The northeast corner of the site contains a steep slope that drops down generally to the south. The slope is about 40 feet high with an average slope angle of about 40 percent and localized areas that are steeper than 50 percent. The existing residence is located on a bench within the steep slope area. This bench exists only on the east side of the slope. Outside of the steep slope, the east end of the site is nearly level and covered with grass and weeds with a few scattered piles of brush and debris.

Geology

The Geologic Map of the Arlington West Quadrangle, Snohomish County, Washington by James P. Minard (USGS 1985) was referenced for this report. This map indicated that the majority of the site was underlain by recessional sand of the Marysville Sand Member. The slope in the northeast corner of the site and the terrace above is mapped as recessional sand of the Arlington Gravel Member. Our explorations encountered medium dense to dense sand with gravel and cobbles that suggest the Arlington Gravel covered the entire site. Medium sand similar to the Marysville Sand Member was encountered in only our deepest exploration at the site.

Explorations

Subsurface conditions were explored at the site on December 21, 2002, by excavating 12 test pits with a trackhoe and two hand auger holes. The test pits were excavated to depths of 4.5 to 15.0 feet below the ground surface. The hand augers were completed near the creek and were completed to depths of 4.0 and 4.6 feet. The explorations were located in the field by an engineer from this firm who also examined the soils and geologic conditions encountered, and maintained logs of the test pits. The approximate locations of the explorations are shown on the Site Plan in Figure 2. The soils were visually classified in general accordance with the Unified Soil Classification System, a copy of which is presented as Figure 3. The logs of the explorations are presented in Figures 4 through 7.

Subsurface Conditions

A brief summary of the conditions encountered in our explorations is included below. For a more complete and detailed description of the soils encountered please refer to the logs presented in Figures 4 through 7.

All of our explorations encountered medium dense to dense, gray-brown, fine to coarse sand with gravel and cobbles. This was the most abundant material encountered at the site. The amount of gravel and cobbles varied somewhat with depth. Above this material, a weathered layer of brown to orange-brown sand with silt and gravel, to silty sand with gravel was encountered in many explorations. In the sloping portion of the site, Test Pit 5 and Test Pit 6 encountered a layer of silty fine sand and fine to medium sand with silt that was not encountered in other areas of the site. In undeveloped areas, the surface layer of dark brown to black topsoil was 1.0 to 1.5 feet thick. Where the site had been developed often the topsoil layer was thin or not present.

Our deepest exploration was Test Pit 10 in the potential infiltration area. Below 11 feet we observed fine to medium sand with trace silt. This material is consistent with what is generally described as Marysville Sand.

Test Pit 3 was completed in an area were topsoil stripped from the site had been placed. We did not encounter other areas of fill other than local stockpiles and berms. Some of the fill areas are indicated on Figure 2. This should not be considered a complete inventory of fill areas. This is mostly based on visual surface interpretation.

We completed a hand auger hole on each side of the creek where the proposed road would cross. Hand Auger 1 was located about 8 feet from the edge of the creek and about 3.5 feet above the level of the creek at the time of our explorations. Hand Auger 2 was located about 7 feet from the edge of the creek and about 2.5 feet above the level of the creek. Both explorations were completed in the medium dense, fine to coarse sand with gravel and cobbles found throughout the site.

Hydrologic Conditions

Ground water seepage was not encountered in any explorations at the site. Hand Auger 2 was completed to a depth about 2 feet below the level of the creek at the time of our explorations. We placed temporary piezometer pipes for measuring high ground water elevation at several locations of the site as noted in the logs on Figures 4 through 7. We understand that you have checked the piezometers several times over the past few weeks and have not recorded any water.

Laboratory Results

Grain-size analyses were performed on three samples from the proposed excavation slope in the northeast corner of the site. The sieve results are presented as Figures 8 through 10. The large majority of the soils encountered in our explorations were similar to the grain-size distribution presented in Figures 8 and 9. Minor layers of silty sand were observed in the northeast corner of the site similar to the distribution presented in Figure 10. We did not explore to the full depth of the planned excavation and there is potential for fine-grained soils to be encountered at depth.

CONCLUSIONS AND RECOMMENDATIONS

General

The underlying medium dense to dense sand with gravel and cobbles that underlies the site at shallow depth is suitable for support of shallow foundations and for infiltration of site storm water. We recommend that the foundations for the structures extend through any topsoil, loose, or disturbed soils, and bear on the underlying medium dense or better soils. Based on our site explorations, we anticipate these soils will generally be encountered at depths of 1.5 to 3.0 feet.

The majority of the site soils below the upper topsoil and weathered soil layers are only slightly moisture sensitive and can be expected to be suitable for use as fill in most weather conditions. The upper topsoil and weathered soil layers are moisture sensitive and site grading in wet weather may result in a greater depth of stripping. In developed portions of the site, much of the topsoil has already been removed. In other areas, such as the proposed access road, site stripping would be a minimum of 1.5 feet due to the thick topsoil layer.

We expect that shallow foundations may be used for the proposed creek crossing provided some setback from the creek is used. Our exploration results suggest that foundation excavations for shallow footings to support a bridge most likely will not encounter significant water seepage unless completed at times of very high water level.

Soil generated from the excavation at the northeast corner of the site is expected to consist mainly of well-draining sand and gravel. We did observe minor layers of silty fine to medium sand in explorations in this area (see Figure 10 for sieve results). The large majority of soil in our excavations, however, was sand with gravel and cobbles with only trace amounts of silt (see Figure 8 and 9 for sieve results). This material is generally called "all-weather fill" due to the well-draining properties. We did not explore to the full depth of the proposed excavation and there is potential for finer soils at depth. We caution economic planning for these materials with the current limited data. In our opinion, the excavation could be completed with a 1.75 Horizontal to 1.0 Vertical final slope provided the material is consistent with depth and water seepage is not encountered. For a 40-foot slope height this corresponds to 70 feet of horizontal slope distance. We recommend that the slope be protected against erosion and that the slope begin no closer to the property line than 2 feet. We should visit the site during excavation to evaluate conditions encountered.

Site Preparation and Grading

The first step of site preparation should be to strip the vegetation, topsoil, or loose soils to expose medium dense native soils in pavement and building areas. This material should be removed from the site, or stockpiled for later use as landscaping fill. The actual depth of stripping will be controlled by organics, moisture contents of the subgrade soils, and extent of previous stripping. The resulting subgrade should be compacted to a firm, non-yielding condition. Areas observed to pump or weave should be repaired prior to placing hard surfaces. In dry summer conditions, it may be possible to compact the loose weathered soils to a suitably firm condition, while in wet weather or during the winter, additional stripping depth may be needed.

Structural Fill

General: All fill placed beneath buildings, pavements or other settlement sensitive features, should be placed as structural fill. Structural fill, by definition, is placed in accordance with

prescribed methods and standards, and is monitored by an experienced geotechnical professional or soils technician. Field-monitoring procedures would include the performance of a representative number of in-place density tests to document the attainment of the desired degree of relative compaction.

Materials: Imported structural fill should consist of a good quality, free-draining granular soil, free of organics and other deleterious material, and be well graded to a maximum size of about 3 inches. Imported, all-weather structural fill should contain no more than 5 percent fines (soil finer than a Standard U.S. No. 200 sieve), based on that fraction passing the U.S. 3/4-inch sieve. The on-site soils can be used as structural fill. The sand with gravel and cobbles encountered throughout the site is considered only slightly moisture sensitive and is considered suitable for use as fill in most weather conditions. During dry weather, the well-draining soil may require addition of water to achieve proper compaction.

Fill Placement: Following subgrade preparation, placement of the structural fill may proceed. Fill should be placed in 8- to 10-inch-thick uniform lifts, and each lift should be spread evenly and be thoroughly compacted prior to placement of subsequent lifts. All structural fill underlying building areas, and within a depth of 2 feet below pavement and sidewalk subgrade, should be compacted to at least 95 percent of its maximum dry density. Maximum dry density, in this report, refers to that density as determined by the ASTM D 1557 compaction test procedure. Fill more than 2 feet beneath sidewalks and pavement subgrades should be compacted to at least 90 percent of the maximum dry density.

Temporary and Permanent Slopes

Temporary cut slope stability is a function of many factors, such as the type and consistency of soils, depth of the cut, surcharge loads adjacent to the excavation, length of time a cut remains open, and the presence of surface or ground water. It is exceedingly difficult under these variable conditions to estimate a stable temporary cut slope geometry. Therefore, it should be the responsibility of the contractor to maintain safe slope configurations, since the contractor is continuously at the job site, able to observe the nature and condition of the cut slopes, and able to monitor the subsurface materials and ground water conditions encountered.

For planning purposes, we recommend that temporary cuts be no steeper than 1 Horizontal to 1 Vertical (1H:1V). If water seepage is encountered flatter slopes will be necessary.

We recommend that cut slopes be protected from erosion. Measures taken may include covering cut slopes with plastic sheeting and diverting surface runoff away from the top of cut slopes. We do not recommend vertical slopes for cuts deeper than 4 feet, if worker access is necessary. We recommend that cut slope heights and inclinations conform to local and WISHA/OSHA standards.

A permanent excavation slope is planned in the storm water ponds and the steep slope area in the northeast corner of the site. We recommend that pond slopes be no steeper than 2H:1V. We did not complete borings or other deep explorations in the proposed cut area in the northeast corner of the site. Test Pits in this area encountered sand with gravel and cobbles similar to that encountered in the flatter portions of the site but also some layers of finer sand. It is possible that there is a soil layer at depth, which was not encountered in our explorations. For this reason, we recommend that Cornerstone Geotechnical visit the site during excavation to evaluate conditions as the excavation is made. In our opinion, conditions appear to be suitable for a permanent slope angle of as steep as 1.75H:1V. If excavation encounters an unexpected fine-grained soil unit or water seepage, then flatter slopes below that point would be necessary.

The excavation slope should be protected against erosion. Vegetation should be established as soon as possible. Temporary erosion control measures should be used until permanent vegetation is well established. Jute netting with grass seed is one type of temporary erosion control method that may be used. We recommend that the excavation start at least 5 feet away from the property line to provide additional offset for surface raveling or erosion that does occur.

Foundations

Conventional, shallow-spread foundations should be founded on undisturbed, medium dense or better native soils, or be supported on structural fill extending to those soils. If the soil at the planned bottom of footing elevation is not medium dense, it should be overexcavated to expose suitable bearing soil, and the excavation should be filled with structural fill, or the footing may be overpoured with extra concrete. Some compaction of upper loose soil may be appropriate instead

of removal, depending on organic and moisture content. This should be evaluated at the time of construction.

Footings should extend at least 18 inches below the lowest adjacent finished ground surface for frost protection and bearing capacity considerations. Minimum foundation widths of 12 and 18 inches should be used for continuous and isolated spread footings, respectively. Standing water should not be allowed to accumulate in footing trenches. All loose or disturbed soil should be removed from the foundation excavation prior to placing concrete.

For foundations constructed as outlined above, we recommend an allowable design bearing pressure of 2,000 pounds per square foot (psf) be used for the footing design. Uniform Building Code (UBC) guidelines should be followed when considering short-term transitory wind or seismic loads. Potential foundation settlement using the recommended allowable bearing pressure is estimated to be less than 1 inch total and 1/2 inch differential between footings or across a distance of about 30 feet. Higher soil bearing values may be appropriate for wider footings. These higher values can be determined after a review of a specific design.

Lateral loads can be resisted by friction between the foundation and subgrade soil, and by passive soil resistance acting on the below-grade portion of the foundation. For the latter, the foundation must be poured "neat" against undisturbed soil or backfilled with clean, free-draining, compacted structural fill. Passive resistance may be calculated as a triangular equivalent fluid pressure distribution. We recommend that an equivalent fluid density of 350 pounds per cubic foot (pcf) be used to calculate the lateral passive resistance for the case of a level ground surface adjacent to the footing. The upper 1 foot of soil should be ignored for passive resistance unless covered by a hard surface such as asphalt or concrete. In the case of the bridge abutments at the creek crossing, passive resistance should be reduced to 200 pcf in addition to ignoring the upper 1 foot. A coefficient of friction between footings and soil of 0.7 may be used in all cases, and should be applied to the vertical dead load only. An appropriate factor of safety should be applied to the passive pressure and friction coefficient.

At the creek crossing, we expect that shallow footings may be suitable. The excavation depth for footings near the creek is expected to be 3 to 4 feet. We recommend that the footing excavation be separated from the lateral extent of the creek during seasonal high water levels to protect

against erosion and scouring. We recommend a minimum offset of 10 feet from the embankment face. This may be reduced to 5 feet if suitable armament is placed on the face of the slope below the footings to act as erosion protection. The alternative is to place the foundation below the bottom of the creek elevation to reduce the risk of scour impacting the bridge performance.

Slabs-On-Grade

Slab-on-grade areas should be prepared as recommended in the **Site Preparation and Grading** subsection. Slabs should be supported on medium dense native soils, or on structural fill extending to these soils. The clean native sand may be expected to act a as a capillary break. If silty soil is encountered at the subgrade level, a 6-inch-thick layer of clean sand or pea gravel should be placed to act as a capillary break. A suitable vapor barrier, such as heavy plastic sheeting, should be placed over the subgrade. If desired, a sand blanket could be placed over the vapor barrier to aid in curing of the concrete.

Retaining Walls

The lateral earth pressure acting on retaining walls is dependent on the nature and density of the soil behind the wall, the amount of lateral wall movement that can occur as backfill is placed, and the inclination of the backfill. Walls that are free to yield at least one-thousandth of the height of the wall are in an "active" condition. Walls restrained from movement by stiffness or bracing are in an "at-rest" condition. Active earth pressure and at-rest earth pressure can be calculated based on equivalent fluid density. Equivalent fluid densities for active and at-rest earth pressure of 33 pounds per cubic foot (pcf) and 50 pcf, respectively, may be used for design for a level backslope. These values assume that the on-site free-draining granular soils are used for backfill, and that the wall backfill is drained. The preceding values do not include the effects of surcharges due to foundation loads, traffic or other surface loads. Surcharge effects and sloping backfills should be considered where appropriate.

The above lateral pressures may be resisted by friction at the base of the wall and passive resistance against the foundation. These values are presented in the **Foundation** section of this report.

All wall backfill should be well compacted. Care should be taken to prevent the buildup of excess lateral soil pressures due to overcompaction of the wall backfill. This can be

accomplished by placing wall backfill in 8-inch loose lifts and compacting with small, hand-operated compactors.

Infiltration

We have used the United States Department of Agriculture (U.S.D.A.) soil group classification (Figure III-3.1) as presented in the "Storm Water Management Manual for the Puget Sound Basin", (Ecology 1992) to classify the soil samples analyzed. Based on our visual evaluation, this material is classified as a coarse sand or gravel. Based on this manual, an infiltration rate of 20 inches per hour may be used for the design of the infiltration system, as indicated on Table III-3.1 for soils classified as a coarse sand or gravel. It is our opinion that the permeability numbers provided in this manual are conservative. It has been our experience that higher infiltration rates may be obtained from field infiltration tests. We understand that a safety factor of 2 is commonly used by civil engineers for infiltration system design. This would result in an actual design rate of 10 inches per hour. It is possible that siltier zones in the deposit may exist. We recommend that the soils in the specific infiltration areas be evaluated and the excavation depth changed if finer-grained soils are encountered.

It is very important that infiltration areas be kept free of silt laden runoff which can dramatically reduce the actual infiltration rate achieved. Therefore, infiltration areas should not be used to collect runoff during site grading. We recommend that storm water be directed through a catch basin to aid in removal of sediment.

Drainage

We recommend that runoff from impervious surfaces, such as roofs, driveway and access roadways, be collected and routed to an appropriate storm water discharge system. Surface water should be collected by permanent catch basins and drain lines, and be discharged into a storm drain system.

The site appears to be well draining at the shallow subsurface level. For this reason, footing drains may be optional around the structures. If footing drains are not used, the ground surface should slope away from the structures at a gradient of 3 percent minimum for a distance of at least 10 feet away from the buildings.

Footing drains, if used, should consist of 4-inch-diameter, perforated PVC pipe that is surrounded by free-draining material, such as pea gravel. Footing drains should discharge into tightlines leading to an appropriate collection and discharge point. Roof drains should not be connected to wall or footing drains.

Construction Monitoring

We recommend we be retained to monitor the earthwork phase of construction. Our services would include evaluating the conditions encountered during construction for conformance with those expected during the design phase. If needed, we will provide alternatives if conditions differ from those that are expected. In particular, CG should evaluate conditions in the proposed slope excavation in the northeast corner of the site during grading.

USE OF THIS REPORT

We have prepared this report for Miller Shingle Co., Inc. and their agents, for use in planning and design of this project. The data and report should be provided to prospective contractors for their bidding and estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of subsurface conditions.

The scope of our work does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractors' methods, techniques, sequences or procedures, except as specifically described in our report, for consideration in design. There are possible variations in subsurface conditions. We recommend that project planning include contingencies in budget and schedule, should areas be found with conditions that vary from those described in this report.

We should be retained to provide monitoring and consultation services during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, and to provide recommendations for design changes, should the conditions revealed during the work differ from those anticipated. As part of our services, we would also evaluate whether or not earthwork and foundation installation activities comply with contract plans and specifications.

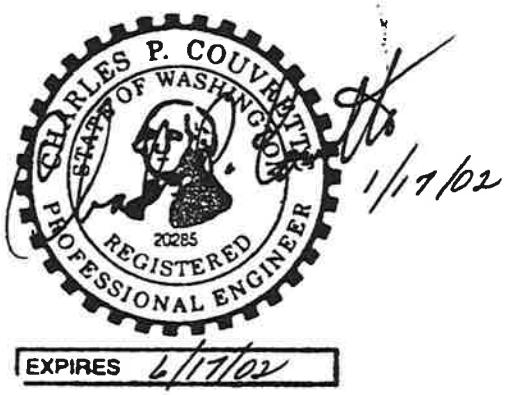
Within the limitations of scope, schedule and budget for our work, we have strived to take care that our work has been completed in accordance with generally accepted practices followed in this area at the time this report was prepared. No other conditions, expressed or implied, should be understood.

We appreciate the opportunity to be of service to you. If there are any questions concerning this report or if we can provide additional services, please call.

Sincerely,

Cornerstone Geotechnical, Inc.

Doug Bath
Project Engineer



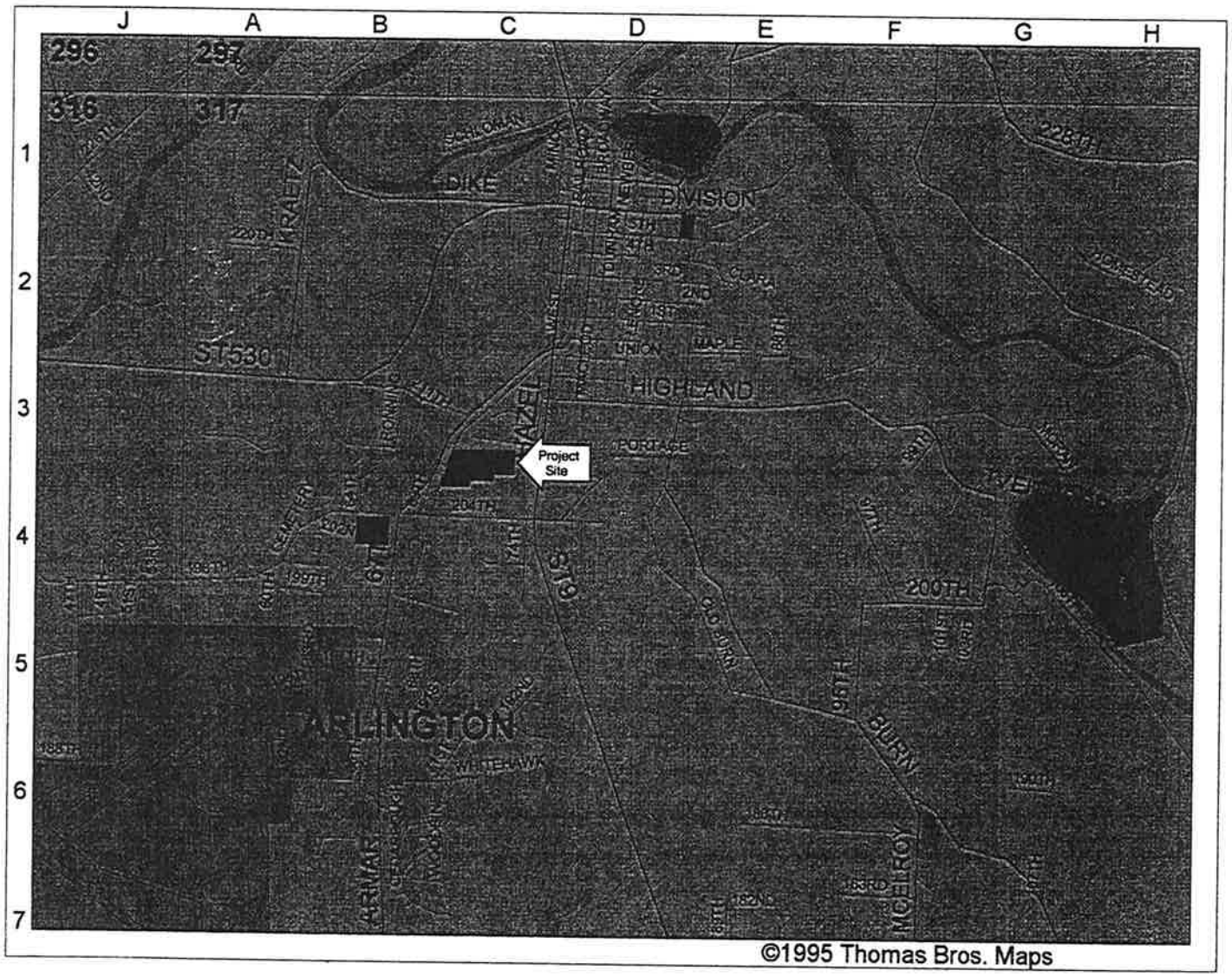
Charles P. Couvrette, PE
Principal Engineer

DJB:CPC:nt

Three Copies Submitted
Six Figures

cc: Mr. Rick McArdle, Shockey Brent, Inc.
Mr. Alan Murray, Evergreen Engineering

Vicinity Map



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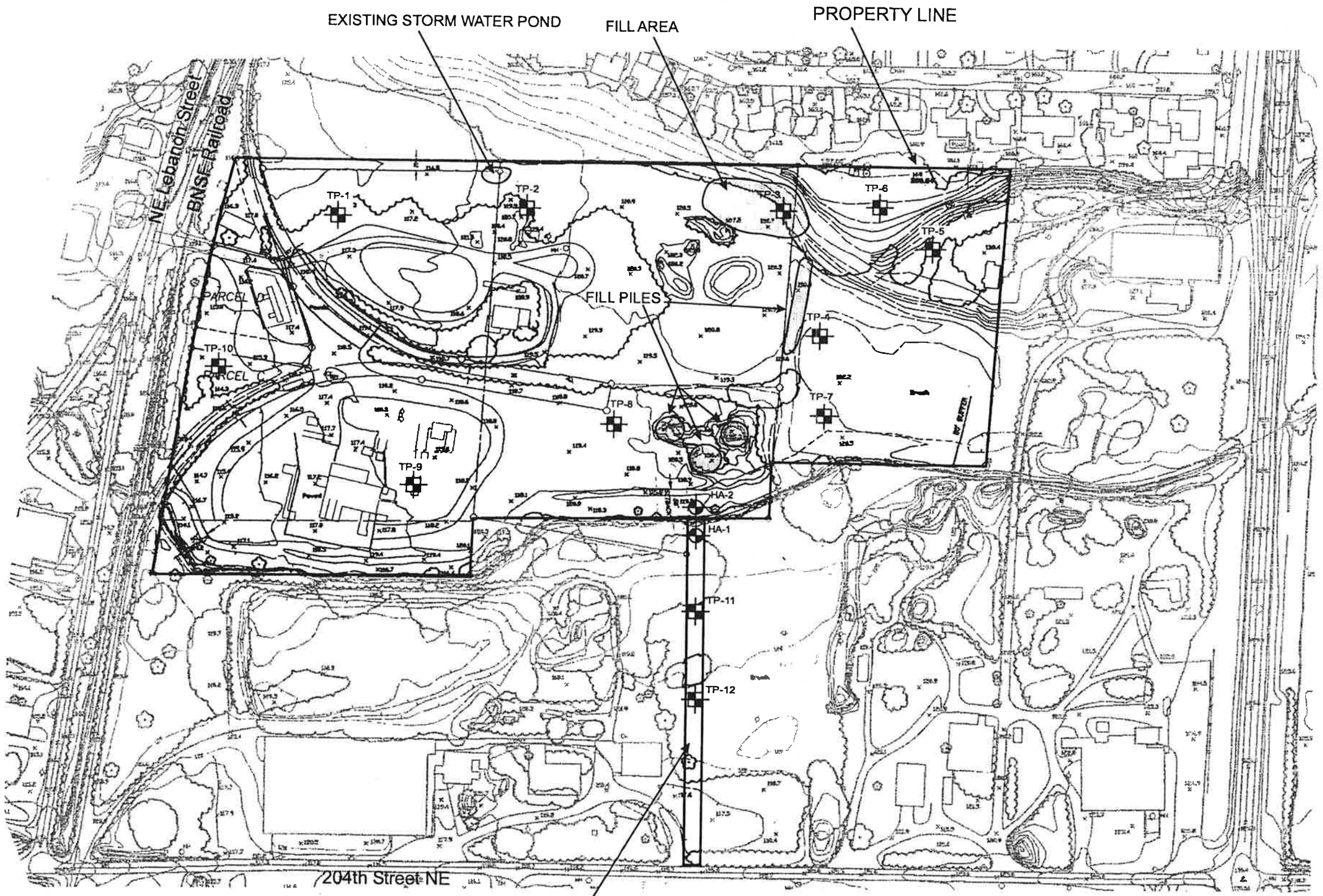
Miller Shingle

File Number	Figure
1232	1

SITE PLAN



North

LEGEND

TP-1 — Test Pit Number and Approximate Location

HA-1 — Hand Auger Number and Approximate Location

0 200 400

Scale 1" = 200'

Reference: Site Plan based on drawing prepared by Evergreen Engineering Services, Inc.

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Miller Shingle company

File Number	Figure
1232	2

Unified Soil Classification System

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE - GRAINED SOILS MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVEL MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE - GRAINED SOILS MORE THAN 50% PASSES NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50%	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY LIQUID LIMIT 50% OR MORE	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1) Field classification is based on visual examination of soil in general accordance with ASTM D 2488-83.
2) Soil classification using laboratory tests is based on ASTM D 2487-83.
3) Descriptions of soil density or consistency are based on interpretation of blowcount data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS

Dry- Absence of moisture, dusty, dry to the touch

Moist- Damp, but no visible water

Wet- Visible free water or saturated, usually soil is obtained from below water table

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Unified Soil Classification System

Figure 3

LOG OF EXPLORATION

DEPTH	USC	SOIL DESCRIPTION
TEST PIT ONE		
0.0 – 1.8	SW-SM	GRAY-BROWN FINE TO COARSE SAND WITH SILT, GRAVEL, AND SCATTERED COBBLES (MEDIUM DENSE, MOIST) (FILL)
1.8 – 3.2	SM	ORANGE-BROWN SILTY FINE TO COARSE SAND WITH TRACE GRAVEL (LOOSE TO MEDIUM DENSE, MOIST)
3.2 – 6.0	SP	GRAY-BROWN MEDIUM TO COARSE SAND WITH TRACE SILT, GRAVEL, AND SCATTERED COBBLES (MEDIUM DENSE, MOIST)
6.0 – 8.8	SP	GRAY-BROWN MEDIUM TO COARSE SAND WITH GRAVEL, TRACE SILT, AND SCATTERED COBBLES (MEDIUM DENSE TO DENSE, MOIST)
		SAMPLES WERE COLLECTED AT 1.0, 2.5, 4.0, AND 8.8 FEET GROUND WATER SEEPAGE WAS NOT ENCOUNTERED SLIGHT TEST PIT CAVING OBSERVED BETWEEN 3.0 AND 6.0 FEET TEST PIT WAS COMPLETED AT 8.8 FEET ON 12/21/01 PIEZOMETER INSTALLED TO A DEPTH OF 8.8 FEET
TEST PIT TWO		
0.0 – 1.4	SM	DARK BROWN SILTY FINE TO COARSE SAND WITH ROOTS AND GRAVEL (LOOSE, MOSIT) (FILL)
1.4 – 3.0	SM	ORANGE-BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL (MEDIUM DENSE, MOIST)
3.0 – 7.0	SP	GRAY-BROWN MEDIUM TO COARSE SAND WITH GRAVEL AND SCATTERED COBBLES (MEDIUM DENSE, MOIST)
		SAMPLES WERE NOT COLLECTED GROUND WATER SEEPAGE WAS NOT ENCOUNTERED SLIGHT TEST PIT CAVING WAS OBSERVED TEST PIT WAS COMPLETED AT 7.0 FEET ON 12/21/01
TEST PIT THREE		
0.0 – 6.0	SM	DARK BROWN TO BLACK SILTY FINE TO MEDIUM SAND WITH WOOD, ROOTS, OTHER ORGANICS AND TRACE GRAVEL (LOOSE, MOIST TO WET) (FILL)
6.0 – 6.5	SP-SM	BROWN FINE TO COARSE SAND WITH SILT, AND GRAVEL (LOOSE TO MEDIUM DENSE, MOIST)
6.5 – 7.5	SP	GRAY FINE TO COARSE SAND WITH TRACE SILT AND GRAVEL (MEDIUM DENSE, MOIST)
		SAMPLE WAS COLLECTED AT 3.0 FEET GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 7.5 FEET ON 12/21/01

LOG OF EXPLORATION

DEPTH	USC	SOIL DESCRIPTION
TEST PIT FOUR		
0.0 – 1.0	SM	DARK BROWN SILTY FINE SAND WITH ROOTS (LOOSE, MOIST TO WET) (TOPSOIL)
1.0 – 2.0	SP-SM	BROWN FINE TO MEDIUM SAND WITH SILT AND GRAVEL (LOOSE TO MEDIUM DENSE, MOIST TO WET)
2.0 – 8.0	SP	GRAY-BROWN MEDIUM TO COARSE SAND WITH TRACE GRAVEL AND SCATTERED COBBLES WITH A LENSE OF ROUNDED FINE GRAVEL WITH FINE TO COARSE SAND FROM 6.5 TO 7.0 FEET (MEDIUM DENSE, MOIST)
		SAMPLES WERE NOT COLLECTED GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 8.0 FEET ON 12/21/01 PIEZOMETER INSTALLED TO A DEPTH OF 7.5 FEET
TEST PIT FIVE		
0.0 – 1.4	SM	ORANGE-BROWN SILTY FINE TO MEDIUM SAND WITH TRACE ROOTS (LOOSE, MOIST)
1.4 – 4.0	SM	TAN SILTY FINE TO MEDIUM SAND WITH TRACE ROOTS (MEDIUM DENSE, MOIST)
4.0 – 9.5	SP	GRAY MEDIUM TO COARSE SAND WITH TRACE SILT, GRAVEL, AND SCATTERED COBBLES WITH A 5-INCH THINK LAYER OF SILTY FINE SAND AT 7.0 FEET (MEDIUM DENSE, MOIST)
		SAMPLES WERE COLLECTED AT 1.0, 2.5, AND 4.5 FEET GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 9.5 FEET ON 12/21/01
TEST PIT SIX		
0.0 – 1.0	SM	ORANGE-BROWN SILTY FINE SAND WITH TRACE ROOTS (LOOSE, MOIST)
1.0 – 1.5	SP-SM	BROWN FINE TO MEDIUM SAND WITH SILT AND GRAVEL (LOOSE TO MEDIUM DENSE, MOIST)
1.5 – 10.5	SP/GW	GRAY-BROWN MEDIUM TO COARSE SAND WITH GRAVEL AND COBBLES, AMOUNT OF GRAVEL AND COBBLES VARIES (MEDIUM DENSE TO DENSE, MOIST) - (SEE SIEVE RESULTS)
		SAMPLES WERE COLLECTED AT 4.0 AND 10.5 FEET GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 10.5 FEET ON 12/21/01
TEST PIT SEVEN		
0.0 – 1.3	SM	BLACK SILTY VERY FINE SAND WITH ROOTS (LOOSE, MOIST TO WET) (TOPSOIL)
1.3 – 2.2	SP-SM	BROWN FINE TO MEDIUM SAND WITH SILT, GRAVEL, AND ROOTS (LOOSE, MOIST)
2.2 – 9.2	SW	BROWN FINE TO COARSE SAND WITH GRAVEL AND COBBLES, STOPPED ON A BOULDER AT THE BOTTOM OF THE HOLE (MEDIUM DENSE, MOIST)
		SAMPLES WERE NOT COLLECTED GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 9.2 FEET ON 12/21/01 PIEZOMETER INSTALLED TO A DEPTH OF 9.2 FEET

LOG OF EXPLORATION

DEPTH	USC	SOIL DESCRIPTION
TEST PIT EIGHT		
0.0 – 0.4	SP-SM	BROWN FINE TO COARSE SAND WITH SILT, GRAVEL, AND COBBLES (LOOSE TO MEDIUM DENSE, MOIST) (FILL)
0.4 – 0.8	SP-SM	BLACK FINE TO COARSE SAND WITH SILT AND TRACE GRAVEL (LOOSE TO MEDIUM DENSE, MOIST)
0.8 – 5.0	SP-SW	GRAY-BROWN FINE TO COARSE SAND WITH TRACE GRAVEL AND SCATTERED COBBLES (MEDIUM DENSE, MOIST)
		SAMPLE WAS COLLECTED AT 0.6 FEET GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 5.0 FEET ON 12/21/01
TEST PIT NINE		
0.0 – 0.3	SW-SM	BROWN FINE TO COARSE SAND WITH SILT, GRAVEL, AND COBBLES (LOOSE TO MEDIUM DENSE, MOIST) (FILL)
0.3 – 1.6	SM	DARK BROWN SILTY FINE TO COARSE SAND WITH GRAVEL AND COBBLES (MEDIUM DENSE ,MOIST)
1.6 – 4.5	SW	GRAY-BROWN FINE TO COARSE SAND WITH GRAVEL AND SCATTERED COBBLES (MEDIUM DENSE, MOIST)
		SAMPLES WERE NOT COLLECTED GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 4.5 FEET ON 12/21/01
TEST PIT TEN		
0.0 – 0.3	SM	BLACK SILTY FINE SAND (LOOSE, MOIST) (TOPSOIL)
0.3 – 11.0	SW	GRAY-BLACK FINE TO COARSE SAND WITH GRAVEL AND COBBLES (MEDIUM DENSE, MOIST)
11.0 – 15.0	SP	LIGHT BROWN FINE TO MEDIUM SAND WITH TRACE SILT GRADES TO FINE TO COARSE SAND WITH TRACE SILT AND GRAVEL (MEDIUM DENSE, MOIST)
		SAMPLES WERE COLLECTED AT 4.5, 8.5, 12.0, AND 15.0 FEET GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 15.0 FEET ON 12/21/01 PIEZOMETER WAS INSTALLED TO A DEPTH OF 15.0 FEET
TEST PIT ELEVEN		
0.0 – 1.3	SM	DARK BROWN TO BLACK SILTY SAND WITH TRACE ROOTS (LOOSE, MOIST TO WET) (TOPSOIL)
1.3 – 5.0	SW	GRAY-BROWN FINE TO COARSE SAND WITH GRAVEL AND SCATTERED COBBLES (MEDIUM DENSE, MOIST)
		SAMPLES WERE NOT COLLECTED GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 5.0 FEET ON 12/21/01

LOG OF EXPLORATION

DEPTH	USC	SOIL DESCRIPTION
TEST PIT TWELVE		
0.0 – 1.4	SM	BLACK SILTY FINE SAND WITH ROOTS (LOOSE, MOIST) (TOPSOIL)
1.4 – 2.0	SM	BROWN SILTY FINE TO COARSE SAND WITH GRAVEL AND SCATTERED COBBLES (MEDIUM DENSE ,MOIST)
2.0 – 5.0	SW	GRAY-BROWN FINE TO COARSE SAND WITH GRAVEL AND SCATTERED COBBLES (MEDIUM DENSE, MOIST)
		SAMPLES WERE NOT COLLECTED GROUND WATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT OBSERVED TEST PIT WAS COMPLETED AT 5.0 FEET ON 12/21/01
HAND AUGER ONE		
0.0 – 1.9	SM	BLACK SILTY FINE TO MEDIUM SAND (LOOSE, MOIST) (TOPSOIL)
1.9 – 3.3	SM	DARK BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND SCATTERED COBBLES (LOOSE TO MEDIUM DENSE, MOIST)
3.3 – 4.0	SW	GRAY-BROWN FINE TO COARSE SAND WITH GRAVEL AND COBBLES (MEDIUM DENSE, MOIST)
		SAMPLES WERE NOT COLLECTED GROUND WATER SEEPAGE WAS NOT ENCOUNTERED (LOCATED 8 FEET FROM CREEK, SURFACE 3.5 FT ABOVE CREEK LEVEL) HAND AUGER WAS COMPLETED AT 4.0 FEET ON 12/21/01
HAND AUGER TWO		
0.0 – 0.8	SW-SM	BROWN FINE TO COARSE SAND WITH SILT AND GRAVEL (LOOSE, MOIST) (FILL)
0.8 – 2.5	SM	BLACK SILTY FINE TO MEDIUM SAND (LOOSE, MOIST) (TOPSOIL)
2.5 – 3.2	SP-SM	BROWN FINE TO COARSE SAND WITH SILT AND GRAVEL (LOOSE TO MEDIUM DENSE, MOIST)
3.2 – 4.6	SW	GRAY-BROWN FINE TO COARSE SAND WITH GRAVEL AND COBBLES (MEDIUM DENSE, MOIST)
		SAMPLE WAS COLLECTED AT 1.5 FEET GROUND WATER SEEPAGE WAS NOT ENCOUNTERED (LOCATED 7 FEET FROM CREEK, SURFACE 2.5 FT ABOVE CREEK LEVEL) HAND AUGER WAS COMPLETED AT 4.6 FEET ON 12/21/01

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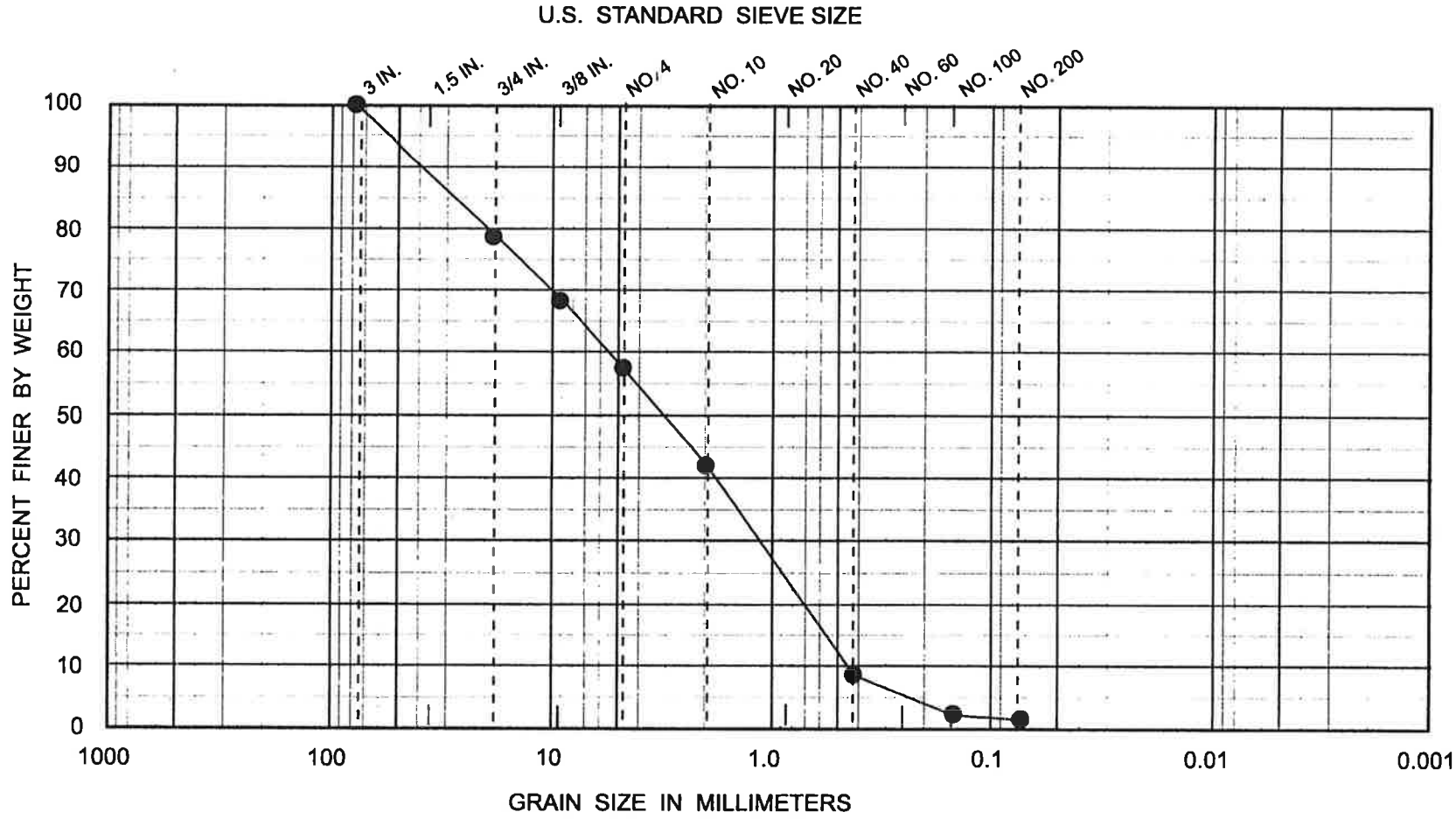
Milleer Shingle Company

FILE NO. 1232

FIGURE 8



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	EXPLORATION NUMBER	SAMPLE DEPTH	SOIL DESCRIPTION
●	TP-6	4.0 feet	SP - Gray-brown medium to coarse sand with gravel and cobbles

Note: Does not include cobbles over 3 inches in diameter, which are scattered in the unit.

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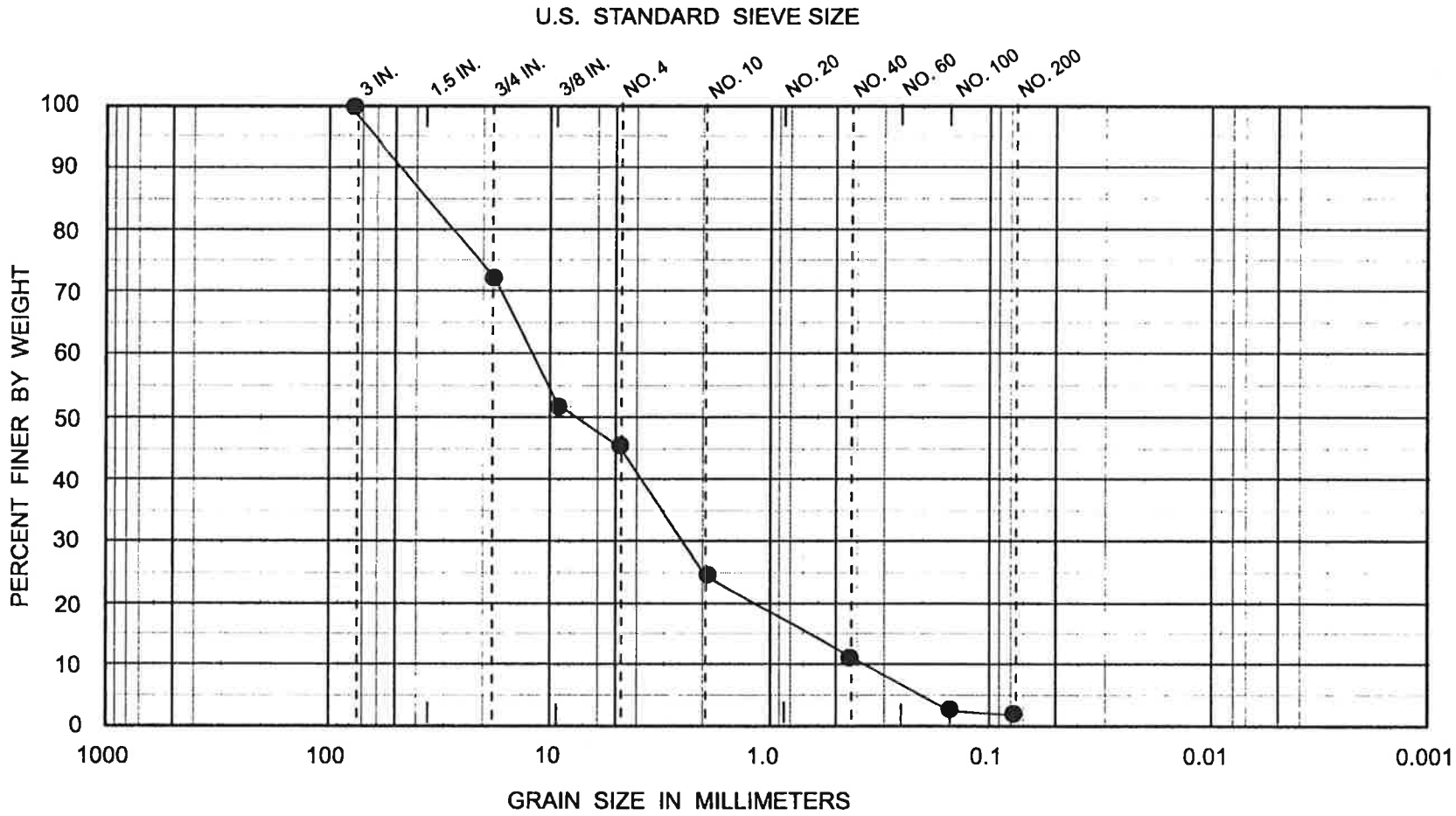
FIGURE 9



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	EXPLORATION NUMBER	SAMPLE DEPTH	SOIL DESCRIPTION
●	TP-6	10.5 feet	GW - Brown gravel with sand and cobbles

Note: Does not include cobbles over 3 inches in diameter, which are scattered in the unit.

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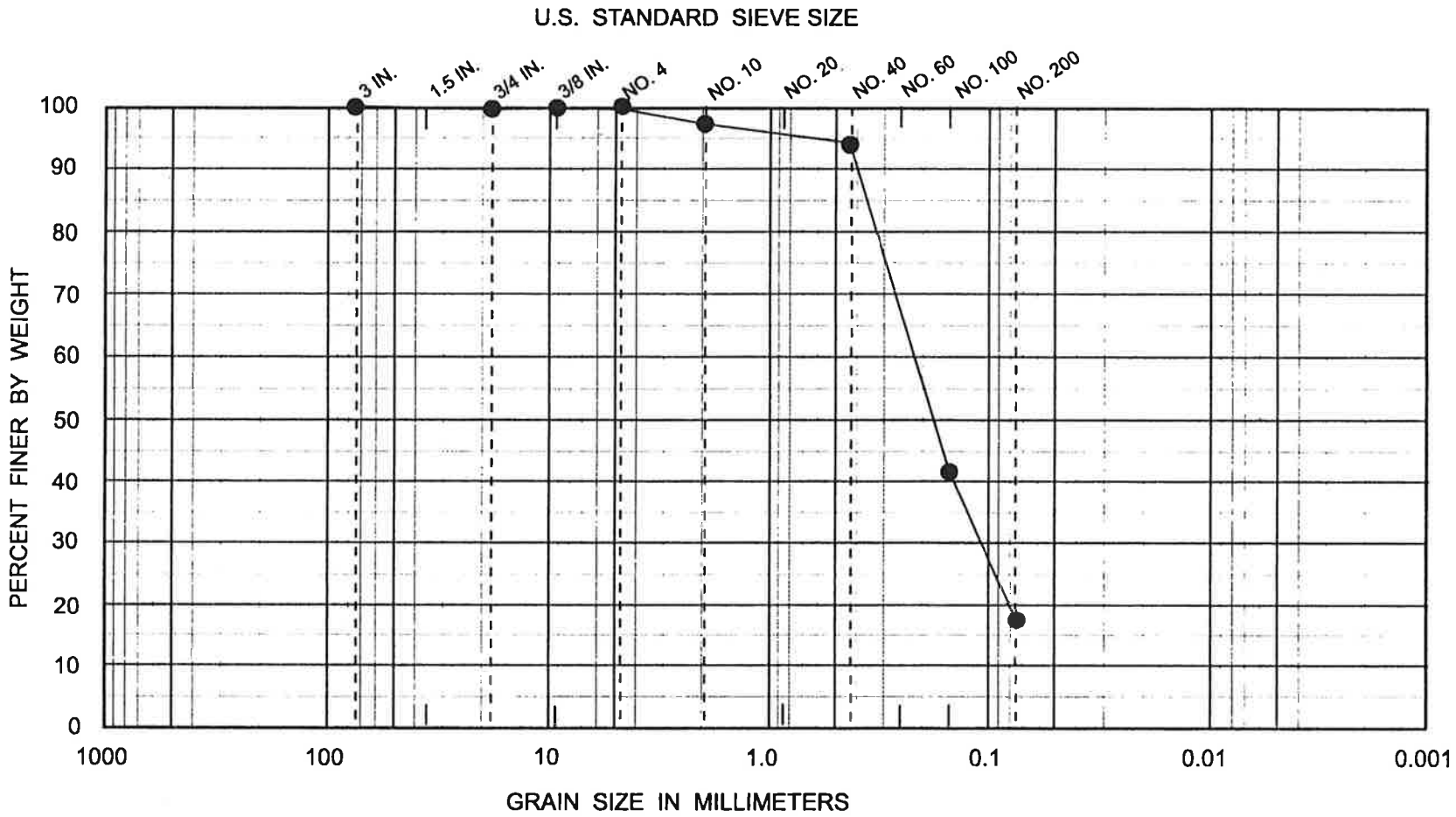
FIGURE 10



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	EXPLORATION NUMBER	SAMPLE DEPTH	SOIL DESCRIPTION
●	TP-5	2.5 feet	SM - Light brown silty fine to medium sand

APPENDIX C – CRITICAL AREA STUDY

Barton Grading Project

Critical Area Analysis and Mitigation Plan

June 25th, 2002
Prepared by

SHOCKEY BRENT, INC.

Barton Grading Project

Critical Area Analysis and Mitigation Plan

Prepared for

Miller Shingle Company
PO Box 29
Granite Falls, Washington 98252

Prepared by

SHOCKEY BRENT, INC.
2716 Colby Avenue
Everett, Washington 98201
Phone: (425) 258-9308

June 25th, 2002

Introduction

The Miller Shingle Company is proposing to re-grade and prepare for further development a 5-acre site (the Barton property) located northwest of the intersection of Highway 9 and 204th Street NE (See Figure 1 – Vicinity Map). The project would consist of the removal of approximately 50,000 cubic yards of topsoil and pit run from the site and the construction of a new public access street (72nd Ave NE) and sewer main from 204th Street to the adjacent Miller property. Road construction would include a bridge crossing of Portage Creek, a perennial stream flowing from east to west across the southern edge of the property.

The southern portion of the site is relatively flat and gently slopes to the southwest. A major slope up to the north is located on the northern portion of the property. A single family residence is located near the northeast corner of the property.

Existing Conditions

The majority of the site is relatively flat and is covered with grasses and shrubs. A large patch of snowberry (*Symphoricarpos albus*) is located in approximately the center of the property. Other vegetation on the site includes scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus discolor*), reed canary grass (*Phalaris arundinacea),* and pasture grasses. On the slope in the northern portion of the site is a stand of big leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*) and conifer trees.

Geotechnical analysis indicates high infiltration rate - water table substantially below stream bed. Flat slopes, high infiltration rate, deep water table = site runoff/percolation contributes very little to stream recharge.

Portage Creek is classified under Arlington's Unified Development Code (AUDC IX–73) as a Type 3 stream, requiring a 50-foot buffer and an additional 25-foot development setback (AUDC IX-77). The stream provides bull trout and coho salmon habitat. Bull trout are a listed species and coho are a candidate species under the Federal Endangered Species Act.

The existing riparian portion of the creek corridor is dominated by a dense stand of reed canary grass with occasional patches of blackberry. From the active channel the stream banks rise up steeply into the relatively level riparian zone. Several large black cottonwood (*Populus trichocarpa*) trees are located on the southern side of the creek, outside the property limits. Photographs 1-3 show the current conditions of the creek and the riparian environment.

Photo 1. From Portage Creek north bank looking west.

Photo 2. From Portage Creek North bank looking east.

Photo 3. Reed canary grass growth within the riparian portion of the creek.

Unavoidable Impacts

All construction activities on the Barton site and the 72nd Ave NE Street corridor would occur outside of the Portage Creek corridor and will not negatively impact in-stream habitat. The stream crossing is designed as a pre-cast concrete panel bridge. The support piers for the bridge would be placed approximately 5-10 feet back from the creek edge to prevent the need for in-stream activity. The construction of the bridge and roadway approaches would permanently impact approximately 5000 S.F. of the required 50-foot riparian buffer.

The proposed sanitary sewer line would be bored under the stream, within the road corridor. The stream channel would not be cut or impacted by the installation of the sewer line. In addition, all stormwater from the re-graded site would sheet flow to north, away from stream, to a natural infiltration area. The use of infiltration would help to maintain groundwater recharge to the stream.

The impacted buffer contains primarily a monoculture of reed canary grass and provides minimal wildlife support or other buffer functions. Hydrologic impacts of the construction will be minimal because all storm water will sheet flow off of the bridge and road, to be infiltrated to maintain groundwater recharge.

Proposed Mitigation

As mitigation for the unavoidable impacts to the creek buffer the applicant proposes to construct and plant with native vegetation a 5-foot high berm along the north edge of the creek buffer (See Buffer Mitigation/Enhancement Plan). Total area of coverage from the berm would be approximately 13,750-sq. ft. The berm would serve to control flooding and drainage within the Portage Creek watershed as well as discourage human intrusion from adjacent developed areas. The design concept and location of the berm and native plantings would be similar to the area behind the Safeway store on the east side of SR-9. The berm also would be designed to create a continuous flood control structure with the existing berm on the Miller Shingle site to the west of 72nd Ave. NE. The planted native trees and shrubs would provide additional wildlife habitat on the site and provide additional shading to control water temperature within the creek itself.

Additional mitigation would include the planting of native trees between the berm and the creek edge. These trees would provide additional creek shading, reduce bank erosion and provide a source of woody debris and organic deposits for the creek. Trees proposed for planting in this area include black cottonwood, big leaf maple, Sitka spruce, and western red cedar. The proposed species mix would provide a natural mix of fast growing deciduous species and longer lasting conifer trees along the creek edge.

Other proposed mitigation measures include transplanting the large snowberry patch on the site to the proposed cut slope to help reduce erosion on the site.

APPENDIX D – DRAINAGE REPORT

EVERGREEN ENGINEERING SERVICES INC.
LAND USE PLANNING • CIVIL ENGINEERING R. Alan Murray, P.E.

Surface Water and Temporary Erosion Control for Barton Grading Project

Project Description

Miller Shingle Company, Inc. is proposing to grade and prepare the 5-acre Barton property for future industrial and/or commercial development (Figure 3, Grading Plan). The existing hillside located on the northern quarter of the site would be re-graded by removal of approximately 50,000 c.y. of earth removed from the site to create additional level developable area on the site at approximately the same elevation as the adjacent Miller site to the west. Construction would also include 700 feet of a new city street (72nd Avenue Northeast) constructed from 204th Street Northeast, across Portage Creek at the south edge of the Miller Shingle property, approximately 150 feet west of the southwest corner of the Barton parcel. Road improvements would include a bridge across Portage Creek and a new 12-inch gravity sanitary sewer main extension from 204th to the Miller property for future service to commercial and/or industrial uses on the Miller and Barton parcels. A stream buffer with a planted berm would be constructed on the north side of Portage Creek.

Location

The approximately five-acre site is located north of 204th Street Northeast and east of the BNSF Railroad and the existing Miller Shingle properties in the City of Arlington. The site is located within the southwest quarter of Section 11, Township 31 North, Range 5 East, W.M. (see Figure 1, Vicinity Map and Figure 2, Parcel Map and Appendix A - Legal Description). The new city street would run north/south between 204th Street Northeast and the Miller Shingle properties (see Figure 2, Parcel Map).

Existing Conditions

The existing Barton property topography consists of a steep hill on the north half of the property that levels out and slopes towards Portage Creek at the south edge of the property. There is an existing house and garage located on the northeast corner of the property that will be removed. The site is mostly vegetated at this time.

8625 Evergreen Way, Suite 104 • Everett, Washington 98208-2620 • Phone: 425-513-2500 • Fax: 425-355-1307

Proposed Grading

The proposed grading will remove soil from the hillside to create a flat area at the toe for future development. This will result in a 40-foot high slope from the residential property at the top to the flat area at the toe.

The proposed berm, to be located on the north side of Portage Creek, will be constructed with 1:3 slopes and will be five (5) feet high above the existing ground on the side facing the creek. The height of the berm as seen from the north side will vary between three and four feet. From there the ground will slope north at a grade of 0.50 percent to the toe of the hill.

The berm and the remainder of the buffer area on the north side of Portage Creek will be planted as described in the Buffer Mitigation/Restoration Plan.

The hillside will be hydroseeded.

Construction of 72nd Avenue Northeast will require the placement of embankments on either side of the bridge.

Temporary and Permanent Erosion Control

Silt fencing will be installed along the creek corridor to reduce the potential of sediment-laden water entering the creek during construction of the bridge and berm.

Any groundwater encountered during the construction of the bridge will be pumped upland to an area where it can be filtered and infiltrated into the ground.

Site grading will be staged to direct stormwater to the north, reducing the potential of sedimentation.

Hydroseeding will be placed on the sloping hillside to stabilize the surface. The proposed berm along Portage Creek will also be hydroseeded.

Stormwater Control

Currently stormwater infiltrates into the ground at several locations on the site.

Site grading on the Barton property will direct surface water north from the proposed berm to be located on the north side of Portage Creek. At this time, no impervious cover is being proposed on the flat portion of the site to remain between the berm and the toe of the hill.

The site appears to be suitable for infiltration of stormwater. Future development plans for the site will consider infiltration ponds and/or trenches for disposal of stormwater.

Stormwater from 72nd Avenue Northeast south of the creek will sheet flow off of the road surface and infiltrate into the ground.