

25 September 2000

SUBJECT: DETERMINATION OF THE SUITABILITY OF SEDIMENT PROPOSED TO BE DREDGED FROM THE TACOMA NARROWS BRIDGE PROJECT FOR EITHER OPEN-WATER DISPOSAL IN COMMENCEMENT BAY OR FOR OTHER BENEFICIAL IN-WATER USE, AS EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT.

1. The following summary reflects the consensus determination of the Agencies that comprise the regional Dredged Material Management Program (DMMP) for the State of Washington. The agencies include the Corps of Engineers, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency. The agencies are charged with determining the suitability of dredged material for in-water disposal and have evaluated the proposed dredging associated with the Tacoma Narrows Bridge project located in the Tacoma Narrows, Puget Sound. The Agencies assessed the suitability of an estimated 110,000 cubic yards of sediment to be dredged for construction of the bridge tower foundations for disposal at either the unconfined open-water disposal site in Commencement Bay, or used for other beneficial in-water purposes. The Section 10 permitting agency for the bridge construction will be the U.S. Coast Guard. The Section 404 dredging/disposal action will be covered by a Corps Nationwide Permit # 15 to the U.S. Coast Guard after the bridge permit is issued.
2. The project was ranked low-moderate for testing purposes, and the sampling and analysis plan was approved on July 12, 2000 by the DMMP agencies for an estimated dredged material footprint volume of 110,000 cubic yards. Sampling of the proposed dredging footprint consisted of collecting multiple grab samples within each Dredged Material Management Unit (DMMU) at four separate DMMU locations on July 23, 2000 from the proposed dredging footprint (see figure 1). Within each of the four DMMU boundaries, grab samples were composited for a total of four DMMUs.
3. The Sampling and Analysis Plan approved by the Agencies for testing the four DMMUs was followed, and quality assurance/quality control guidelines specified by the Puget Sound Dredged Disposal Analysis Users Manual were generally complied with. The data gathered were deemed sufficient and acceptable for decision making by the Dredged Material Management Program (DMMP) agencies based on best professional judgment.
4. Relevant dates for regulatory tracking purposes are included in Table 1.

Table 1. Regulatory Tracking Dates

SAP submittal date:	June 22, 2000
SAP Approval date:	July 12, 2000
Sampling date(s):	July 23, 2000
Sediment data characterization report submittal date:	August 31, 2000
Recency Determination Date: Low-Moderate (5-7 years)	July 2005-2007

DAIS reference number: TNBRG-1-A-F-148

5. Table 2-3 summarizes the results of the convent./chem. parameters analyzed in the four composited DMMUs. Chemical analysis of the composited DMMUs (available from DMMO) indicated that there were no detected or undetected chemicals exceeding the screening level guidelines for the chemicals-of-concern. In addition, none of the chemicals-of-concern exceeded bioaccumulation triggers or maximum. Therefore, biological testing was not required to render a suitability determination.

6. The agencies concluded that all four DMMUs passed PSDDA non-dispersive disposal site guidelines for open-water disposal. The 110,000 cy of material is suitable for placement at the Commencement Bay open-water disposal site. Moreover, the material was evaluated relative to the Sediment Management Standards and all four DMMUs were found to exhibit chemistry below the Sediment Quality Standards (SQS) for all chemicals of concern. All the material is therefore suitable for appropriate beneficial use projects.
7. This memorandum documents the suitability of proposed dredged maintenance material from the Tacoma Narrows Bridge Towers Foundation Construction Project for disposal at the Commencement Bay non-dispersive open-water disposal site, and its suitability for beneficial reuse projects. However, this suitability determination does not constitute final agency approval of the project. A dredging plan for this project must be completed as part of the final project approval process. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under Section 404(b)(1) of the Clean Water Act.

Concur:

10/5/2000

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Table 2. Summary of sediment quality parameters within each DMMU characterized.

Parameter	TNBTN-W1	TNBTN-W2	TNBTN-E1	TNBTN-E2
Total Solids (%)	97.8	83.9	78.5	80.4
Total Volatile Solids (%)	1.4	3.1	2.7	1.3
Total Organic Carbon (%)	0.5	0.61	0.48	0.3
Ammonia (mg/kg)	< 1	3.4	6.0	< 1.2
Total Sulfides (mg/kg)	< 10	< 12	< 13	< 12
GrainSize:				
% Gravel	62.7	16.9	0.1	23.6
% Sand	35.4	68.8	71.5	76.3
% Silt	2.0	11.5	28.3	0.1
% Clay	<0.1	2.9	0.2	< 0.1
% Silt+Clay	2.0	14.4	28.5	0.1

Table 3. DAIS Value Table - Dry Weight Basis

Project: Tacoma Narrows Bridge Project: TNBRG1AF148

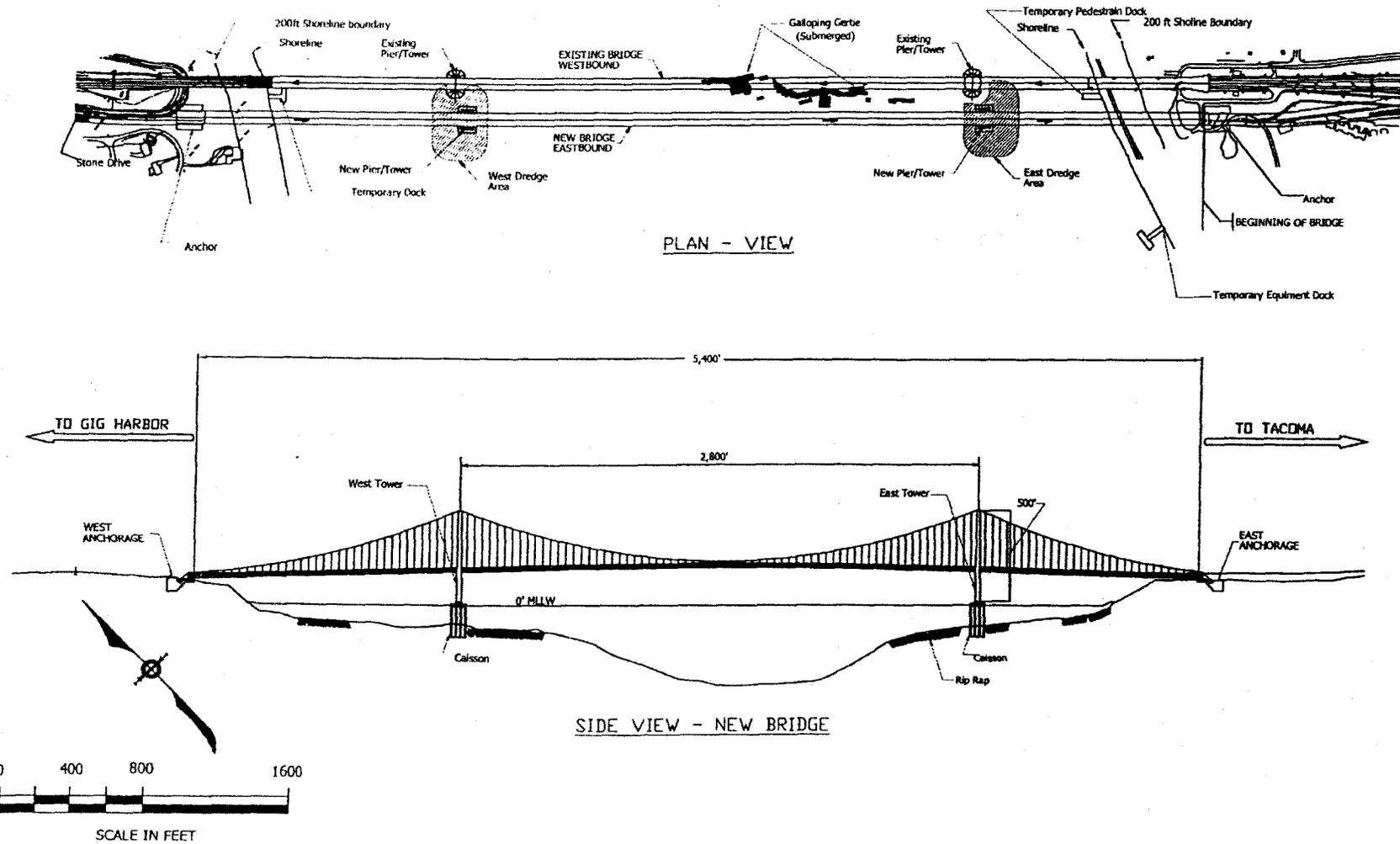
	units	C1	C2	C3	C4
SEDIMENT CONVENTIONALS					
Total Solids	%	97.8	83.9	78.5	80.4
Volatile Solids	%	1.4	3.1	2.7	1.3
Total Organic Carbon	%	0.5	0.61	0.48	0.3
Ammonia	MG/KG	1 u	3.4	6	1.2 u
Total Sulfides	MG/KG	10 u	12 u	13 u	12 u
METALS					
Antimony (1)	MG/KG	0.1 u	0.4 u	0.5 u	0.1 u
Arsenic	MG/KG	0.9	2.5	3.1	1.2
Cadmium	MG/KG	0.06 u	0.19 u	0.42 u	0.07 u
Chromium (4)	MG/KG	11	32	34	24
Copper	MG/KG	7.9	17	16	9.2
Lead	MG/KG	1.2	2.3	2.5	2
Mercury	MG/KG	0.01 u	0.03	0.01 u	0.02
Nickel	MG/KG	14	39	50	40
Selenium (4)	MG/KG	-	-	-	-
Silver	MG/KG	0.04 u	0.12 u	0.14 u	0.04 u
Zinc	MG/KG	14	38	35	25
LPAH					
2-Methylnaphthalene (1)	UG/KG	15 u	17 u	18 u	18 u
Acenaphthene (1)	UG/KG	15 u	17 u	18 u	18 u
Acenaphthylene (1)	UG/KG	15 u	17 u	18 u	18 u
Anthracene (1)	UG/KG	15 u	17 u	18 u	18 u
Fluorene (1)	UG/KG	15 u	17 u	18 u	18 u
Naphthalene (1)	UG/KG	15 u	17 u	18 u	18 u
Phenanthrene (1)	UG/KG	15 u	17 u	18 u	18 u
Total LPAH (1)	UG/KG	15 u	17 u	18 u	18 u
HPAH					
Benzo(a)anthracene (1)	UG/KG	15 u	17 u	18 u	18 u
Benzo(a)pyrene (1)	UG/KG	15 u	17 u	18 u	18 u
Benzo(g,h,i)perylene (1)	UG/KG	15 u	17 u	18 u	18 u
Benzo(a)fluoranthene (1)	UG/KG	15 u	17 u	18 u	18 u
Chrysene (1)	UG/KG	15 u	17 u	18 u	18 u
Dibenzo(a,h)anthracene (1)	UG/KG	15 u	17 u	18 u	18 u
Fluoranthene	UG/KG	15 u	17 u	18 u	18 u
Indeno(1,2,3-c,d)pyrene (1)	UG/KG	15 u	17 u	18 u	18 u
Pyrene	UG/KG	15 u	17 u	18 u	18 u
Total HPAH (1)	UG/KG	15 u	17 u	18 u	18 u
CHLORINATED HYDROCARBONS					
1,2,4-Trichlorobenzene (1)	UG/KG	4 u	5 u	5 u	5 u
1,2-Dichlorobenzene (1)	UG/KG	1.7 u	2 u	2.1 u	2 u
1,3-Dichlorobenzene (3)	UG/KG	1.7 u	2 u	2.1 u	2 u
1,4-Dichlorobenzene (1)	UG/KG	1.7 u	2 u	2.1 u	2 u
Hexachlorobenzene	UG/KG	7 u	8 u	9 u	9 u
PHTHALATES					
Bis(2-ethylhexyl)phthalate (1)	UG/KG	15 u	17 u	18 u	18 u
Butyl benzyl phthalate (1)	UG/KG	15 u	17 u	18 u	18 u
Di-n-butyl phthalate (1)	UG/KG	15 u	17 u	18 u	18 u
Di-n-octyl phthalate (1)	UG/KG	15 u	17 u	18 u	18 u
Diethyl phthalate (1)	UG/KG	15 u	17 u	18 u	18 u
Dimethyl phthalate (1)	UG/KG	15 u	17 u	18 u	18 u
PHENOLS					

2 Methylphenol (1)	UG/KG	7 u	8 u	9 u	9 u
2,4-Dimethylphenol (1)	UG/KG	7 u	8 u	9 u	9 u
4 Methylphenol (1)	UG/KG	15 u	17 u	18 u	18 u
Pentachlorophenol	UG/KG	58 u	68 u	73 u	71 u
Phenol (1)	UG/KG	15 u	17 u	18 u	18 u
MISCELLANEOUS EXTRACTABLES					
Benzoic acid (1)	UG/KG	73 u	85 u	91 u	88 u
Benzyl alcohol (1)	UG/KG	15 u	17 u	18 u	18 u
Dibenzofuran (1)	UG/KG	15 u	17 u	18 u	18 u
Hexachlorobutadiene (1)	UG/KG	9 u	10 u	11 u	11 u
Hexachloroethane (1)	UG/KG	15 u	17 u	18 u	18 u
N-Nitrosodiphenylamine (1)	UG/KG	9 u	8 u	9 u	9 u
VOLATILE ORGANICS					
Ethylbenzene (1)	UG/KG	1.7 u	2 u	2.1 u	2 u
Tetrachloroethene (1)	UG/KG	1.7 u	2 u	2.1 u	2 u
Total Xylene (1)	UG/KG	1.7 u	2 u	2.1 u	2 u
Trichloroethene (1)	UG/KG	1.7 u	2 u	2.1 u	2 u
PESTICIDES AND PCBs					
Aldrin (3)	UG/KG	0.43 u	0.5 u	0.63 u	0.5 u
Chlordane (2)	UG/KG	1.2 u	1.3 u	1.7 u	1.3 u
Dieldrin (3)	UG/KG	0.58 u	0.66 u	0.83 u	0.67 u
Heptachlor (3)	UG/KG	0.43 u	0.5 u	0.63 u	0.5 u
Lindane (3)	UG/KG	0.43 u	0.5 u	0.63 u	0.5 u
Total DDT	UG/KG	1.4 u	1.6 u	2.1 u	1.7 u
Total PCBs	UG/KG	29 u	33 u	42 u	34 u
ORGANOMETALLICS					
Tributyltin (porewater) (2)	UG/L	-	-	-	-

A dash indicates that no data exists for this analyte in DAIS

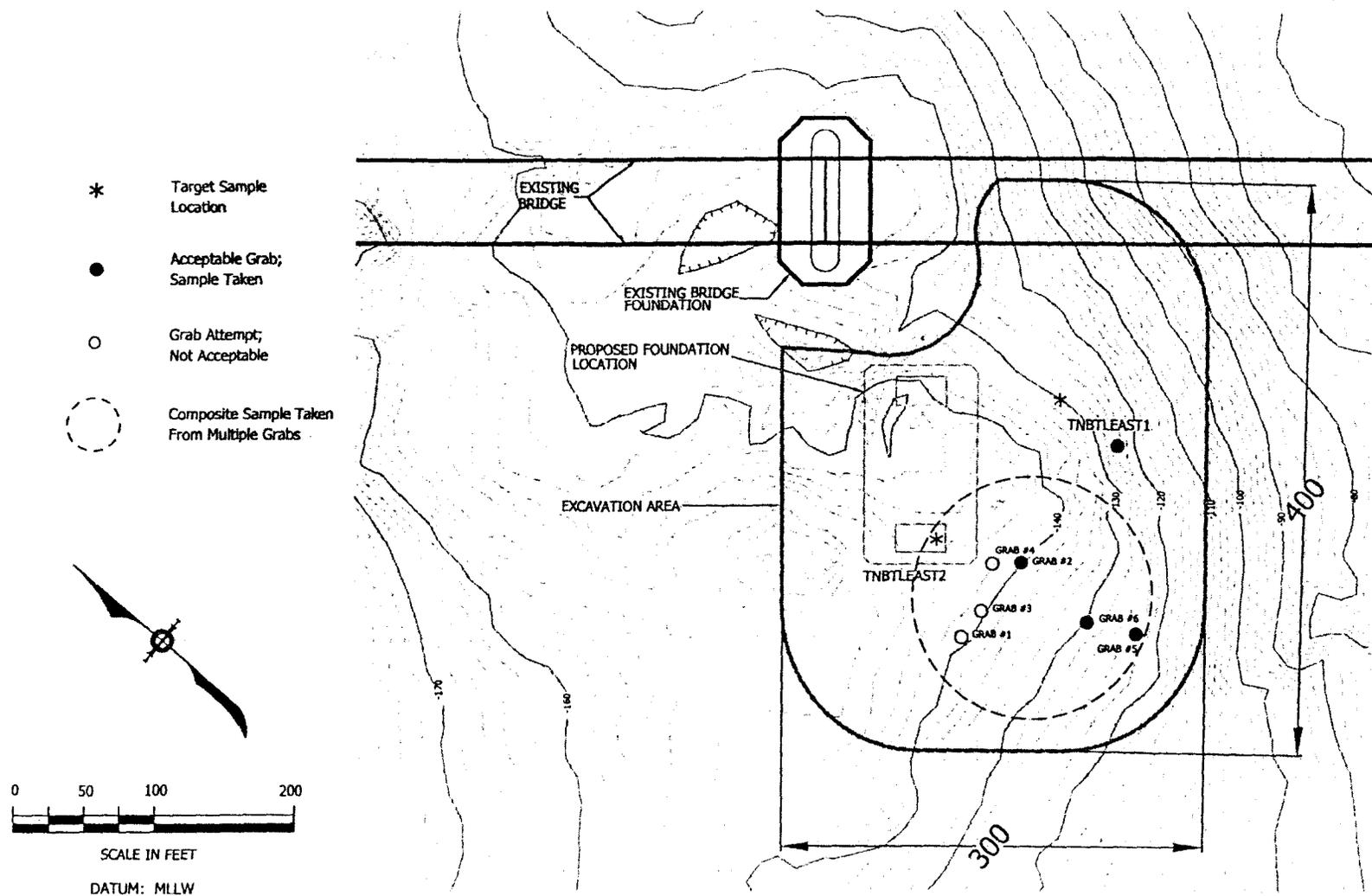
(1) = No BT exists (2) = No ML exists (3) = No BT or ML exists (4) = No SL or ML exists

END OF REPORT



~~Figure 2~~ General Plan

Figure 1a



~~Figure 3~~ Proposed Dredge Area and Sample Locations for East Tower

Figure 1b.

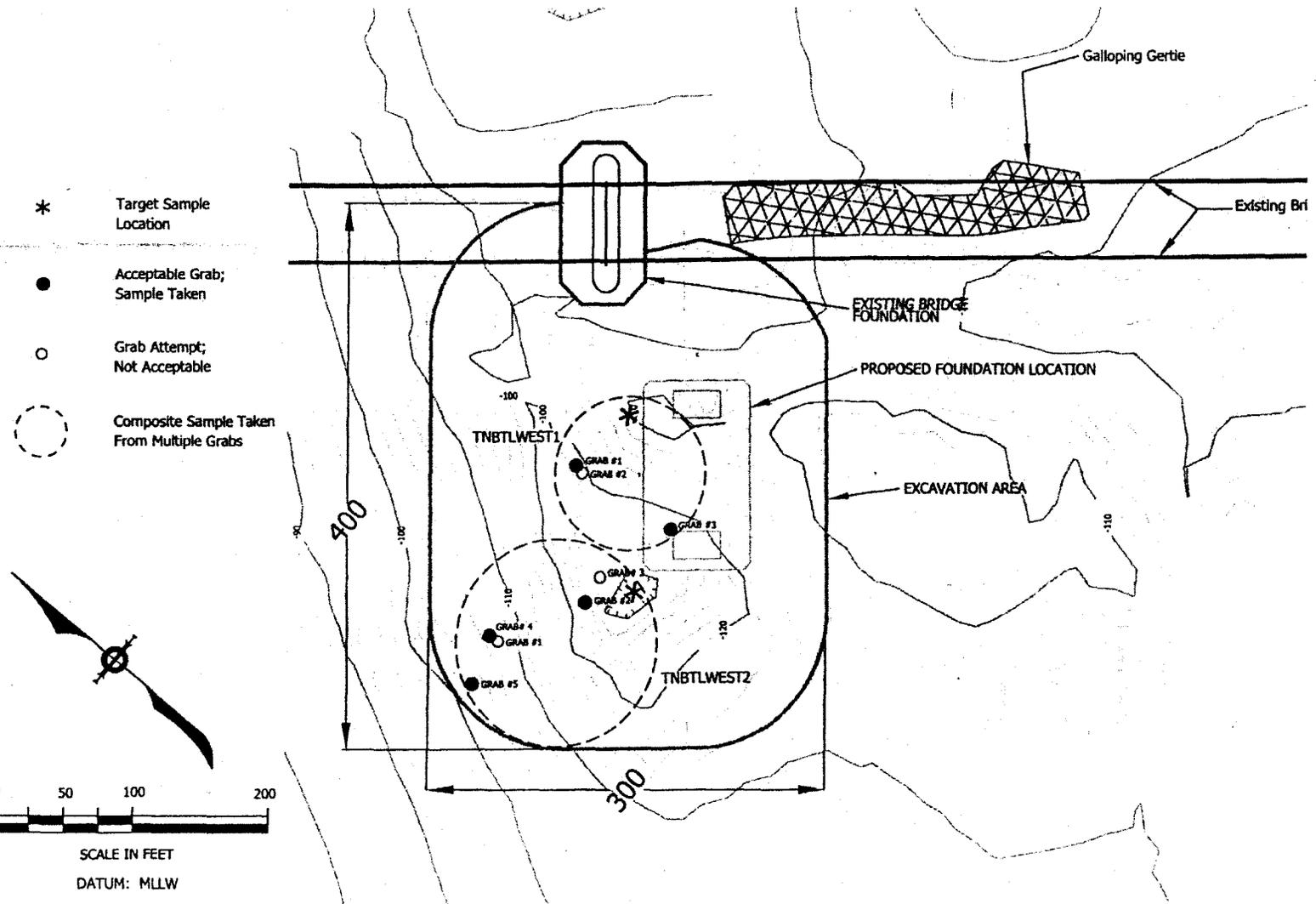


Figure 1c Proposed Dredge Area and Sample Locations for West Tower

Figure 1c.