W-8259-01

Geotechnical Report
Chimacum School District Expansion
Chimacum, Washington

March 1998

Tillman Engineering
P.O. Box 1375
Port Hadlock, Washington 98339

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March 9, 1998

Tillman Engineering
P.O. Box 1375
Port Hadlock, Washington 98339

Attn: Mr. Ryan Tillman

RE: GEOTECHNICAL REPORT, CHIMACUM SCHOOL DISTRICT EXPANSION, CHIMACUM, WASHINGTON

This letter presents our field explorations, conclusions, and recommendations for the proposed Chimacum School expansion at Chimacum, Washington. The expansion includes building additions on the existing school campus at the intersection of Rhody Drive and West Valley Road, and construction of a new school adjacent to the Jefferson County Public Library on Ness Corner Road (see Figure 1). Our work was conducted in accordance with our proposal dated February 19, 1998. Our geotechnical evaluation is based on 11 subsurface test pit explorations excavated on Saturday, February 21, 1998, and site plans provided by Tillman Engineering.

SITE AND PROJECT DESCRIPTION

Both the existing school campus and proposed new school site are located in a relatively broad, flat glacial outwash channel. The existing school campus (Figure 2) is relatively flat and consists primarily of single-story, lightly-loaded structures surrounded by athletic fields and play grounds. At the site of the proposed new school (Figure 3), the ground slopes slightly down to the south. The site is vegetated with fir trees (typically 1-foot or less in diameter) and an undergrowth of grasses and shrubs. While the new school site is currently vacant, a portion of the site along the east property line apparently had been used in conjunction with a gravel pit.

We understand that the building additions and new buildings at both the existing and new school locations will be relatively lightly-loaded one- and two-story structures with spread footing foundations and slab-on-grade floors. The approximate locations of the proposed additions to the existing school are shown on Figure 2. The layout of the new school is shown on Figure 3.

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We understand that some cuts and fills as much as 4 feet are planned to provide a flat building site.

SUBSURFACE EXPLORATIONS AND LABORATORY TESTING

Subsurface explorations consisted of 11 backhoe test pits excavated on February 21, 1998, by Shold Excavating under contract to Tillman Engineering. Soils exposed in the test pits were logged and relative densities were estimated in the field by our engineering geologist. Representative samples were collected in the field and returned to our laboratory for further visual classification and laboratory testing.

Four test pits, designated TP-1 through TP-4, were excavated in the vicinity of the building additions at the existing school campus. The locations of these test pits are shown on Figure 2 and were determined in the field using tape measurements from existing site features. The test pits were excavated to depths ranging between 5 and 8 feet. Logs of the subsurface soils exposed in test pits TP-1 through TP-4 are provided in Table 1.

At the location of the new school, 7 existing septic disposal test pits were scraped and enlarged. In accordance with the septic disposal test pit designations, these explorations are designated as test pits TP-5 through TP-11. The location of these test pits are shown on Figure 3 and were provided by Tillman Engineering. The test pits were excavated to depths ranging between 6 and 7 feet. Logs of the subsurface soils exposed in test pits TP-5 through TP-11 are provided in Table 2.

Laboratory testing included one mechanical grain size analysis and one Modified Proctor maximum dry density test (ASTM Designation D1557) on soil sample S-1 from test pit TP-7 in the area anticipated to be excavated to provide a level building pad for the new school. We understand that this material may be considered for use as structural fill on the site. Therefore, the purpose of these tests was to determine the gradation and compaction characteristics of this soil to evaluate its suitability for use as structural fill. The results of the grain size analysis are presented in Figure 4; the results of the compaction test are presented in Figure 5.

SUBSURFACE CONDITIONS

Geologic maps of the area indicate that both the existing and proposed new school sites are underlain by Vashon recessional channel outwash deposits. The outwash was deposited in large meltwater channels from the Vashon ice sheet as it receded to the north at the end of the Pleistocene Epoch, approximately 13,000 years ago. Since the retreat of the ice sheet, topsoil has typically developed at the ground surface.

The subsurface explorations at both sites confirmed the presence of the recessional outwash channel deposits. These deposits were encountered at both sites, typically within ½ to 2 feet of the ground surface and extended to the maximum depths of the explorations. The recessional outwash exposed in the explorations was typically classified as a medium dense to dense, sand and gravel with the actual percent of sand or gravel within the unit being variable. Only a trace of silt was observed in the recessional outwash below a depth of 4 feet. Between depths of 2½ and 4 feet, the silt content is somewhat more variable and may range from a trace (less than 5 percent) to a slight constituent (5 to 12 percent). Above a depth of 2½ feet, the amount of silt in the outwash is more variable and ranges from a trace (less than 5 percent) to a minor constituent (between 12 and 50 percent) of the soil.

Topsoil that has developed above the recessional outwash typically extends from the ground surface to about ½ to 2 feet below the ground surface. The topsoil is typically a loose to medium dense, slightly silty to silty, slightly gravelly to gravelly sand with organic material. In test pit TP-6, the topsoil appeared to be mixed with sandy fill. In test pit TP-9, a one-foot thick layer of loose, slightly silty, gravelly, sandy fill was observed over the topsoil.

Groundwater was not observed in the test pits at either site during excavation. However at the new school site, the recessional outwash within 2 to 4 feet of the ground surface in test pits TP-5, TP-6, TP-9, and TP-11 contained a sufficient quantity of silt and water to appear moist to wet.

ENGINEERING CONCLUSIONS AND RECOMMENDATIONS

Foundation Design

We understand that shallow spread footing foundations will be used to support the existing school additions and the new school. We recommend that the footings for these structures be located in medium dense to dense recessional outwash or in compacted structural fill placed on the recessional outwash. Provided that the recommendations contained in this letter are implemented, the spread footings bearing in the recessional outwash or overlying compacted structural fill may be designed for an allowable soil bearing pressure of 4,000 pounds per square foot and may be increased by one-third for seismic loading conditions. Stripping depths to reach the medium dense to dense, recessional outwash is about ½ to 2 feet, based on the subsurface conditions observed in the test pits.

Continuous footings should have a minimum width of 18 inches, and column spread footings should have a minimum width of 24 inches. Minimum footing widths may govern footing design. Footings should bear at least 18 inches below the lowest adjacent grade. If footings are supported in structural fill, this fill should extend beyond the outer edges of the footings a distance equal to at least the fill thickness below the footing.

Foundation subgrades should be observed by a geotechnical engineer during construction to verify the presence of competent bearing soil and to determine that all loosened, disturbed soils and all existing topsoil and fill have been removed.

Provided that the recommendations in this report are followed, we estimate total settlement of spread footings to be about 3/4 inch, with differential settlements (between adjacent footings or over a 20-foot span of continuous footing) of approximately 1/2 inch. Settlements would occur almost simultaneously with load application, in our opinion.

Lateral forces on the buildings will be resisted by friction along the base of the footings and passive soil pressures developed along the buried portions of the foundations. We estimate that the ultimate coefficient of friction between the bottom of the cast-in-place concrete footing and the subgrade will be approximately 0.55. Passive pressures may be estimated using an

equivalent fluid weight of 280 pounds per cubic foot and includes a reduction of 1.5 as significant lateral movements would be required to mobilize the ultimate passive pressures. These values assume that the backfill around the footings is compacted granular fill.

Slab-On-Grade Floors and Pavements

Slab-on-grade floors and pavements may be constructed on the medium dense to dense recessional outwash or on compacted structural fill placed on the recessional outwash. Subgrades should be observed by a geotechnical engineer or his/her representative to determine that all loosened, disturbed soils and all existing topsoil and fill have been removed. Care should be taken to compact any localized backfills, such as footing or utility trench excavations, to the same degree as that specified for structural fill.

We recommend that a capillary break be placed beneath floor slabs as some of the recessional outwash within 4 feet of the ground surface may contain significant quantities of silt and may retain water. A 4-inch thick (minimum) layer of washed pea gravel placed over the prepared subgrade is one method to provide this break. The capillary break should be hydraulically connected to free-draining backfill around the exterior of the footings. The use of 2-inch-diameter weep holes on 5- to 6-foot spacings through the foundation is one method for providing a hydraulic connection. A vapor barrier, consisting of a plastic sheet could be placed directly over the pea gravel.

Pavements constructed on the recessional outwash or compacted structural fill may be designed with a CBR (California Bearing Ratio) value of 15. This recommended value is based on subsurface soils exposed in the test pits, most of which are located around proposed building locations and not in areas to be paved. However, based on the similarities in subsurface conditions observed among the test pits at both sites, the recommended CBR value is suitable for pavement design in our opinion.

Structural Fill

All fill and/or backfill beneath footings, slabs-on-grade, pavements and other areas where settlements are to be minimized, should be structural fill compacted to a dense, unyielding state, and to at least 95 percent of its Modified Proctor maximum dry density (ASTM Designation D1557). We recommend that the thickness of fill/backfill layers before compaction not exceed 12 inches for heavy compaction equipment or 6 inches for hand-operated mechanical compactors.

The recessional outwash beneath the topsoil can be used for structural fill if suitably compacted, as previously recommended. Generally, material suitable for structural fill even under wet weather conditions should be well graded sand and gravel, free of organic material, with no more than 5 percent passing the No. 200 sieve (based on the minus ¾-inch fraction), a maximum particle size of 3 inches and a moisture content at or slightly below its optimum value for compaction. The results of the gradation and compaction tests on a sample of the recessional outwash from test pit TP-7 indicate that this material generally meets these criteria. As such, it is our opinion that it will make a suitable structural fill material. However, as previously discussed under subsurface conditions, the silt or fines content of the recessional outwash within 4 feet of the ground surface varies. The recessional outwash with a relatively high silt content may be difficult to compact, especially under wet weather conditions. Where present, these silty soils may not be suitable for structural fill, depending on their moisture content at the time of construction. In particular, at the new school site, the recessional outwash within 2 to 4 feet of the ground surface in test pits TP-5, TP-6, TP-9, and TP-11 contained a sufficient quantity of silt and water at the time of our visit that would make it difficult or impossible to compact as required for structural fill without drying or mixing with drier and cleaner soils.

Drainage

Due to the relatively free-draining nature of most of the soils observed in the test pits and the absence of observed groundwater at either site, it is our opinion that extensive subdrainage measures are not needed. However, we recommend that backfill around the exterior of the footings be free-draining material with less than 5 percent fines. As previously noted, some of

the recessional outwash material within 4 feet of the ground surface contains a significant quantity of silt and may retain water. The use of free-draining backfill around the foundations will help provide a drainage path for water that may be present in the adjacent, silty soils.

Much of the on-site soils contain less than 5 percent fines and will be suitable for as drainage backfill material around the footings. The onsite material used for backfill along the footings should be observed by a geotechnical engineer or his/her representative to evaluate the fines content and suitability of the material for this application.

Construction Monitoring and Plans Review

We recommend that we be retained to review portions of the plans and specifications pertaining to subdrainage, earthwork and foundations to evaluate whether they are consistent with the recommendations in this letter. We also recommend that we be retained to monitor earthwork, including evaluation and preparation of subgrades and compaction of structural fill, and drainage backfill placed next to the footings.

Additional Considerations

The test pit excavations at the existing school campus were loosely backfilled with excavated material, while the test pits at the new school site were not backfilled because additional inspection was required by septic drain field designers. If test pits are located in a proposed building or pavement area, the loose material should be overexcavated and then replaced with compacted structural fill.

CLOSURE

The conclusions and recommendations in this letter are based on site conditions as they presently exist and assume that the explorations are representative of the subsurface conditions throughout the site; i.e., the subsurface conditions are not significantly different from those encountered in the test pits. If, during construction, subsurface conditions different from those encountered in

the explorations are observed or appear to be present, we should be advised at once so that we can review those conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between submission of our report and the start of work at the site, we recommend that this report be reviewed to determine the applicability of the conclusions and recommendations, considering the changed conditions and/or time lapse.

Within the limitations of scope, schedule, and budget, the analyses, conclusions, and recommendations presented in this letter were prepared in accordance with generally accepted professional geotechnical engineering principles and practices in this area at the time this letter was prepared. We make no other warranty, either express or implied. The conclusions and recommendations were based on our understanding of the project as described in this letter and the site conditions as observed at the time of our site visit.

This report was prepared for the use of the Owner and Engineer in the design of the subject structures. With respect to construction, it should be made available to contractors for information on factual data only and not as a warranty of subsurface conditions, such as those interpreted from the test pit logs and discussion of subsurface conditions included in this letter. Unanticipated conditions are commonly encountered and cannot be fully determined merely by subsurface explorations. Such unexpected conditions frequently require that additional expenditures be made to achieve a properly constructed project. Some contingency fund is recommended to accommodate such potential extra costs.

Please note that the scope of our services did not include any investigation for the presence or absence of wetlands or environmental assessment for the presence or absence of hazardous or toxic material in the soil, surface water, groundwater, or air on or below or around this site. We are able to provide these services and would be happy to discuss these with you if the need arises.

Shannon & Wilson has prepared the attached "Important Information About Your Geotechnical Report," to assist you and others in understanding the use and limitations of our report.

If you have any questions regarding the observations, conclusions, or recommendations contained in this letter, please call us. We appreciate the opportunity to be of service.

SHANNON & WILSON, INC.

REGISTERED PROFESSIONAL
OREGON
WILLIAM J. PERKINS
No. G1650
GEOLOGIST

3/9/98

GREGORY ROBERT FISCHER
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EXPIRES 10/3/99

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William J. Perkins, R.P.G.
Principal Engineering Geologist

Gregory R. Fischer, Ph.D., P.E.
Associate

WJP:GRF:WTL/wjp

Enclosures:
- Table 1 – Existing Campus Test Pit Logs
- Table 2 – New School Test Pit Logs
- Figure 1 – Vicinity Map
- Figure 2 – Existing Campus Site and Exploration Plan
- Figure 3 – New School Site and Exploration Plan
- Figure 4 – Grain Size Distribution
- Figure 5 – Compaction Test
- Important Information About Your Geotechnical Report

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TABLE 1
EXISTING CAMPUS TEST PIT LOGS

Test Pit Designation	Depth	Soil Description	Sample (Designation & Depth)
TP-1	0' to1'	Loose to medium dense, dark brown, slightly silty, gravelly SAND; moist; fine roots and organics; (Topsoil) SM-SW	
	1' to 6'	Medium dense to dense, brown, sandy GRAVEL; moist; lenses of gravelly sand; (Recessional Outwash) GW	S-1 (2.5')
TP-2	0' to 0.5'	Loose to medium dense, dark brown, silty, gravelly SAND; moist; organics and scattered fine roots; (Topsoil) SM	
	0.5' to 3'	Medium dense to dense, brown, slightly silty, slightly gravelly SAND; moist; (Recessional Outwash) SM-SW	S-1 (1.5')
	3' to 5'	Medium dense to dense, brown, gravelly SAND; trace of silt; moist; (Recessional Outwash) SW	S-2 (3.5')
TP-3	0' to 1.8'	Loose to medium dense, dark brown, slightly gravelly, silty SAND; moist; organcis and scattered fine roots in upper 6"; (Topsoil) SM	S-1 (1.5')
	1.8' to 2.5'	Medium dense to dense, orange-brown, slightly gravelly, slightly silty to silty SAND; moist; (Recessional Outwash) SM-SW	S-2 (2')
	2.5' to 4'	Medium dense to dense, gray-brown, slightly silty, sandy GRAVEL; moist; (Recessional Outwash) GW-GM	S-3 (4')
	4' to 8'	Medium dense to dense, brown, slightly sandy GRAVEL; moist; (Recessional Outwash) GW	
TP-4	0' to 1'	Loose to medium dense, dark brown, slightly gravelly, slightly silty SAND; moist; organcis and scattered fine roots; (Topsoil) SM	
	1' to 5.8'	Medium dense to dense, brown, slightly sandy to sandy GRAVEL; trace of cobbles and boulders up to 1' in diameter; moist; (Recessional Outwash) GW	S-1 (2.5')

NOTES

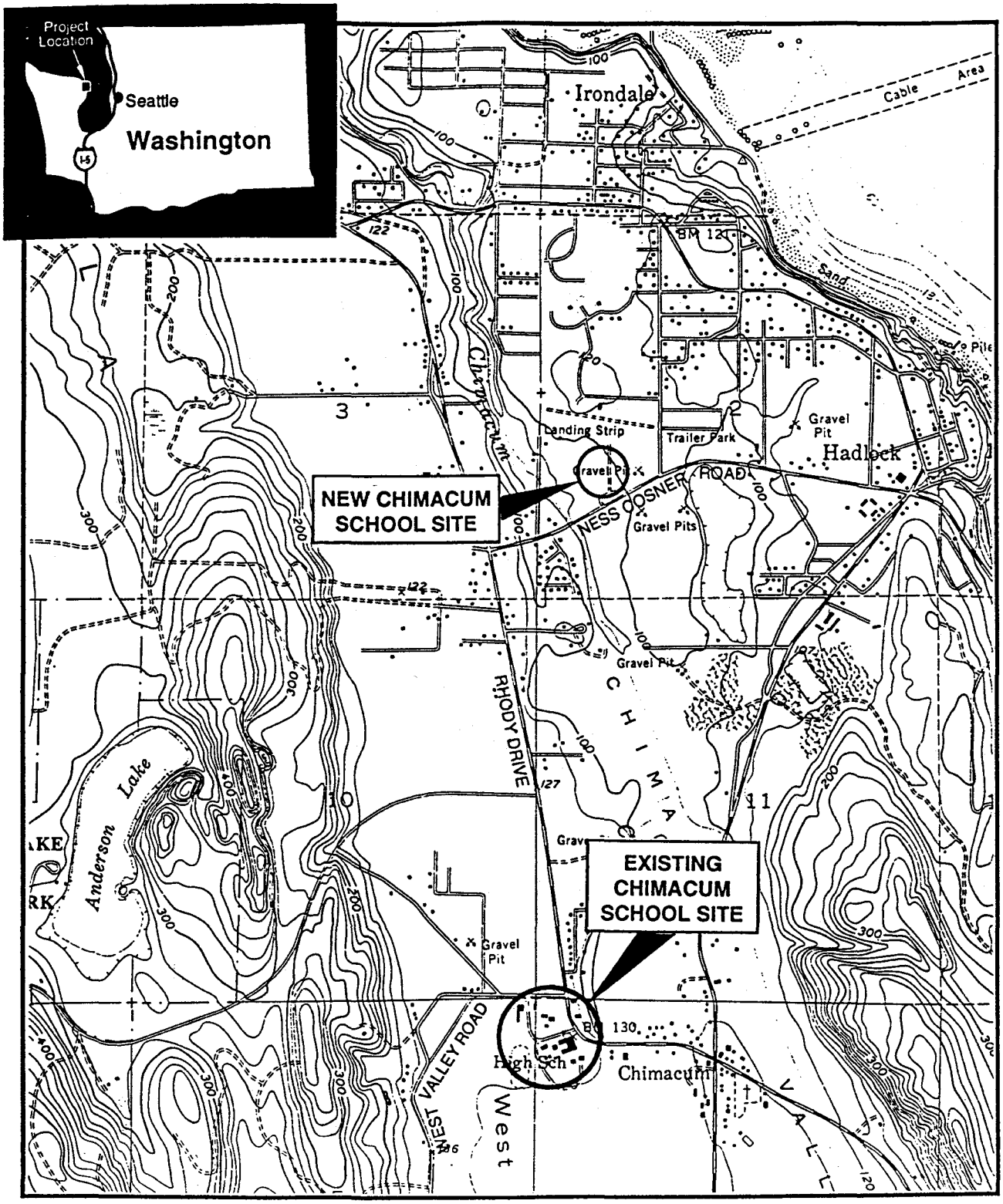
1. No groundwater encountered in any of the test pits during excavation.
2. Test pits excavated and backfilled on February 21, 1998.

TABLE 2
NEW SCHOOL TEST PIT LOGS

Test Pit Designation	Depth	Soil Description	Sample (Designation & Depth)
TP-5	0' to 1'	Loose, dark brown, slightly gravelly, silty SAND; moist; fine roots and organics; (Topsoil) SM	
	1' to 2'	Medium dense to dense, gray-brown, gravelly, silty SAND; moist to wet; (Recessional Outwash) SM	S-1 (1.5')
	2' to 3'	Medium dense to dense, gray-brown, slightly silty, slightly sandy GRAVEL; moist; (Recessional Outwash) GM-GW	
	3' to 6'	Medium dense to dense, brown, sandy GRAVEL; moist; (Recessional Outwash) GW	S-2 (4')
TP-6	0' to 2'	Loose, dark brown, slightly gravelly, silty SAND; moist; fine roots and organics; (Topsoil/Fill) SM	
	2' to 4'	Medium dense to dense, gray-brown, slightly gravelly, slightly silty to silty SAND; moist to wet; (Recessional Outwash) SW-SM	S-1 (3')
	4' to 7'	Medium dense to dense, brown, gravelly SAND; moist; (Recessional Outwash) SW	S-2 (4.5')
TP-7	0' to 1'	Loose to medium dense, dark brown to gray-brown, slightly silty, gravelly SAND; moist; organics and scattered roots; (Topsoil) SW-SM	
	1' to 6'	Medium dense to dense, brown, sandy GRAVEL; trace of silt; moist; (Recessional Outwash) GP	S-1 (2' to 4')
TP-8	0' to 1'	Loose to medium dense, gray-brown, slightly gravelly, slightly silty to silty SAND; moist; numerous roots and organics; (Topsoil) SW-SM	
	1' to 6'	Medium dense to dense, brown, slightly gravelly SAND; moist; (Recessional Outwash) SW	S-1 (3.5')
TP-9	0' to 1'	Loose, brown, trace to slightly silty, gravelly SAND; moist; (Fill) SM-SW	
	1' to 1.5'	Loose, dark brown, slightly gravelly, slightly silty to silty SAND; moist; organics and scattered fine roots; (Buried Topsoil) SM	
	1.5' to 2.5'	Medium dense, gray-brown, slightly silty to silty, fine SAND; trace of gravel; moist to wet; scattered roots; (Recessional Outwash) SP-SM	S-1 (2.2')
	2.5' to 6.5'	Medium dense to dense, brown, gravelly SAND; moist (Recessional Outwash) SW	S-2 (3.5')
TP-10	0' to 0.5'	Loose, dark brown, silty, gravelly SAND; moist; organics and scattered fine roots; (Topsoil) SM	
	0.5' to 4'	Medium dense to dense, brown, sandy GRAVEL; moist; scattered fine roots; (Recessional Outwash) GW	S-1 (2.5')
	4' to 6'	Medium dense to dense, brown, gravelly SAND; moist; (Recessional Outwash) SW	S-2 (5')
TP-11	0' to 0.5'	Loose to medium dense, dark brown, slightly gravelly, silty SAND; moist; fine roots and organics; (Topsoil) SM	S-1 (2')
	0.5' to 2.5'	Medium dense to dense, gray-brown, slightly gravelly, silty SAND; moist to wet; (Recessional Outwash) SM	
	2.5' to 6.5'	Medium dense to dense, brown, sandy GRAVEL; moist; (Recessional Outwash) GW	

NOTES

1. No groundwater encountered in any of the test pits during excavation.
2. Existing septic test pits scraped on February 21, 1998. These test pits were not backfilled.



0 1/2 1

Scale in Miles

NOTE

Map taken from 1:24,000 USGS topographic map of Port Townsend South, WA quadrangle, dated 1953, photorevised 1981.

Chimacum School Expansion
Chimacum, Washington

VICINITY MAP

March 1998 W-8259-01

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FIG. 1

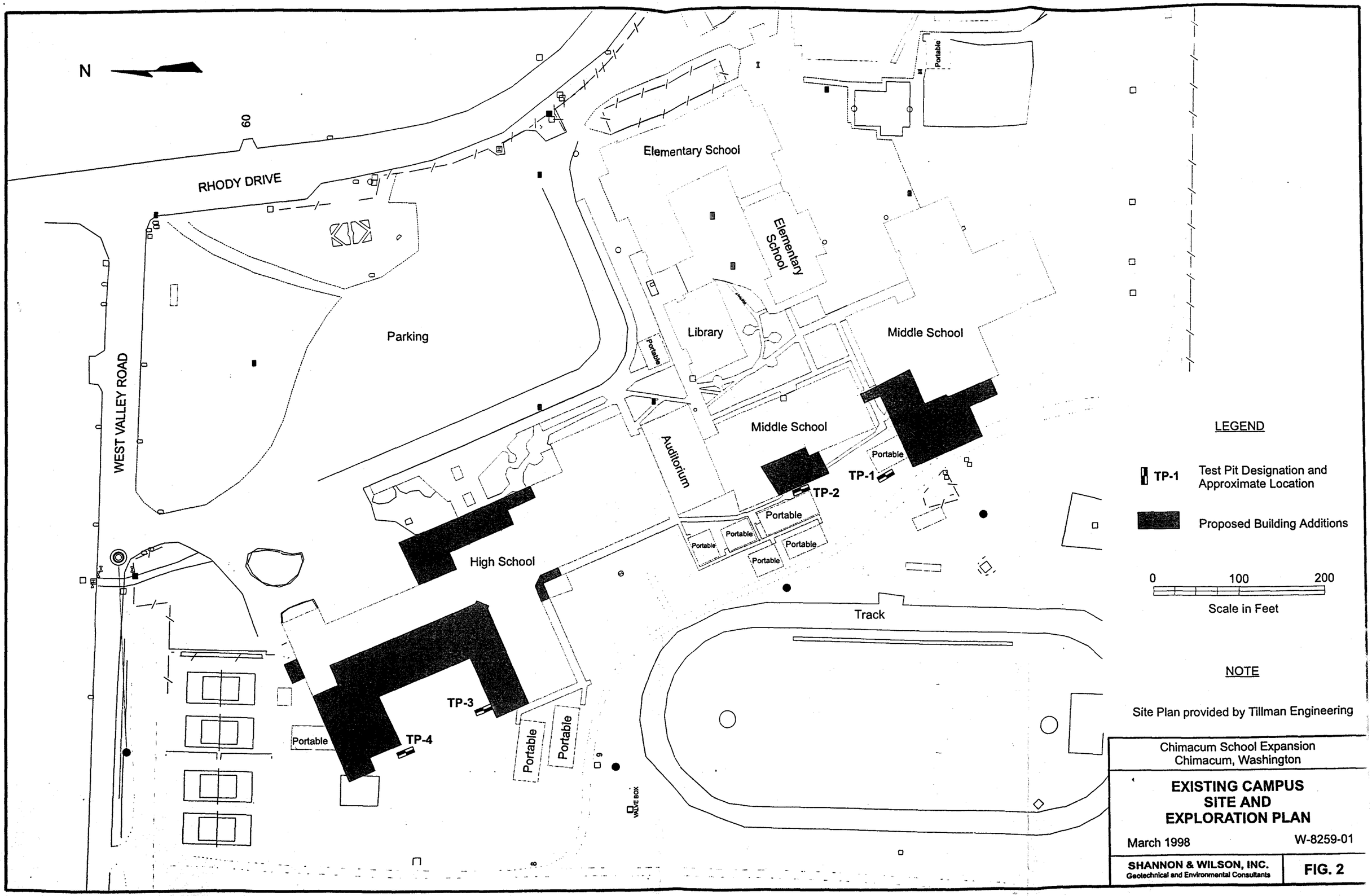
N
60
RHODY DRIVE
WEST VALLEY ROAD
Parking
Elementary School
Elementary School
Library
Portable
Middle School
Middle School
Auditorium
Portable
TP-1
TP-2
Portable
Portable
Portable
Portable
Portable
High School
Track
TP-3
TP-4
Portable
Portable
Portable
VALVE BOX
LEGEND
TP-1
Test Pit Designation and Approximate Location
Proposed Building Additions
0
100
200
Scale in Feet
NOTE
Site Plan provided by Tillman Engineering
Chimacum School Expansion
Chimacum, Washington
EXISTING CAMPUS SITE AND EXPLORATION PLAN
March 1998
W-8259-01
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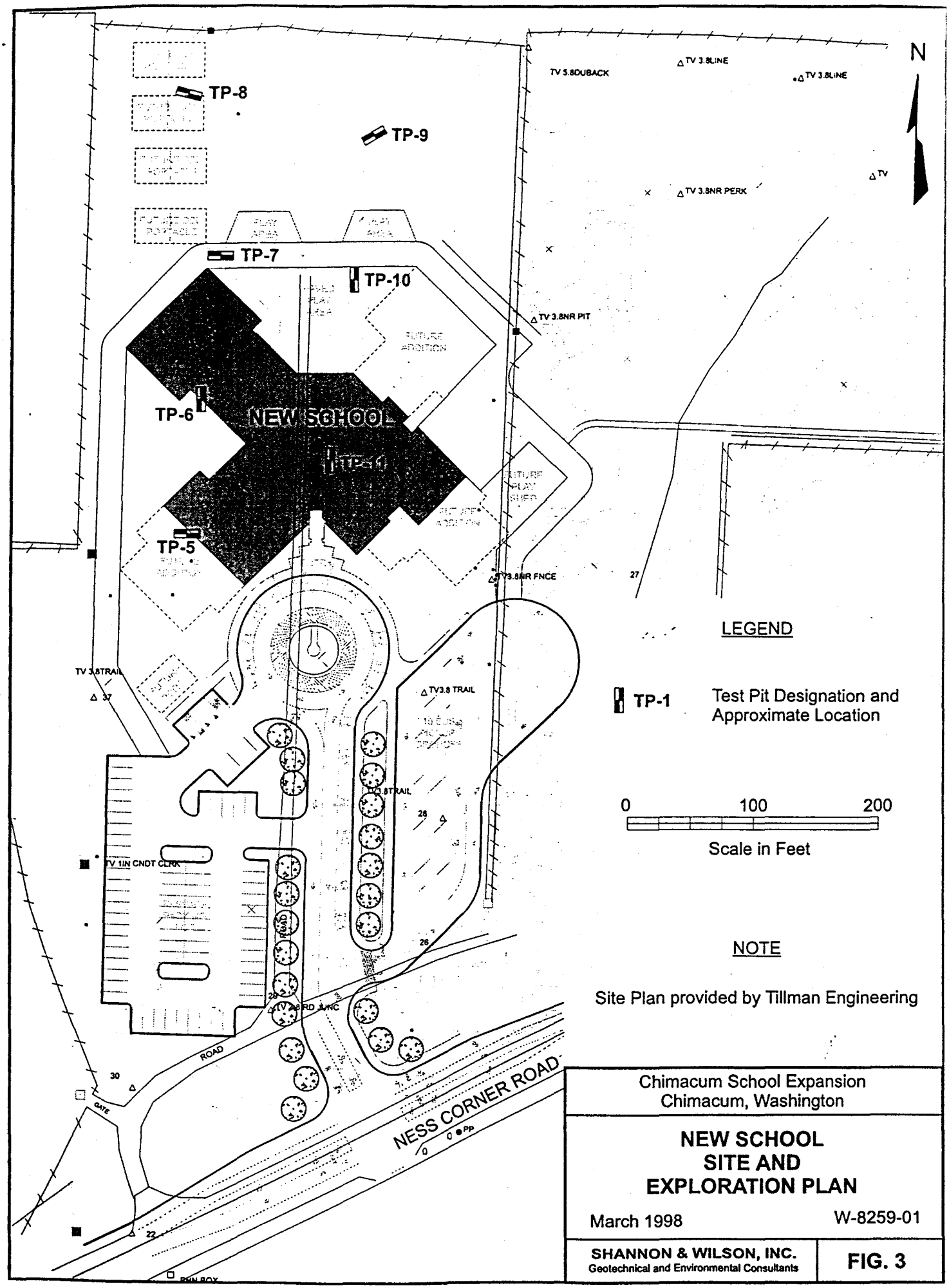
FIG. 2



Chimacum School Expansion
Chimacum, Washington

NEW SCHOOL SITE AND EXPLORATION PLAN

March 1998 W-8259-01

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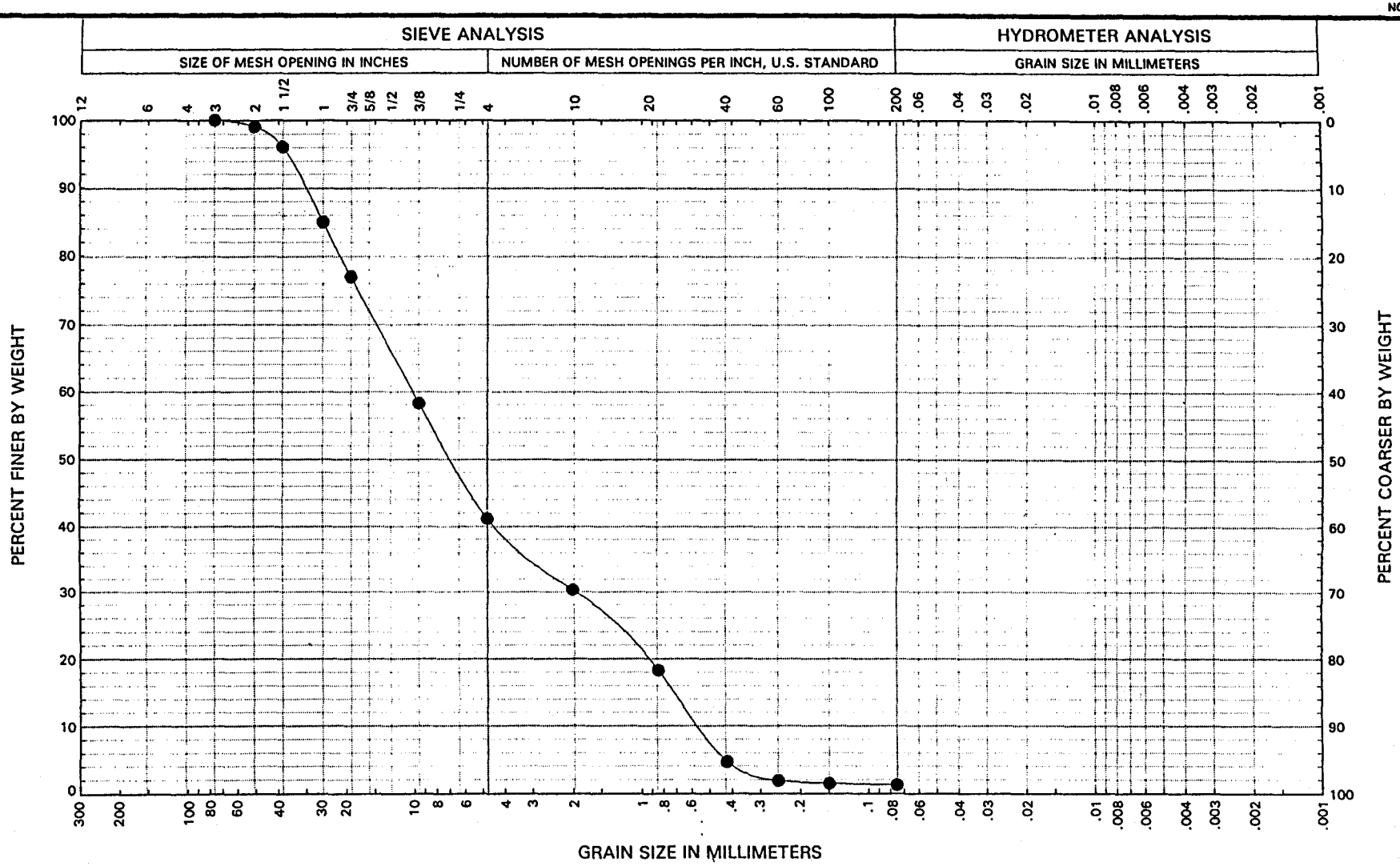
FIG. 3

NCDGRAIN 3/3/98



BORING AND SAMPLE NO.	DEPTH, FT.	U.S.C.	CLASSIFICATION	% FINES	NAT. W.C. %	LL	PL	PI
● TP-7, S-1	2.0	GP	Brown, sandy GRAVEL; trace of silt.	1.3	5.2			

Chimacum School Expansion
Chimacum, Washington

GRAIN SIZE DISTRIBUTION

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FIG. 4

FIG. 4

COMPACTION TEST

- ☐ STANDARD (ASTM D698-78)
- ☒ MODIFIED (ASTM D1557-78)
- ☐ OTHER _____

Project Chimacum School Expansion
Job Number W-8259-01 Date Feb 1998
Sample Number TP-7 Depth 2'
Tested By NSK Calculated By NSK
Checked By ND

Max. Dry Density, lbs./cu. ft.	138.5
Optimum W.C., %	7.5
Natural W.C., %	5.2
Hammer Wt., lbs.	10.0
Drop, in.	18.0
No. Layers	5
No. Blows/Layer	56
Dia. Mold, in.	6.0
Height Mold, in.	5.0
Vol. Mold, cu. ft.	0.075
Compactive Effort, ft. lbs./cu. ft.	56,300

Sample Classification Brown, sandy GRAVEL; trace of silt. GP

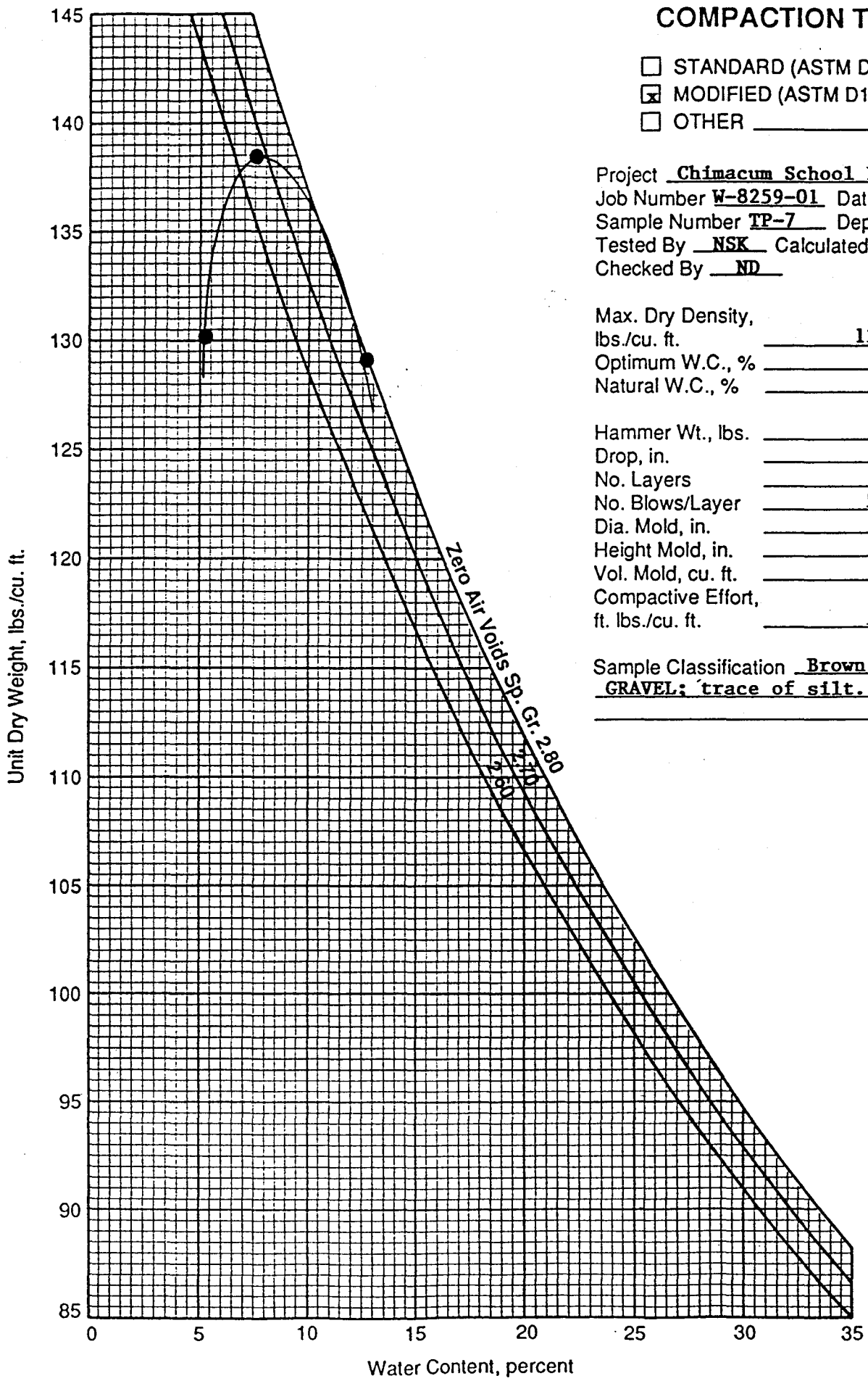

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FIG. 5

Dated: March 9, 1998

To: Mr. Ryan Tillman

Tillman Engineering

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland