McCULLOUGH HILL, PS

October 1, 2008

VIA ELECTRONIC AND REGULAR MAIL

Tukwila Planning Commission
c/o Department of Community Development
6300 Southcenter Blvd., #100
Tukwila, WA 98188

RE: Shoreline Master Program Update

Dear Commissioners:

We are writing on behalf of La Pianta LLC ("La Pianta"). We previously submitted written comments on behalf of La Pianta on August 7 and August 28, 2008. The City has informed us that it will not begin to prepare responses to public comment until after the last public hearing currently scheduled for this matter, on October 9, 2008, and that therefore the earliest the public can expect responses is late October.

We now write again to request that the Planning Commission:

(1) Provide for meaningful public participation, including directing staff to assemble a Citizens' Stakeholder Committee; and

(2) Recommend denial of the Tukwila Shoreline Master Program ("SMP") Update as currently drafted due to numerous flaws.

The bases for these requests are discussed below.

I. THE CITY MUST PROVIDE FOR MEANINGFUL PUBLIC PARTICIPATION.

Washington law requires that the City provide interested parties with a "full opportunity" for involvement in the development of the SMP and that the City "shall not only invite but actively encourage participation." RCW 90.58.130 (emphasis added). Also, state regulations provide that the City "shall make all reasonable efforts to inform, fully involve and encourage participation of all interested persons." WAC 173-26-090 (emphasis added). "[L]ocal government shall solicit public and agency comment during the drafting of proposed new or amended master programs." WAC 173-26-100 (emphasis added). For governments planning under the Growth Management Act ("GMA"), such as the City, "local citizen involvement strategies should be implemented that insure early and continuous public participation." *Id.* (emphasis added). State regulations further provide that these citizen involvement strategies should include the following measures, among others (1) each planning jurisdiction should endeavor to involve the broadest cross-section of the community, so that groups not previously involved in planning become involved; (2) the public should be

EXHIBIT DATE
PROJECT NAME
FILE NO

involved at the earliest possible time in the process of comprehensive planning under the act, beginning with a public visioning process; (3) full use should be made of the planning commission as a liaison with the public; (4) once the plan is completed in draft form, or as parts of it are drafted, a series of public meetings or workshops should be held at various locations throughout the jurisdiction to obtain public reaction and suggestions; (5) at each stage of the process when public input is sought, opportunity should be provided to make written comment; (6) each jurisdiction should make every effort to collect and disseminate public information explaining the act and the process involved in complying with it; (7) whenever public input is sought on proposals and alternatives, the relevant drafts should be reproduced and made available to interested persons; and (8) all comments and recommendations of the public should be reviewed and adequate time should be provided to evaluate and respond to public comments. WAC 365-195-600(2)(a).

The City's public participation process falls short of these requirements. The City failed to conduct a visioning process in connection with the current draft SMP. It also failed to solicit public participation during the drafting of the SMP, instead developing, seeking Department of Ecology comments, and revising an initial draft last year behind closed doors. Now, while it has made some concessions in the wake of public outcry, the City still has not developed a public participation program that allows for meaningful dialogue with the public. The City's public participation program is currently limited to (1) two public open houses; (2) two public hearings before the Planning Commission; and (3) an unspecified number of City Council hearings. The Planning Commission will hold other workshops and meetings, but the public is not invited to provide testimony. This leaves the public unable to correct factual errors in the materials and presentations given to the Commission. In addition, the City does not plan to respond to the voluminous public comment provided already until well after the last scheduled public hearing before the Planning Commission. Thus, the process as currently designed fails to provide for a dialogue between the City and the public. The public is not "fully involved" in the drafting process as required by law.

In order to remedy these significant problems, the City must develop and implement a meaningful public participation program. This program should include the formation of a Citizens' Stakeholder Committee to review and comment on the draft SMP. In addition, the Planning Commission should not act on draft SMP until after staff has revised the draft SMP to respond to public comment and the public has had the opportunity to review and comment on these revisions.

II. THE PLANNING COMMISSION MUST RECOMMEND DENIAL OF THE SMP AS CURRENTLY DRAFTED.

As currently drafted, the SMP inflicts burdensome, inequitable, illegal and unconstitutional limitations on shoreline properties. Accordingly, unless significant changes are made to the Draft SMP, the Planning Commission must recommend denial.

A. The SMP imposes an illegal tax.

Under the recent Washington appellate court decision in *Citizens' Alliance of Property Rights v. King County*, __ Wn.App.3d. ___, 2008 WL 2651455 ("*Citizens Alliance*"), the proposed river buffers,

among other things, are an illegal tax. In this case, the court reviewed King County's critical areas ordinance. The court focused on the portions of the ordinance limiting clearing on rural properties. These clearing limits varied depending on parcel size and location, limiting new clearing to 50 percent of the property in some cases. The court determined that the clearing limitations were indirect taxes, fees or charges on development. Therefore, they were subject to the requirements of state law codified at RCW 82.02.020.

Under RCW 82.02.020, the government must show that the conditions are tied to a specific, identified impact of a development on a community. The government bears the burden of showing that the condition is reasonably necessary as a direct result of the development. In other words, the conditions must be both related to the impacts of development and proportional to these impacts. They cannot be imposed for the purpose of mitigating pre-existing problems. In *Citizens Alliance*, the court determined that the clearing limitations did not meet the requirements of RCW 82.02.020 and were therefore illegal.

Several provisions of the Draft SMP suffer from the same defect as King County's critical areas ordinance. The Draft SMP proposes buffers of either 100'- or 125-feet in commercial areas adjacent to the Green/Duwamish River, similar to the clearing limitations in King County's critical areas ordinance struck down in *Citizens Alliance*. Yet the City has not made a showing that these buffers are directly related and proportional to the impacts caused by the specific future development of the affected parcels. Staff has advanced various justifications for the buffer width at different times. These justifications include a desire to allow for future improvement of existing levees by increasing their slope to 2.5:1[1], inclusion of a bench for habitat improvement and improving access for maintenance. However, staff has never explained how these improvements are linked to impacts caused by development of the affected parcels.

To the contrary, the Draft SMP acknowledges that the buffers would improve an existing condition, not mitigate future impacts. The Draft SMP makes it abundantly clear that its purpose is not only to protect (achieve "no net loss") but also to restore and improve habitat:[2]

> [A] minimum buffer will be established for each shoreline environment and allowed uses will be designated for the buffer area along the river and the remaining shoreline jurisdiction. This system is intended to facilitate the City's long-range objectives for land and shoreline management, including:
>
> - Providing no net loss of ecological shoreline functions;
> - Providing for habitat protection, enhancement, and restoration to improve degraded shoreline ecological functions over time and protection of already restored areas.

1/ Staff has given conflicting justifications for this slope. At the Planning Commission work session on August 7, 2008, staff said that the slope was required in order for King County to continue to maintain the levees. At the work session on September 17, however, the justification given (for the first time) was prevention of speculative future river bank scour.

2/ See *Skagit County v. Western Washington Hearings Board*, 161 Wn.2d 415, 166 P.3d 1198 (2007) (distinguishing protection from restoration).

Draft SMP, p. 46 (emphasis added).

> The purpose of the Urban Conservancy Environment is to protect ecological functions where they exist in urban and developed settings, and restore ecological functions where they have been previously degraded.

Id., p. 48 (emphasis added).

> The purpose of Urban Conservancy River Buffers is to:
> - Protect existing and restore degraded ecological functions of the open space, flood plain and other sensitive lands in the developed urban settings;
> - Ensure no net loss of shoreline function when new development or redevelopment is proposed;
> - Provide opportunities for restoration and public access.

Id. (emphasis added).

> The buffer width of 100 feet allows enough room to reconfigure the river bank to achieve a slope of 2.5:1, the "angle of repose" or the maximum angle of a stable slope and allow for some restoration and improvement of shoreline function through the installation of native plants and other habitat features.

Id., p. 49. Yet, the City may not impose the cost of habitat restoration and improvement on private property owners. Instead, under RCW 82.02.020 and *Citizens Alliance*, the City may only impose buffers if they are related and proportional to the impacts of development.

If the City fails to take into account the requirements of RCW 82.02.020, it will leave itself open to claims by every affected owner along the shoreline. In light of the clear ruling in *Citizens Alliance* case, if the City adopts the proposed buffer, it could be liable for damages caused by buffer requirements under RCW 64.40.

B. The SMP includes requirements not authorized by the Shoreline Management Act ("SMA").

The SMA and its implementing regulations do not authorize the City to place the burden of shoreline restoration, enhancement or improvement on private property owners. Instead, the regulations adopted by the Department of Ecology ("DOE") to implement the SMA provide unequivocally that:

> The policy goals of the act, implemented by the planning policies of master programs, may not be achievable by development regulations alone. Planning policies should be pursued through the regulation of development of private property only to an extent that is consistent with all relevant constitutional and other legal limitations (where applicable,

> statutory limitations such as those contained in chapter 82.02 RCW and RCW 43.21C.060) on the regulation of private property. Local government should use a process designed to assure that proposed regulatory or administrative actions do not unconstitutionally infringe upon private property rights.

WAC 173-26-186(5) (emphasis added).

The regulations also state:

> Local master programs shall include regulations and mitigation standards ensuring that each permitted development will not cause a net loss of ecological functions of the shoreline; local government shall design and implement such regulations and migration standards in a manner consistent with all relevant constitutional and other legal limitations on the regulation of private property.

WAC 173-26-186(8)(b)(i) (emphasis added).

In addition, they provide:

> Some master program policies may not be fully attainable by regulatory means due to the constitutional and other legal limitations on the regulation of private property. The policies may be pursued by other means as provided in RCW 90.58.240.

WAC 173-26-191(1)(a).

RCW 90.58.240 specifies non-regulatory means for achieving shoreline master program policies:

> In addition to any other powers granted hereunder, the department and local governments may:
>
> (1) Acquire lands and easements within shorelines of the state by purchase, lease, or gift, either alone or in concert with other governmental entities, when necessary to achieve implementation of master programs adopted hereunder;
>
> (2) Accept grants, contributions, and appropriations from any agency, public or private, or individual for the purposes of this chapter;
>
> (3) Appoint advisory committees to assist in carrying out the purposes of this chapter;
>
> (4) Contract for professional or technical services required by it which cannot be performed by its employees.

Thus, rather than providing authority for illegal and unconstitutional development regulations, the SMP expressly recognizes that local governments should pay for lands and easements when it needs them to implement shoreline master program policies and should seek public funding to implement some of its shoreline master program goals.

C. The SMP effects an unconstitutional taking of private property without just compensation.

The public access requirements of the draft SMP violate constitutional prohibitions against governmental taking of property without compensation. The U.S. Supreme Court addressed this very issue in *Nollan v California Coastal Commission*, 483 U.S. 825, 107 S. Ct. 3141 (1987). In this case, the Nollans sought a permit to replace an existing residence on a beachfront lot located between two public beaches. The Coastal Commission granted the permit with the condition that the Nollans allow public access between the two beaches across a portion of their property. The U.S. Supreme Court invalidated the condition because it was not related to a specific impact of the development. The required nexus was absent. Accordingly, the condition constituted an unconstitutional taking. If the state wanted a public easement across the Nollans' property, the Court held, it must pay for one.

Similarly here, the Draft SMP proposes to require property owners to grant to the public a right of access to their shoreline properties as a condition of receiving development permits. Yet there is no requirement for a demonstrated nexus between impacts created by specific development projects and the public purpose asserted as support for the public access requirement. Permit conditions imposed under the Draft SMP will directly conflict with the principles established by *Nollan*. As the U.S. Supreme Court held in *Nollan*, the City may not require shoreline owners to provide public access across their properties without full and fair compensation.

D. The SMP is inconsistent with the Comprehensive Plan in violation of the Growth Management Act.

The Growth Management Act ("GMA") requires that the development regulations adopted by a city must be consistent with and implement its comprehensive plan. RCW 36.70A.040. In addition, a city's comprehensive plan must be internally consistent. RCW 36.70A.070. The goals and policies of a city's approved shoreline master program are considered an element of the city's comprehensive plan. RCW 36.70A.480. All other portions of the shoreline master program, including use regulations, are considered a part of the city's development regulations. *Id.*

Here, the Draft SMP is inconsistent with the City's Comprehensive Plan. Among other inconsistencies, the enormous burden the Draft SMP places on shoreline properties renders it inconsistent with various goals and policies calling for economic development, including:

- Goal 2.1. "Continuing enhancement of the community's economic well-being."
- Policy 2.1.12. "Promote Tukwila as a regional crossroads for commerce."
- Policy 2.1.13. "Promote economic use of industrial lands outside the MIC . . . Such lands should be preserved for industrial uses, achieved through *appropriate* buffering requirements and use restrictions. . . ." (Emphasis added.)

This is a fatal flaw. The City must review the Draft SMP to identify its land use and economic impacts. The City must then revise the Draft SMP and revise it as necessary to ensure that it is fully consistent with the Comprehensive Plan.

III. CONCLUSION

In sum, La Pianta requests that you: (1) provide for meaningful public participation in the SMP update process; and (2) recommend denial of the current Draft SMP due to its numerous deficiencies.

Thank you for your attention to this matter.

Sincerely,

Courtney Kaylor

Courtney A. Kaylor

CAK:ldc

cc: Client
Jack Pace
Carol Lumb

GeoEngineers

October 9, 2008

VIA HAND DELIVERY

Tukwila Planning Commission
c/o Department of Community Development
6300 Southcenter Blvd., #100
Tukwila, WA 98188

RE: Shoreline Master Program

Dear Commissioners:

I am writing regarding the proposed Draft Shoreline Master Program. I am a Senior Principal with Geoengineers, Inc. and have 30 years of experience providing geotechnical engineering services throughout the Pacific Northwest. During my career, I have been involved in many different project types, including shoreline projects. In particular, I am familiar with the shoreline of the Green/Duamish River running through the City of Tukwila. My qualifications are attached.

The Draft SMP requires uniform shoreline buffers of 100 and 125 feet in commercial and industrial areas of the City in order to accommodate future reconstruction or construction of levees at a 2.5:1 slope. This buffer requirement applies equally to properties that are protected by the federally certified Tukwila 205 Levee, private levees, or no levees. City staff has stated that this levee configuration is necessary due to potential sour and erosion along the river bank.

In my professional opinion, there is no risk of scour or erosion common to all properties along the Green/Duamish River in the City. The proposition that all properties require a levee (designed with a 2.5:1 slope) to prevent scour and erosion is incorrect. Indeed, the risk of scour and erosion is significantly limited by the existence of the Howard Hanson Dam, which regulates the flow of water in the River through the City. Therefore, the requirement for a uniform buffer width along the Green/Duamish River is not technically supportable.

Instead, the risk of scour and erosion, and the corresponding need for shoreline protection, can only be determined based on an evaluation of a property specific conditions. Factors that should be considered in this evaluation include, among others:

- The history of scour and erosion on the property.
- The location of the property on an inside or outside curve of the River. Typically erosion occurs on outside curves and deposit on inside curves.

1101 S. Fawcett Ave, Suite 200
Tacoma, WA 98402
telephone 253.383.4940
facsimile 253.383.4923
website www.geoengineers.com

- The elevation of the property relative to the River.
- The current shoreline bank conditions of the property (Tukwila 205 levee, private levee, revetment, or natural vegetated conditions). Dense vegetation provides excellent protection against erosion and scour.

In addition, for properties that do have a risk of scour or erosion, there are a number of viable options for addressing this issue other than construction or reconstruction of a levee at a 2.5:1 slope. These options have less impact on adjacent properties.

In summary, in order for the City's shoreline buffers to be supported from a technical viewpoint, the City must provide for flexibility to address property-specific conditions. Thank you for your consideration of these comments.

Sincerely,

Gary Henderson, PE

GARY HENDERSON, PE, SENIOR PRINCIPAL

Education

M.S., Civil Engineering, New Mexico State University, 1968
B.S., Civil Engineering, New Mexico State University, 1967

Affiliations

Consulting Engineers Council of Washington, American Society of Civil Engineers, Sigma Chi

Registrations

Washington: Professional Engineer, (#12979), 1971

Experience

Gary Henderson, a civil engineer, has specialized in geotechnical engineering since 1968 with special emphasis on port-related and waterfront projects. His experience with waterfront facilities includes geotechnical investigations for piers, wharves and docks at nearly every Washington port, including Port of Grays Harbor, the Alaskan Ports of Wrangell and Valdez, ports in Oregon, California, and several foreign locations. Projects have included work for the U.S. Navy at the Trident-Bangor, Bremerton, Manchester, Silverdale, San Diego and Whidbey Island naval bases. He has a strong background in offshore construction and dredging methods. His marine work includes geotechnical services for a submarine cable at Sinclair Inlet for the Navy. He is currently working with the Port of Tacoma providing geotechnical consultation for the construction of the Pierce County Intermodal Terminal. The following are just a few examples of Gary's relevant project experience:

Manson Construction, Point Loma Outfall
San Diego, CA
GeoEngineers provided geotechnical consultation during construction of a 4-mile-long extension to the City of San Diego's sewer outfall at Point Loma. Services included reviewing geotechnical information for the site and providing recommendations for support of the 12-foot diameter pipe and bedding and estimated settlement during construction. Also provided input regarding staged bedding, pipe, and backfill installation methods.

KFM Construction, Oakland Bay Bridge Replacement - Main Span
Oakland, California
GeoEngineers provided pile drivability analysis services and prepared the pile driving submittal for Oakland Bay Bridge Replacement Project to CALTRAN. Pile analyzed was an 8-foot-diameter steel pipe to be driven to a depth of up to about 330 feet (100 meters) using Menck MHUT 500 (rated energy = 300,000 foot-pound) and Menck MHU 1700 (rated energy = 900,000 foot-pound). Subsurface soils consisted of young and old bay mud overlying MPSA and LAA deposits. The pile tip will be embedded in the very dense LAA sand unit. Derived soil parameters included soil quake and damping by reviewing PDA test results available for the

project. Since the pile will be driven in three sections and welding will take approximately 1 week to complete, the setup effect was also evaluated. We also provided recommendations for design of cofferdams at the piers and for piling support of temporary falsework.

Manson Construction, Seismic Upgrade of the Oakland Bay Bridge

Oakland, California

We provided pile driving analyses for a test pile program that consisted of driving three, 8-foot diameter, 440-foot long piles. We also designed piling to support a frame used to hold the test piles while driving. Two hammers were used for installing the piles during the test pile program, including a small hammer with 300,000-foot pounds of energy, and a 900,000-foot pound hammer to drive the final 100 feet into bedrock.

Port of Grays Harbor, Terminal 2

Aberdeen, Washington

Gary Henderson worked with Bob Wallace of Berger ABAM during the design and construction of Terminal 2. He provided geotechnical design parameters for design of piling, pile installation criteria, design of slope which included dredging of the birth to Elevation -42 (MLLW) and riprap design.

Port of Grays Harbor, Slip 1 Closure Dike

Aberdeen, Washington

The Port proposed to dike the mouth of Slip 1 to create approximately 30 acres of shoreline property for future development. The bottom surface along the dike alignment is underlain by a deep zone of soft compressible soils. Conventional diking methods would have resulted in earth failure. After site exploration and extensive laboratory testing, GeoEngineers' staff conducted stability and settlement analysis for local soils. Based on these findings, we developed a staged construction method where the top level of the dam is raised in three- to six-month stages. Several lifts of material were successfully placed and fine-grained sediment from the Port's maintenance dredging was used as fill behind the dam. This material consolidated several feet and induced substantial settlement in the underlying soft soil.

Port of Grays Harbor, Frye Creek Diversion

Aberdeen, Washington

Port development plans called for Frye Creek to be diverted as a part of filling the Slip 1 area. The Frye Creek Channel alignment was approximately 2,000 feet long and traversed an area containing medium stiff to very soft soils. The creek flowline ranged from 10 to 12 feet below the ground surface and 6 to 8 feet below at the groundwater table. Our initial studies involved subsurface exploration and testing as a basis for evaluating technical feasibility of several alternate concepts. We also provided recommendations for three design schemes, consisting of sheet pile walls, cofferdam-type walls using precast concrete panels, and an open-end using rockfill to buttress the slopes. After the open-end method was selected, we provided design criteria for overexcavation construction procedures, and rock placement. Consultation during construction was also provided.

Port of Tacoma, Geotechnical Engineering Services, Marshall Auto Facility Bridge Access

Tacoma, Washington

As part of the ongoing expansion of the Pierce County Terminal, the Port of Tacoma is constructing a 1,120 foot long elevated roadway structure and highway bridge over the Belt Link rail line and Port of Tacoma Road. The

new structure is critical to the efficient transport of imported automobiles from the dock to storage and subsequent distribution by rail and truck.

GeoEngineers performed studies and construction observation services to support the Type Size and Location (TS&L) study, the Plan Specification and Estimate (PS&E) phase of work, and the roadway and bridge construction. Subsurface explorations completed for the preliminary and final studies included hollow-stem auger borings and Cone Penetrometer Test (CPT) explorations. Engineering studies and analyses included review of existing subsurface data, subsurface explorations, laboratory soil testing, developing a detailed understanding of subsurface conditions, evaluation of approach fill consolidation settlement and embankment stability, seismic design recommendations, liquefaction analyses and development of mitigation measures (stone columns) and pile and shaft foundation design. Geotechnical responsibilities during construction included review of contractor submittals, monitoring stone column installation, monitoring earthwork and construction of wire basket faced mechanically stabilized earth (MSE) approach fills and shaft foundation excavation.

Port of Tacoma, Washington United Intermodal Terminal

Tacoma, Washington

Provided geotechnical services for the construction of new rail and pier facilities at the Port of Tacoma. Made design recommendations for the new railroad tracks including paving selection and support requirements. Also evaluated requirements for excavation and replacement of existing subgrade soil. GeoEngineers was responsible for providing design recommendations for the 2,000- by 200-foot pier, which included over 1,000 piles.

Port of Tacoma, West Blair Terminal Development

Tacoma, Washington

We provided geotechnical engineering services for development of the West Blair Terminal. One of the major project elements was the construction of a container handling dock that is 144 feet wide and 2,000 feet long. GeoEngineers explored subsurface soil and groundwater conditions around the alignment. GeoEngineers developed subsurface soil profiles for use in designing the cargo pier and evaluated potential earthquake effects on the planned structure, including soil liquefaction potential, slope stability and loss of support during seismic events. Geotechnical recommendations were provided for pile support of the pier and for fender-system design.

Port of Tacoma, Tacoma Rail Spur

Tacoma, Washington

GeoEngineers provided geotechnical engineering services for a ½-mile long rail spur located north of SR-509 and east of the Beltline Rail Yard in the Port of Tacoma, Washington. The purpose of our services was to explore subsurface conditions along the proposed alignment and provide geotechnical design recommendations for rail support and roadbed construction. Our report addressed site preparation criteria including site grading; dewatering and temporary cut slopes. We also provided recommendations for placement of appropriate structural fills and identified potential settlement issues.

Stevedoring Services of America, Manzanillo International Shipping Terminal

Colon, Panama

Provided geotechnical consultation related to development of a shipping terminal at a former U.S. Navy facility. The Manzanillo Terminal will serve as a shipment facility for Intermodal containers. Development of the terminal required raising site grades immediately adjacent to a new wharf by about 1.5 meters. This necessitated placement of a fill wedge over an area extending about 110 meters behind the wharf. The fill was then surfaced with concrete pavement capable of supporting heavy wheel loads. Our work included reviewing existing subsurface information, project plans, and test data to determine subsurface conditions; evaluating expected settlements; and providing recommendations for placement and compaction of the new wedge fill. Evaluated additional pressure on the sheet pile wall (from the new fill) and stability of the slope seaward of the sheet pile wall.

Complejo Portuario Mejillones, CPM Terminal

Mejillones, Chile

We provided geotechnical consultation regarding the proposed CPM terminal in Mejillones, Chile. Our services included evaluating the stability of reclamation fill and the underlying native soils during seismic events, liquifaction analyses, spacing and effectiveness of wick drains, and pile capacities. GWH/JEB – 7684-001-00

Port of Tacoma, West Blair Terminal Development

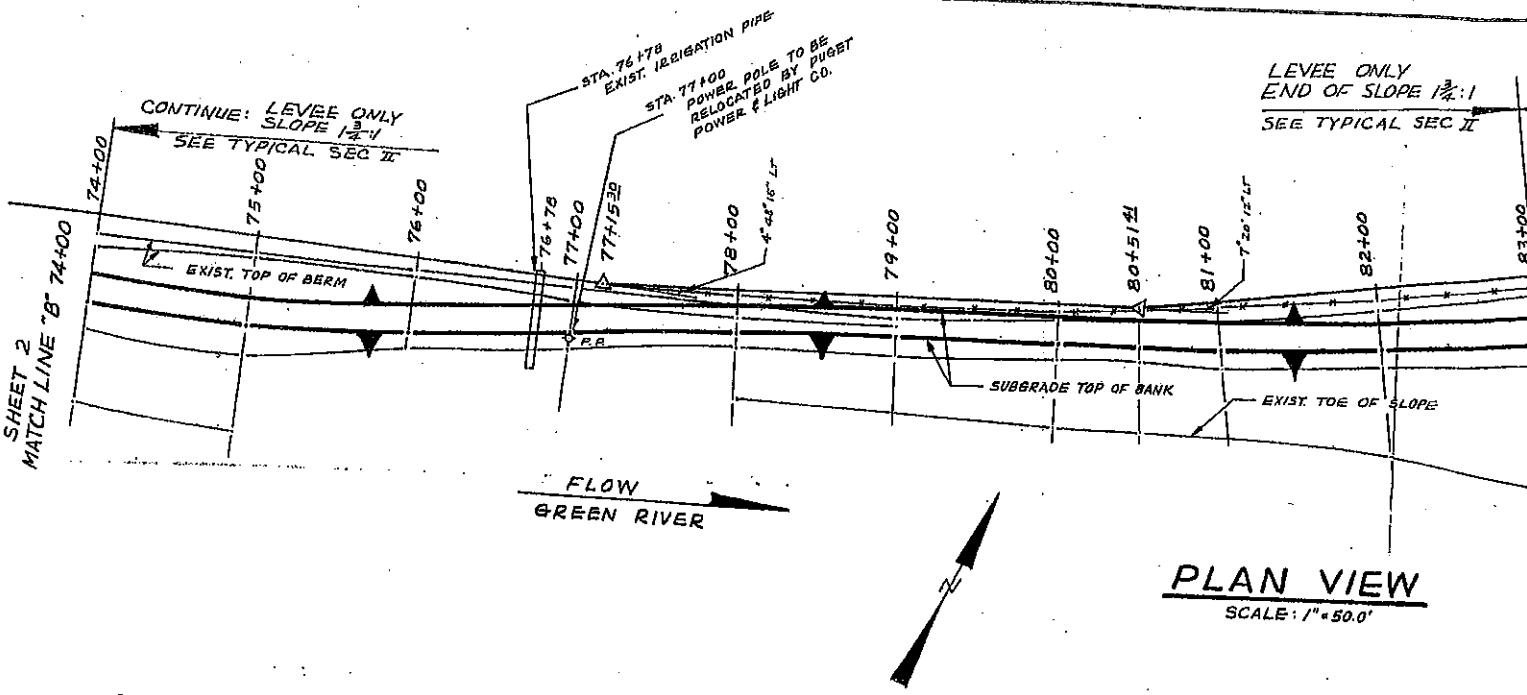
Tacoma, Washington

Provided geotechnical services for the construction of new rail and pier facilities at the Port of Tacoma. Made design recommendations for the new railroad tracks including paving selection and support requirements. Also evaluated requirements for excavation and replacement of existing subgrade soil. GeoEngineers was responsible for providing design and installation recommendations for the pier that included over 1,000 piles. We also did pile installation testing using PDA analysis.

Panama Ports Company, Port of Balboa Berth 14, Geotechnical Engineering Services

Port of Balboa, Panama

As a sub consultant to BERGER/ABAM Engineers, GeoEngineers provided geotechnical review, analyses, conclusions and recommendations for the proposed Berth 14 Improvements and Expansion at the Port of Balboa, Panama. Our services included reviewing existing subsurface information, project plans, and test data to determine subsurface conditions; performing slope stability analyses for the existing Berth 14 wharf and container yard, considering static and pseudostatic conditions; and providing design considerations and recommendations for installation of a sheet pile cutoff wall, liquefaction potential at the site, possible ground improvement schemes, and lateral pile capacity recommendations for the Berth 14 expansion.



PLAN VIEW

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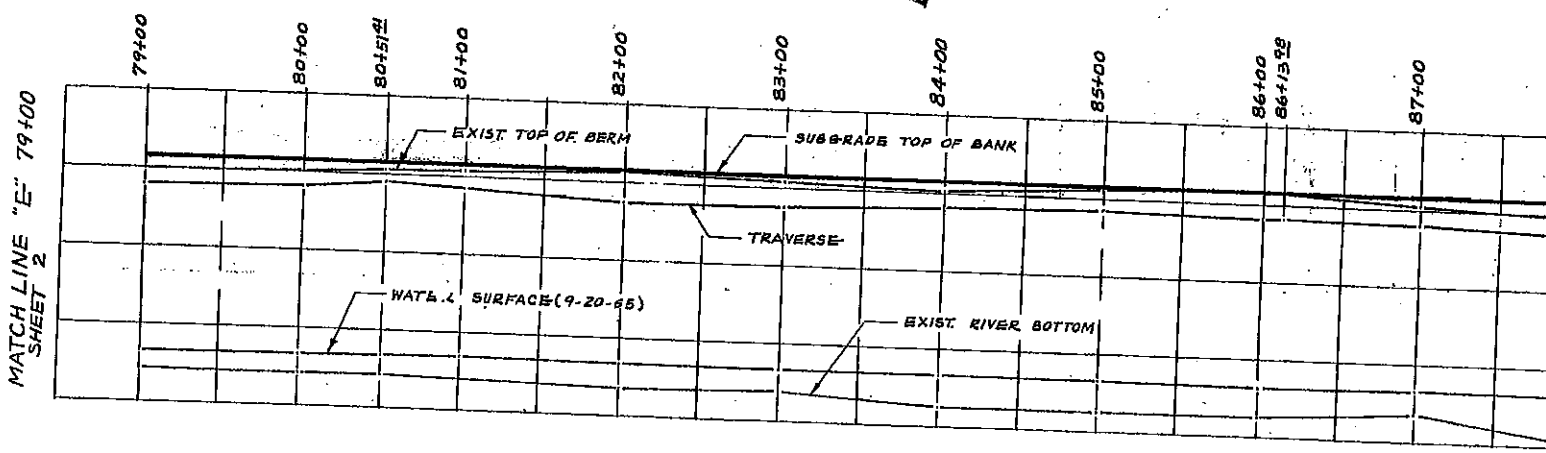
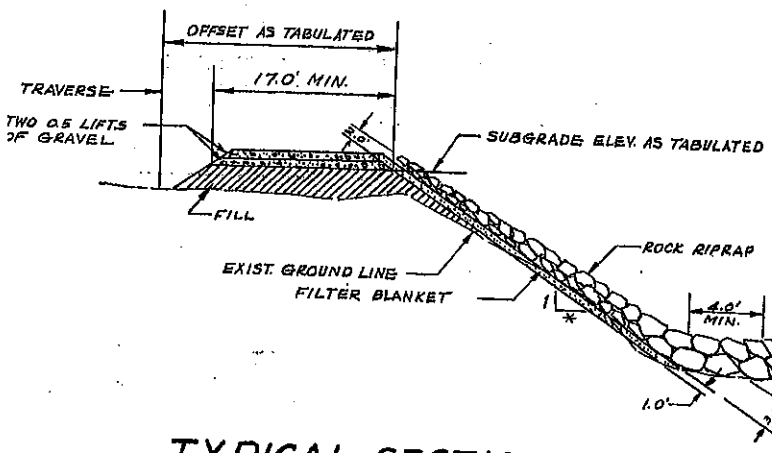


PROFILE

SCALE: H. 1"=50.0'
V. 1"=10.0'

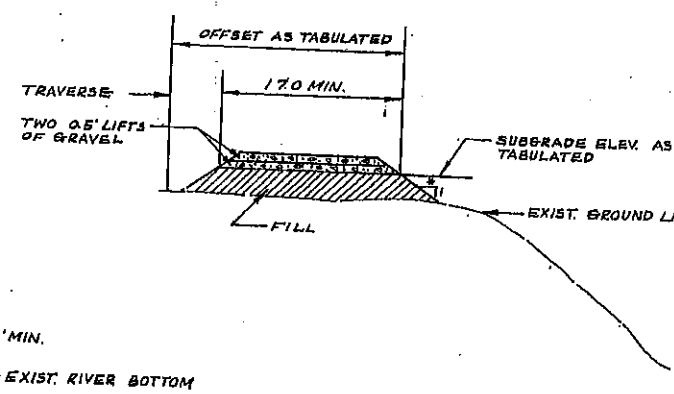


TYPICAL SECTION I

NO SCALE

STA. 37+25 – STA. 46+00
STA. 68+25 – STA. 70+50

* 1½:1 BTW. STA. 37+25 & STA. 46+00
* 1¾:1 BTW. STA. 68+25 & STA. 70+50



TYPICAL SECTION II

NO. SCALE

STA. 46+00 – STA. 68+25
STA. 70+50 – STA. 90+36.85

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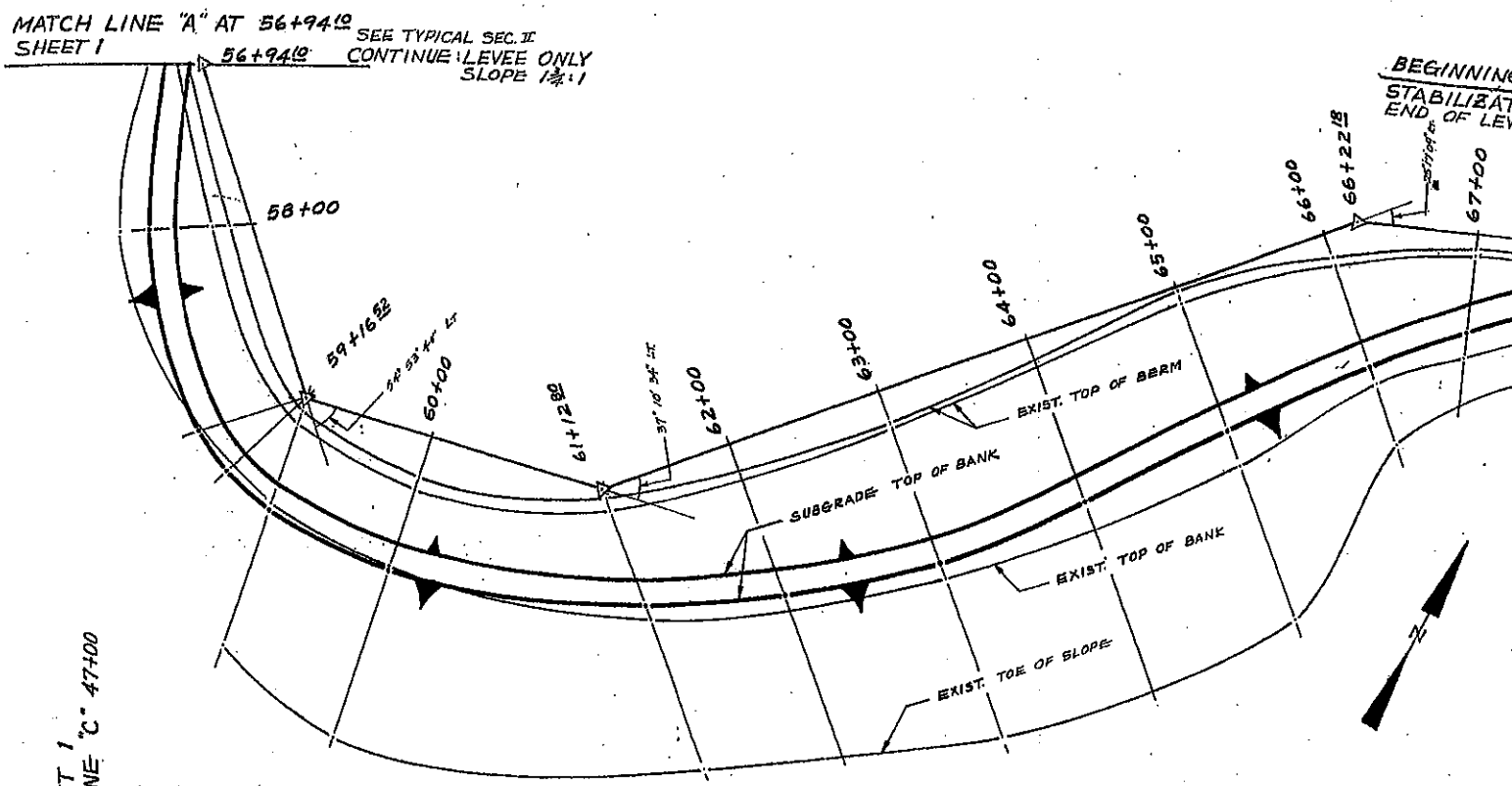
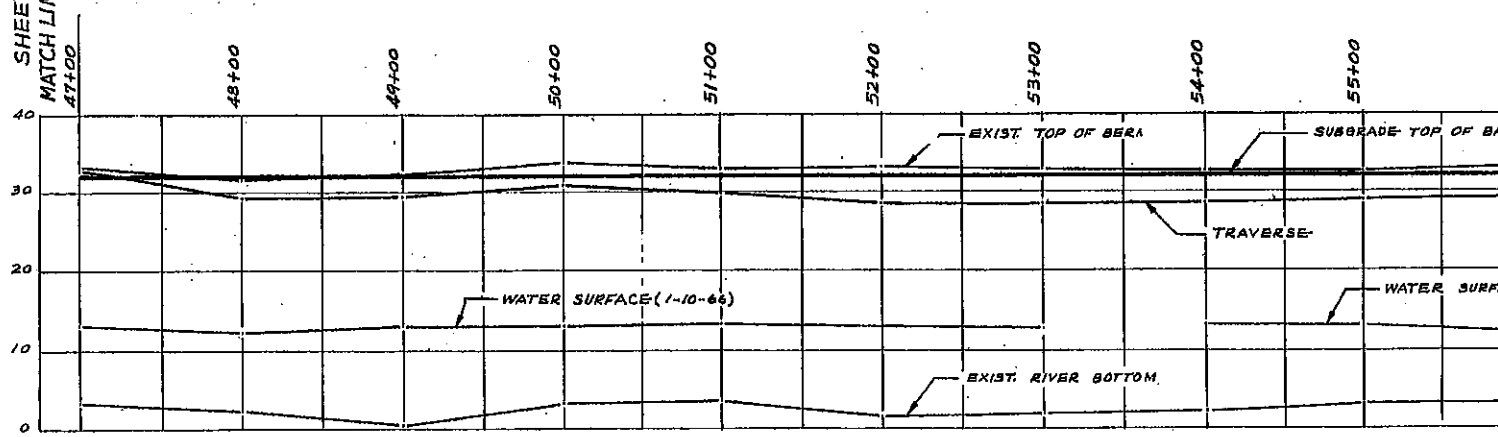
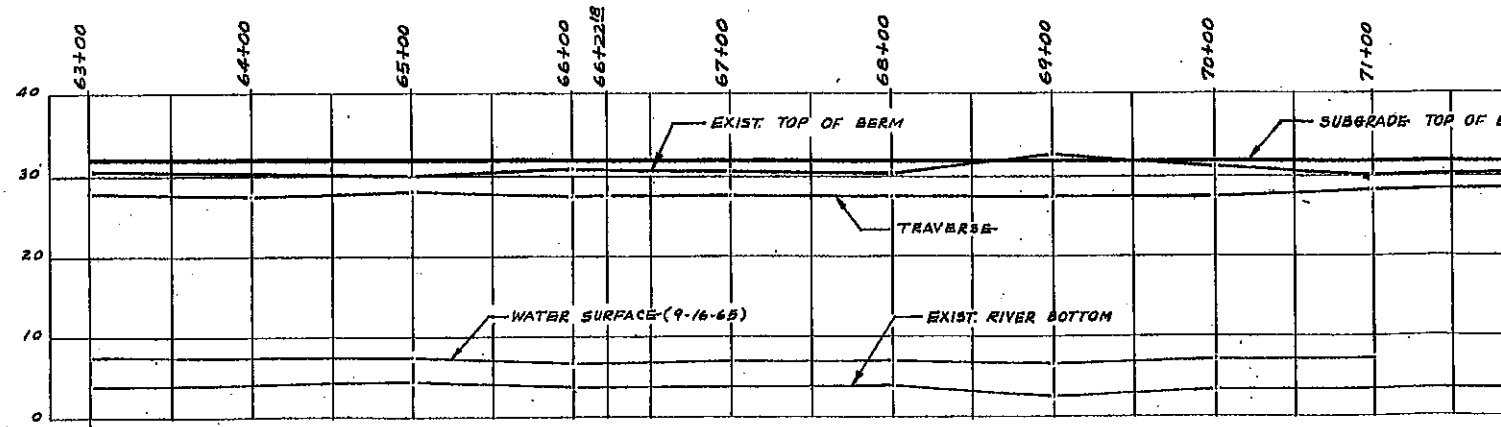
* 1¾:1 BTW. STA. 55+00 & STA. 83+00







PROFILE

SCALE: H. 1" = 50.0'
V. 1" = 10.0'