

ISSUE PAPER

ADJUSTMENTS TO SITE MONITORING

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INTRODUCTION

The PSDDA site environmental monitoring plan is designed to verify that no unacceptable adverse effects have occurred within or beyond the disposal site as a result of dredged material disposal and to ensure that dredged material disposed at the sites remains within the disposal site boundary. The environmental monitoring data forms the basis for the annual review of the need for changes in the evaluation procedures and site management plans. Two types of post-disposal monitoring efforts are described in the Management Plan Reports and the Management Plan Technical Appendix: full surveys and partial surveys.

A full monitoring survey addresses three major questions:

1. Was the dredged material deposited on site?
2. Is the deposited dredged material producing chemical and/or biological conditions on site beyond the "minor adverse effects" levels allowed by the PSDDA Site Management Plan?
3. Is the dredged material causing any adverse impacts to biological resources beyond the disposal site boundaries?

Full PSDDA monitoring is designed to address all three questions, whereas partial PSDDA monitoring only addresses questions 1 and 2. In a cost saving measure, the PSDDA agencies elected to tier the monitoring investigations in 1994 at the Port Gardner disposal site to collect all samples necessary under a full monitoring investigation, but only analyze data to initially answer the first two questions. Analyses of archived samples to address the third monitoring question were contingent on answers to the first two questions. This modified "tiered-full" monitoring approach was successful at Port Gardner and was subsequently used at Commencement Bay in 1995.

The purpose of monitoring is to show compliance with the site management objectives, and demonstrate that no unexpected conditions have developed due to dredged material disposal. The PSDDA FEIS and supporting technical appendices (MPR, 1988; MPR, 1989; MPTA, 1988) envisioned an eventual reduction in post-disposal environmental monitoring once these monitoring events verified the effectiveness of the pre-dredging evaluation procedures in meeting the site management objectives. The monitoring data for the past six years have confirmed the adequacy of the dredged material evaluation and disposal procedures.

Therefore, a reduction in the level and frequency of post-disposal monitoring is justified at this time.

PAST MONITORING HISTORY

Six monitoring surveys have been conducted over the past seven years of PSDDA implementation (1989 - 1995) and have documented that the chemical and biological effects site management objective (only "minor adverse effects" on site and no adverse effects offsite) has been met (Table 1). In recognition that the PSDDA evaluation procedures have been successful in meeting site management objectives, the PSDDA agencies recommend formally adopting a reduction in the frequency and level of monitoring necessary at the nondispersive disposal sites. The tiered-full monitoring approach successfully applied on a trial basis at both the Port Gardner and Commencement Bay disposal sites have resulted in cost savings. Therefore, tiered-full surveys are recommended for adoption as a permanent change to the monitoring plan as an adjunct to the full and partial monitoring surveys.

Table 1. PSDDA Disposal Site Monitoring Surveys.

Disposal Site	Year	Type of Monitoring	Questions Survey Addressed
Port Gardner	1990	Full Monitoring	1, 2, 3
Port Gardner	1994	Tiered-Full Monitoring	1, 2
Elliott Bay	1990	Partial Monitoring	1, 2
Elliott Bay	1992	Full Monitoring	1, 2, 3
Commencement Bay	1995	Tiered-Full Monitoring	1, 2, 3
Bellingham Bay	1993	Partial Monitoring	1, 2

The three central Puget Sound nondispersive sites (Port Gardner, Elliott Bay, and Commencement Bay) have been the most frequently used sites, whereas the Bellingham Bay site in northern Puget Sound and the Anderson/Ketron Island site in south Puget Sound have only been relatively low use sites to date (Table 2). Reducing monitoring frequency at the three central Puget Sound disposal sites is justified based on the success of all previous monitoring results (PBR, 1994; SMARM, 1995). Therefore, the PSDDA agencies recommend setting a cumulative volume trigger at the three central Puget Sound sites of 300,000 cubic yards for future site monitoring. The monitoring trigger volume proposed would not apply to the remaining two nondispersive sites (i.e., Bellingham Bay and Anderson/Ketron Island) because of the relatively low volumes and frequency of use.

Table 2. Cumulative Nondispersive Site use summary (DY89-95).

Disposal Site	Dredging Years Used	Cumulative Volumes Disposed (cubic yards)
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Port Gardner (ND)	90, 91, 93, 94, 95	1,499,094
Elliott Bay (ND)	90, 91, 92, 93, 94, 95	615,247
Commencement Bay (ND)	89, 91, 95	308,405
Bellingham Bay (ND)	93	32,883
Anderson/Ketron (ND)	93, 95	18,874
Total cumulative volume: nondispersive sites (nondispersive + dispersive)		2,474,503 (3,366,435)

ND = nondispersive; D = dispersive

PROPOSED ACTION/MODIFICATION

The PSDDA agencies propose the following changes to the disposal site management plan.

- Tiered-full monitoring will be adopted into the site use management plan as an adjunct survey method to full and partial monitoring. The PSDDA agencies will review the site use history preceding any monitoring event and may elect to conduct either full site monitoring, partial monitoring or tiered-full monitoring depending on the circumstances.

- Initiate monitoring when cumulative volumes approach or exceed 300,000 cubic yards since the last monitoring event at the central Puget Sound nondispersive sites (Port Gardner, Elliott Bay, and Commencement Bay). This volume trigger will not apply to the remaining two nondispersive sites (i.e., Bellingham Bay and Anderson/Ketron Island). Therefore, the PSDDA agencies will give special consideration to conduct periodic monitoring as necessary at both of these relatively low use sites in the future.

REFERENCES

FEIS. 1988. Final Environmental Impact Statement - Unconfined Open-Water Disposal Sites for Dredged Material, Phase I (Central Puget Sound). Prepared jointly by Seattle District Corps of Engineers, Washington State Department of Natural Resources, Washington State Department of Ecology, and U.S. Environmental Protection Agency, Region 10.

MPR. 1988. Management Plan Report; Unconfined Open-Water Disposal of Dredged Material, Phase I (Central Puget Sound). Prepared jointly by Seattle District Corps of

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MPR. 1989. Management Plan Report; Unconfined Open-Water Disposal of Dredged Material, Phase II (North and South Puget Sound). Prepared jointly by Seattle District Corps of Engineers, Washington State Department of Natural Resources, Washington State Department of Ecology, and U.S. Environmental Protection Agency, Region 10.

MPTA. 1988. Puget Sound Dredged Disposal Analysis (PSDDA) Management Plan Technical Appendix. Prepared by the Corps of Engineers in cooperation with the Environmental Protection Agency, Region 10, and the Washington State Departments of Ecology and Natural Resources.

PBR. 1994. PSDDA Biennial Report, Dredged Material Management Years 1992/1993,

PSDDA Program. Prepared jointly by Seattle District Corps of Engineers, Washington State Department of Natural Resources, Washington State Department of Ecology, and U.S. Environmental Protection Agency, Region 10.