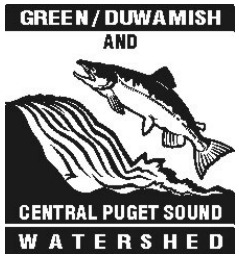
# Final

# Addendum to
# A Strategy for Prioritizing Potential WRIA 9 Habitat Actions

Prepared for:
WRIA 9 Steering Committee

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# 1 INTRODUCTION

In May 2005, the Water Resource Inventory Area (WRIA) 9 Steering Committee reconvened the Science Panel to evaluate a group of new and modified habitat actions that had been submitted after the first round of reviews in November 2004. The members of the Science Panel for this review were Michael Schiewe (consultant to the WRIA 9 Watershed Team, Anchor Environmental, L.L.C.), Glenn Grette (consultant to the Port of Seattle, Grette Associates), and Kirk Lakey (Washington Department of Fish and Wildlife and member of the WRIA 9 Technical Committee). The criteria and procedures for evaluating the new projects were identical to those applied in the first round of WRIA 9 habitat action reviews (Anchor Environmental and Grette Associates 2005).

## 2 UPPER GREEN SUBWATERSHED

The only project submitted to the Science Panel for review in the Upper Green (UG) Subwatershed was a modified version of UG2, in which the statement "[bull trout] stocks would be introduced from adjacent watersheds" was eliminated. The Science Panel noted that the current plan already calls for bull trout to be transported above Howard Hanson Dam (HHD) in the trap-and-haul operation conducted by Tacoma Public Utilities. Hence, no further consideration of this action was required. The Science Panel also noted that transporting bull trout above HHD may have the unintended effect of creating a population trapped above the dam, particularly if collection of downstream migrants is inefficient.

# 3 MIDDLE GREEN SUBWATERSHED

Several new actions in the Middle Green (MG) Subwatershed, including Newaukum Creek, were presented to the Science Panel by King County (KC) staff.

The two new proposed actions for the mainstem MG were for enhanced supplementation of gravel from river mile (RM) 32.0 to 60.4, and enhanced supplementation of large woody debris (LWD) in the same reach. Because both sediment and LWD supply in the MG Subwatershed were already ranked in the first round of reviews (MG21 and MG19), the Science Panel felt no additional evaluation of this proposal was necessary. The Science Panel noted that there is little question that MG habitat has been adversely affected by limited recruitment of sediment and LWD (largely as a result of HHD blocking transport). The Science Panel further noted the high importance of enhancing the quantity and quality of spawning and rearing habitat in the MG Subwatershed by the addition of sediment and/or LWD in the short term; and the importance in the long term of re-establishing more natural recruitment and distribution processes.

The balance of the new actions proposed by KC staff for the MG Subwatershed were in Newaukum Creek and involved riparian plantings of conifers as a long-term source of LWD, immediate instream placement of LWD, control of invasive plants such as Japanese knotweed, and restoration and connection of floodplains. Although these projects were presented in multiple small parcels, it was determined that they could logically be grouped into two larger projects, identified as MG-NC1 and MG-NC2. MG-NC1 covers restoration in RM 0.3 to 4.3. MG-NC2 covers restoration actions in RM 6.5 to 7.5, and includes the realignment of Big Spring Creek, which was previously evaluated as MG14. The RM 0.3 to 4.3 reach is used by chinook salmon; whereas the RM 6.5 to 7.5 reach is considered coho salmon habitat and affects water quality downstream.

The scoring for these two projects is shown in Table 1. MG-NC1 had a composite productivity score of 150 and a life history trajectory (LHT)-specific productivity score of 114. This composite productivity score was in the range of scores assigned a Tier 2 priority in the first group of projects reviewed by the Science Panel in November 2004 (Anchor Environmental and Grette Associates 2004). The Tier 2 designation indicates a priority project with significant anticipated benefits, although slightly less beneficial than projects identified as a Tier 1 priority. It was further noted by the Science Panel that, using the proposed guidelines for land

acquisition in the riverine area of WRIA 9, any land acquired in the RM 0.3 to 4.3 sections would be priority 2; whereas any land acquisition in the RM 6.5 to 7.5 reach would be a Tier 7 priority (Anchor Environmental and Grette Associates 2005).

In addition, KC staff requested that the Science Panel consider the previously rated MG-E2 and MG-E3 projects (Pautzke and Fenster levees removal, respectively) as a single, connected action. The Science Panel concurred that the adjacent location of these two projects made this a logical step, and assigned the new combined project a score of 152 for composite productivity and 148 for LHT-specific productivity, making it a Tier 2 priority. This was the same score initially assigned to MG-E2; therefore, the new combined MG-E2 and MG-E3 replaces MG-E2 on the list as the fourth highest rated project in the MG Subwatershed.

**Table 1**
**Science Panel Score Summary for Additional Middle Green River Subwatershed Projects**

| Action ID | Action Description | Scoring Notes | Composite Productivity | LHT-specific Productivity |
|---|---|---|---|---|
| MG-NC1 | Riparian restoration | Major enhancement of spawning and rearing habitat | 150 | 114 |
| MG-NC2 | LDS floodplain restoration | Primary benefit to coho; water quality downstream | 60 | 60 |
| MG-E2 and MG-E3 | Pautzke and Fenster levees removal | | 152 | 148 |

# 4 LOWER GREEN SUBWATERSHED

One new and several modified actions in the Lower Green (LG) Subwatershed were presented by KC and City of Kent planning staff to the Science Panel for evaluation. The new project (identified as LG-XX) involved the construction of a low-energy rearing channel in the vicinity of RM 13 to 15. Although highly conceptual in nature and speculative at this point, the Science Panel concluded that the idea deserved further consideration due to the current limitation of such habitat in the Lower Green River. The evaluation of this project is summarized in Table 2. The scores assigned to this project were well below the lower scoring limit of Tier 2 priority projects identified in the first group of projects reviewed by the Science Panel in November 2004 (Anchor Environmental and Grette Associates 2004).

**Table 2**
**Lower Green River Subwatershed Added Projects Science Panel Score Summary**

| Action ID | Action Description | Scoring Notes | Composite Productivity | LHT-specific Productivity |
|---|---|---|---|---|
| LG-XX | Artificial rearing channel | Low certainty, but potentially high benefit | 70 | 80 |
| LG-Composite | Composite of projects LG 38, 40, 41; and ERP | | 144 | 168 |

Also shown in Table 2 is an evaluation of a composite project (identified as LG-Composite) that was developed by KC and City of Kent staff. This new project combined the previously reviewed projects LG40, LG41, and LG38 and the adjacent Ecosystem Restoration project revegetation and side-channel project. In addition to the logical linkages among the projects, KC staff presented new information (in the form of a "proof of concept") that the same type of restoration contemplated in LG41 had been highly successful 11 years earlier in an upstream reach near the Central Street Bridge. The Central Street Bridge project involved creating a nearshore bench, placing large logs with root wads extending into the stream, and revegetating the area with willows. The area responded by accreting sediment and developing a dense riparian canopy. It was also pointed out by KC staff that recent surveys of Mullen Slough and Lower Mill Creek indicated that adult chinook salmon hold in these areas. Based on these changes and new information, the Science Panel re-evaluated the composite action, elevating the score for certainty, number of life stages affected, and scale. The LG-Composite project scores were on par with the scoring range of Tier 1 priority projects identified in the first group

of projects reviewed by the Science Panel in November 2004 (Anchor Environmental and Grette Associates 2004).

Also, at the request of KC staff, the Science Panel briefly reviewed actions LG27, LG23, and LG26; the Science Panel felt that none of these actions warranted further re-evaluation

# 5 DUWAMISH ESTUARY SUBWATERSHED

KC and Interlocal Agreement staff updated the Science Panel on recent sampling that suggested that Duwamish Estuarine Transition Zone habitat probably extended downstream to RM 4.8 rather than the previously identified boundary of RM 5.5. They also discussed the strategy of using the previously evaluated transition zone actions to develop an acreage-based approach to increase aerial extent of transition zone habitat. This would replace the site-specific actions that were previously the focus of the planning. Since there was no information that suggested that any one specific parcel or area of the transition zone habitat was more important than another, the Science Panel concurred that an acreage-based goal for transition zone habitat was acceptable. In addition, the Science Panel agreed that using the previously scored projects as guidelines for an acreage-based goal was perfectly acceptable.

# 6 MARINE NEARSHORE SUBWATERSHED

KC staff submitted 160 new Marine Nearshore (NS) Subwatershed projects for Science Panel evaluation. Although numerically daunting, the majority of projects fell into the following nine categories:

- Piling removals (65 actions)
- Combined piling and fill removals (six actions)
- Combined piling and groin removals (two actions)
- Combined piling and bulkhead removals (12 actions)
- Combined piling removals and revegetation (two actions)
- Bulkhead removals (28 actions)
- Sub-estuary restoration (10 actions)
- Intertidal fill or debris removal (24 actions)
- Invasive species removal (four actions)
- Groin removal (seven actions)

In several instances, the Science Panel was able to streamline the evaluation process by grouping projects within these categories and applying the ranking criteria in consistent ways. For example, of the 65 piling removals, a total of 40 actions were for removal of less than 20 piling, 16 were for the removal of 20 to 50 piling, and nine were for greater than 50 piling. In applying the rating criteria to these projects, the following conventions were observed:

- All piling removals were assigned a certainty score of 2, except for the projects located in the Elliott Bay vicinity, which were assigned a score of 3. This higher score was assigned because the habitat would more likely be used by Green-Duwamish River chinook salmon entering the marine nearshore.
- All piling removals that involved the removal of less than 20 piling were assigned a magnitude score of 1; those greater than 20 a rating of 2.

For projects that were not as readily grouped (i.e., bulkhead removals, restoration of sub estuaries) projects were systematically evaluated on a case-by-case basis.

The results of rating the NS Subwatershed actions by project type are summarized in Table 3. The summary of individual project ratings is provided in Table 4. The distributions of scores are summarized in Figure 1, and scores by individual criteria are shown in Appendix A. As a

general rule, the projects that contemplated the removal of intertidal fill were assigned the highest score, and those involving removal of small numbers of piling received the lowest score. Of note, the projects that involved the removal of groins presented somewhat of a dilemma to the Science Panel. Their removal would clearly contribute to re-establishing a more normative sediment transport process; however, their removal would eliminate sandy beach habitat that is typically well-used by juvenile chinook and other species of salmon. Rather than attempt to resolve these apparently conflicting outcomes, the Science Panel elected to provide this narrative explanation of pros and cons, and not provide a potentially confusing numerical score. Moreover, because groins will typically capture a finite amount of sediment, and then pass additional sediment down the drift cell, they are generally not considered to have a major impact in the NS Subwatershed. Therefore, groin removal is not considered a high priority habitat action unless constructed with an extremely high profile above the substrate.

A bulkhead removal project (NS146 and NS147) and a sub-estuary restoration project (NS38) scored the highest for potential benefit. These projects, as well as four intertidal fill removal projects (NS75, NS77, NS89, and NS173), scored on par with priority actions identified in the first round of evaluation conducted in November 2004 (Anchor Environmental and Grette Associates 2005).

**Table 3**
**Science Panel Score Summary by Project Type for Additional Marine Nearshore Subwatershed Projects**

| Type of Project | Number of Projects Presented | Number of Projects Rated | Range of Scores Based on Composite Productivity | Range of Scores Based on LHT-specific Productivity |
|---|---|---|---|---|
| **Remove Piling** | | | | |
| Less than 20 piling | 40 | 40 | 34 to 34 | 34 to 34 |
| 20 to 50 piling | 16 | 16 | 38 to 60 | 44 to 69 |
| Greater than 50 piling | 9 | 9 | 38 to 60 | 44 to 69 |
| Remove piling plus fill | 6 | 6 | 34 to 60 | 34 to 69 |
| Remove piling plus groins | 2 | 0 | 0 to 0 | 0 to 0 |
| Remove piling plus bulkheads | 12 | 12 | 66 to 66 | 84 to 84 |
| Remove piling and revegetate | 2 | 2 | 38 to 38 | 44 to 50 |
| Remove bulkheads | 28 | 28 | 15 to 100 | 15 to 132 |
| Restore sub-estuaries | 10 | 10 | 16 to 100 | 16 to 132 |
| Remove intertidal fill or debris | 24 | 22 | 6 to 88 | 6 to 112 |
| Remove invasive species | 4 | 4 | 15 to 15 | 15 to 15 |
| Remove groins | 7 | 0 | 0 to 0 | 0 to 0 |

**Table 4**
**Marine Nearshore Subwatershed Added Projects Science Panel Score Summary**

| Action ID | Action Description | Composite Productivity | LHT-specific Productivity |
|---|---|---|---|
| **Piling Removal—Less than 20 Piling** | | | |
| NS47 | remove 12 creosote piling | 34 | 34 |
| NS48 | remove 16 creosote piling | 34 | 34 |
| NS58 | remove 8 creosote piling | 34 | 34 |
| NS59 | remove 9 creosote piling | 34 | 34 |
| NS63 | remove 6 creosote piling | 34 | 34 |
| NS68 | remove 12 creosote piling | 34 | 34 |
| NS69 | remove concrete piling | 34 | 34 |
| NS72 | remove 5 creosote piling | 34 | 34 |
| NS73 | remove 16 creosote piling | 34 | 34 |
| NS79 | remove 5 creosote piling | 34 | 34 |
| NS80 | remove 6 creosote piling | 34 | 34 |
| NS90 | remove approximately 10 creosote piling | 34 | 34 |
| NS97 | remove 2 creosote piling | 34 | 34 |
| NS102 | remove 12 creosote piling | 34 | 34 |
| NS104 | remove 2 creosote piling | 34 | 34 |
| NS107 | remove 2 creosote piling | 34 | 34 |
| NS109 | remove 2 creosote piling | 34 | 34 |
| NS113 | remove 10 creosote piling | 34 | 34 |
| NS121 | remove 9 creosote piling | 34 | 34 |
| NS122 | remove 6 creosote piling | 34 | 34 |
| NS123 | remove 3 creosote piling | 34 | 34 |
| NS124 | remove 3 creosote piling | 34 | 34 |
| NS125 | remove 16 creosote piling | 34 | 34 |
| NS127 | remove 2 creosote piling | 34 | 34 |
| NS129 | remove 10 creosote piling and rubble | 34 | 34 |
| NS130 | remove 12 creosote piling | 34 | 34 |
| NS132 | remove 4 creosote piling | 34 | 34 |
| NS133 | remove 15 creosote piling | 34 | 34 |
| NS134 | remove 2 creosote piling | 34 | 34 |
| NS136 | remove 15 creosote piling | 34 | 34 |
| NS137 | remove 12 creosote piling | 34 | 34 |
| NS139 | remove 18 creosote piling | 34 | 34 |
| NS148 | remove 2 creosote piling | 34 | 34 |
| NS156 | remove 16 creosote piling | 34 | 34 |
| NS157 | remove 16 creosote piling | 34 | 34 |
| NS160 | remove 3 creosote piling | 34 | 34 |
| NS161 | remove 12 creosote piling | 34 | 34 |
| NS163 | remove 15 creosote piling and dock | 34 | 34 |
| NS169 | remove 3 creosote piling | 34 | 34 |

**Table 4**
**Marine Nearshore Subwatershed Added Projects Science Panel Score Summary**

| Action ID | Action Description | Composite Productivity | LHT-specific Productivity |
|---|---|---|---|
| NS15A | remove 15 creosote piling | 34 | 34 |
| **Piling Removal—20 to 50 Piling** | | | |
| NS28 | remove 30 creosote piling | 60 | 69 |
| NS31 | remove 20 creosote piling | 60 | 69 |
| NS32 | remove 20 creosote piling | 38 | 44 |
| NS82 | remove 30 creosote piling | 38 | 44 |
| NS87 | remove 32 creosote piling | 38 | 44 |
| NS88 | remove 20 creosote piling | 38 | 44 |
| NS93-94 | remove derelict piling | 38 | 44 |
| NS92 | remove 26 creosote piling and pier remnants | 60 | 69 |
| NS105 | remove 20 creosote piling | 38 | 44 |
| NS106 | remove 25 creosote piling | 38 | 44 |
| NS110 | remove derelict wharf piling | 38 | 44 |
| NS119 | remove 25 creosote piling | 38 | 44 |
| NS138 | remove 35 creosote piling | 38 | 44 |
| NS153 | remove 12 creosote piling | 38 | 44 |
| NS174 | remove 5 creosote piling and derelict dock | 38 | 44 |
| NS8A | remove 20 creosote piling from intertidal zone | 38 | 44 |
| **Piling Removal—Greater than 50 Piling** | | | |
| NS67 | remove approximately 100 creosote piling from lower intertidal | 60 | 69 |
| NS74 | remove 5 dolphins, 80 creosote piling, and concrete rubble | 60 | 69 |
| NS85 | remove creosote piling and failed pier | 38 | 44 |
| NS86 | remove 50 creosote piling | 38 | 44 |
| NS98 | remove 50 creosote piling | 42 | 48 |
| NS103 | remove 70 creosote piling | 38 | 44 |
| NS135 | remove derelict pier and 50 creosote piling | 38 | 44 |
| NS176 | remove 70 creosote piling | 38 | 44 |
| NS17A | remove approximately 50 creosote piling and failed creosote soldier pile bulkhead | 38 | 44 |
| **Combined Piling and Fill Removal** | | | |
| NS29 | remove 35 creosote piling and boulders | 60 | 69 |
| NS51 | remove 20 creosote piling and riprap | 38 | 44 |
| NS55 | remove 8 creosote piling and 2 derelict structures | 38 | 44 |
| NS118 | remove 4 concrete structures and 10 creosote piling | 34 | 34 |
| NS172 | remove 3 creosote piling and intertidal rockery | 60 | 69 |

**Table 4**
**Marine Nearshore Subwatershed Added Projects Science Panel Score Summary**

| Action ID | Action Description | Composite Productivity | LHT-specific Productivity |
|---|---|---|---|
| NS 10A | remove decaying barge and two creosote dolphins from intertidal | 38 | 38 |
| **Combined Piling and Groin Removal** | | | |
| NS35 | remove creosote piling and groins | | |
| NS37 | remove 15 creosote piling and groins | | |
| **Combined Piling and Bulkhead Removal** | | | |
| NS46 | remove 30 creosote piling and failed creosote bulkhead | 66 | 84 |
| NS49 | remove creosote piling and failed bulkhead | 66 | 84 |
| NS56 | remove 2 creosote piling and failed bulkhead | 66 | 84 |
| NS64 | remove 10 creosote piling and failed bulkhead | 66 | 84 |
| NS65 | remove 20 creosote piling and failed bulkhead | 66 | 84 |
| NS99 | remove creosote piling, failed bulkhead, derelict house | 66 | 84 |
| NS151-152 | remove 8 creosote piling and bulkhead | 66 | 84 |
| NS154 | remove 12 creosote piling and bulkhead remnants | 66 | 84 |
| NS155 | remove 8 creosote piling and bulkhead remnants | 66 | 84 |
| NS179 | remove 4 creosote piling and failed bulkhead | 66 | 84 |
| NS53 | remove 11 creosote piling and failed bulkhead | 66 | 84 |
| NS54 | remove 16 creosote piling and bulkhead | 66 | 84 |
| **Combined Piling Removal and Revegetation** | | | |
| NS84 | remove creosote piling and revegetate | 38 | 44 |
| NS91 | remove creosote piling, dolphins, and pier; revegetate | 38 | 50 |
| **Bulkhead Removal** | | | |
| NS25 | remove abandoned cabin and associated debris | 66 | 84 |
| NS26 | remove failed bulkhead and debris | 46 | 62 |
| NS30 | remove derelict bulkhead and groin | 66 | 84 |
| NS34 | remove creosote bulkhead | 15 | 15 |
| NS39 | remove failing bulkhead and debris | 42 | 54 |
| NS41 | remove failing bulkhead | 38 | 50 |
| NS42 | remove failing bulkhead | 38 | 50 |
| NS43 | remove failing bulkhead | 38 | 50 |
| NS44 | remove failing bulkhead | 38 | 50 |
| NS45 | remove unnecessary bulkhead | 20 | 28 |
| NS50 | remove failing bulkhead | 38 | 50 |
| NS57 | remove failing creosote bulkhead | 38 | 50 |
| NS61 | remove creosote bulkhead | 63 | 81 |

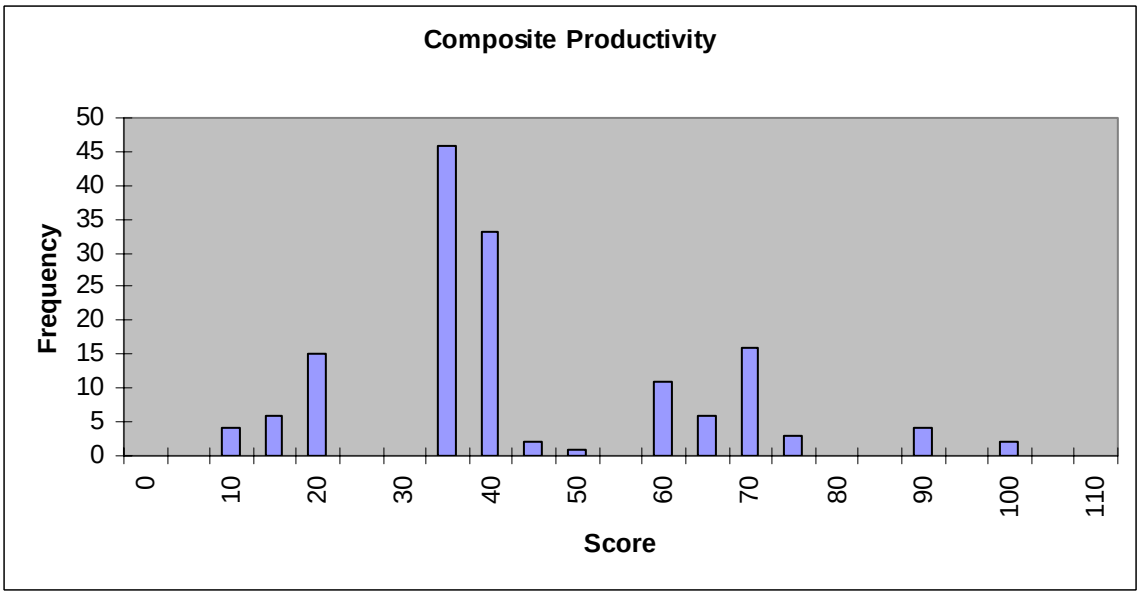
**Table 4**
**Marine Nearshore Subwatershed Added Projects Science Panel Score Summary**

| Action ID | Action Description | Composite Productivity | LHT-specific Productivity |
|---|---|---|---|
| NS62 | remove failing bulkhead | 63 | 81 |
| NS112 | remove small groins and bulkhead | 57 | 69 |
| NS117 | remove failing bulkhead and debris | 38 | 50 |
| NS141 | remove bulkhead materials from backshore | 18 | 18 |
| NS142-143 | remove bulkhead | 38 | 50 |
| NS144-145 | remove telephone poles and bulkhead | 17 | 17 |
| NS146-147 | remove failing bulkhead and creosote piling | 100 | 132 |
| NS149-150 | remove bulkhead and riprap | 18 | 24 |
| NS162 | remove concrete rubble wall | 18 | 24 |
| NS178 | remove remnants of failed bulkhead | 18 | 24 |
| NS181 | remove bulkheads | 72 | 96 |
| NS183 | remove bulkhead | 72 | 96 |
| NS184 | remove gabion wall | 17 | 17 |
| NS1A | remove fill, bulkhead, and pavement over intertidal | 34 | 34 |
| NS11A | remove creosote soldier pile bulkhead from intertidal | 34 | 42 |
| **Restoration of Sub-estuaries** | | | |
| NS33 | enhance mouth of Fauntleroy Creek | 16 | 16 |
| NS38 | enhance sub-estuary | 100 | 132 |
| NS40 | restore sub-estuary | 63 | 81 |
| NS66 | restore sub-estuary | 63 | 81 |
| NS111 | enhance sub-estuary | 16 | 16 |
| NS126 | remove creosote logs from marsh | 16 | 16 |
| NS158-159 | restore sub-estuary | 60 | 78 |
| NS166-168 | restore sub-estuary | 60 | 78 |
| NS180 | | 69 | 93 |
| NS16A | remove riprap, enhance riparian vegetation, and add LWD | 69 | 93 |
| **Removal of Intertidal Fill or Debris** | | | |
| NS27 | remove lumber and debris | 72 | 96 |
| NS52 | remove riprap | 38 | 50 |
| NS75 | remove creosote bulkhead, fill, and rockery | 88 | 112 |
| NS77 | remove fill and creosote bulkhead | 88 | 112 |
| NS81 | remove downed shed on backshore | 6 | 6 |
| NS89 | remove large concrete block | 88 | 112 |
| NS96 | remove creosote LWD across intertidal | 15 | 15 |
| NS100 | remove creosote dock and barge | 34 | 42 |
| NS114 | remove concrete rubble | 8 | 8 |
| NS115 | remove creosote log secured to beach | 8 | 8 |
| NS120 | remove derelict barge/cannery | 63 | 81 |

**Table 4**
**Marine Nearshore Subwatershed Added Projects Science Panel Score Summary**

| Action ID | Action Description | Composite Productivity | LHT-specific Productivity |
|---|---|---|---|
| NS128 | remove creosote wood bulkhead | 57 | 69 |
| NS131 | remove ecology blocks | 34 | 42 |
| NS140 | remove house remnants | 16 | 20 |
| NS164-165 | remove boulders | 34 | 42 |
| NS167[a] | remove dock stored on intertidal | | |
| NS171 | remove steel structure from intertidal zone | 8 | 8 |
| NS173 | remove creosote pier and derelict structures | 88 | 112 |
| NS185 | retrofit stormwater pipe and remove fill | 63 | 81 |
| NS2A | remove concrete footings of a derelict boat ramp | 16 | 16 |
| NS4A | remove concrete rubble in intertidal | 16 | 16 |
| NS6A | remove creosote logs and 12 piling east of stream mouth | 16 | 16 |
| NS9A | remove heavily creosoted dolphin that has washed ashore | 16 | 16 |
| NS13A-14A[a] | remove tires buried in intertidal zone | | |
| **Removal of Invasive Species** | | | |
| NS71 | eradicate invasive species | 15 | 15 |
| NS170 | eradicate invasive species | 15 | 15 |
| NS5A | eradicate Japanese knotweed from Poverty Bay Park | 15 | 15 |
| NS7A | eradicate Japanese knotweed from backshore | 15 | 15 |
| **Removal of Groins[b]** | | | |
| NS60 | remove creosote groin | | |
| NS70 | remove concrete groins | | |
| NS83 | | | |
| NS95 | remove wood groin | | |
| NS175 | remove groins | | |
| NS177 | remove wooden groin remnants | | |
| NS3A | remove boulders and concrete acting as groin | | |

Scoring Notes:
[a] Inadequate information
[b] Not rated—see text



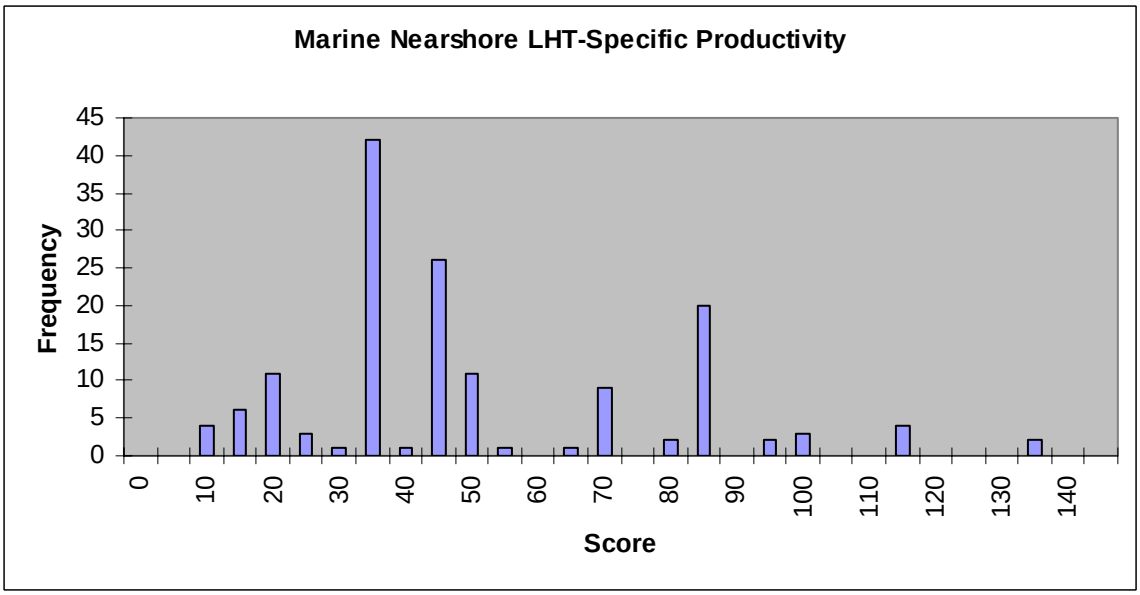




**Figure 1**
Frequency Distribution of Ranking Scores
for the Marine Nearshore Subwatershed

ANCHOR ENVIRONMENTAL, L.L.C.

KC staff also requested that the Science Panel evaluate two additional WRIA 9 nearshore property acquisitions. As shown in Table 5, the Foss Property (located in the Normandy Park area) was rated at 10 points and the Perkins Property (located near Smith Cove) was rated at 6 points. These scores were consistent with Tier 1 and Tier 2 acquisitions, respectively, as identified in the first round of evaluations conducted in November 2004 (Anchor Environmental and Grette Associates 2005).

**Table 5**
**Land Acquisition Priorities**

| Project Name | Feeder Bluff in Two Drift Cells | Feeder Bluff in Single Drift Cell | Forage Fish Spawning Habitat | Pocket Estuary | Marsh | Marine Riparian Vegetation | Sum of Points Assigned |
|---|---|---|---|---|---|---|---|
| Foss Property | 0 | 5 | 4 | 0 | 0 | 1 | 10 |
| Perkins Property | 0 | 5 | 0 | 0 | 0 | 1 | 6 |

In rating and assigning scores to all of these NS Subwatershed projects, the Science Panel observed that although all of these projects were important steps toward returning Puget Sound to a more normatively functioning ecosystem, they are in general very incremental in nature and better thought of in terms of the ecosystem health than as specific measures for Green-Duwamish River chinook salmon. Although a few projects were rated relatively high, the vast majority were clustered in the mid-to-low range of the scoring spectrum. This being the case, the Science Panel recommends that an emphasis be placed on opportunity when considering their implementation.

# 7 SUMMARY AND CONCLUSIONS

This evaluation of the potential benefits of the proposed individual actions was conducted in the same manner as the initial suite of projects reviewed in November 2004 (Anchor Environmental and Grette Associates 2005). Therefore, comparisons of individual action merits are possible between those considered in the first round and those considered here.

In both the MG Subwatershed and the LG Subwatershed, one of the two projects presented (MG-NC1 and LG-Composite, respectively) ranked high enough to be on par with those projects identified as the highest priorities in the first round. In the NS Subwatershed, many of the new projects presented were judged to provide incremental improvement to the overall ecosystem health and aesthetic; however, in terms of individual action benefit for chinook salmon, the Science Panel ratings were relatively low. In general, the projects that proposed the removal of intertidal fill ranked the highest, and those involving removal of small numbers of piling received the lowest score. A bulkhead removal project (NS146 and NS147), a sub-estuary restoration project (NS38), and four intertidal fill removal projects (NS75, NS77, NS89, and NS173) scored on par with priority actions identified in the first round of evaluation conducted in November 2004 (Anchor Environmental and Grette Associates 2005).

In conclusion, this evaluation of a second group of proposed actions identified several new projects that would be expected to provide substantial benefits for salmon.

# 8 REFERENCES

Anchor Environmental and Grette Associates. 2005. A Strategy for Prioritizing Potential WRIA 9 Habitat Actions. Report for the WRIA 9 Forum of local governments. Anchor Environmental, L.L.C., 1423 Third Avenue, Suite 300, Seattle, WA 98101.

# APPENDIX A
# SCORES BY INDIVIDUAL CRITERIA

| Action ID[1] | Action Description | Certainty | P or SS | Magnitude High Productivity LHT | Magnitude Low Productivity LHT | Life Stages | Process, Structure, Function | Links to CHS | Scale | Composite Productivity (C1) *(weighted B)* | LHT-specific Productivity *(weighted B)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Piling Removal—Less than 20 Piling** | | | | | | | | | | | |
| NS47 | remove 12 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS48 | remove 16 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS58 | remove 8 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS59 | remove 9 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS63 | remove 6 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS68 | remove 12 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS69 | remove concrete piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS72 | remove 5 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS73 | remove 16 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS79 | remove 5 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS80 | remove 6 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS90 | remove approximately 10 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS97 | remove 2 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS102 | remove 12 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS104 | remove 2 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS107 | remove 2 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS109 | remove 2 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS113 | remove 10 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS121 | remove 9 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS122 | remove 6 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS123 | remove 3 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS124 | remove 3 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS125 | remove 16 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS127 | remove 2 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS129 | remove 10 creosote piling and rubble | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS130 | remove 12 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS132 | remove 4 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS133 | remove 15 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS134 | remove 2 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS136 | remove 15 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS137 | remove 12 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS139 | remove 18 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS148 | remove 2 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS156 | remove 16 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS157 | remove 16 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS160 | remove 3 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS161 | remove 12 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS163 | remove 15 creosote piling and dock | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS169 | remove 3 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS15A | remove 15 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| **Piling Removal—20 to 50 Piling** | | | | | | | | | | | |
| NS28 | remove 30 creosote piling | 3 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 60 | 69 |
| NS31 | remove 20 creosote piling | 3 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 60 | 69 |
| NS32 | remove 20 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS82 | remove 30 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS87 | remove 32 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS88 | remove 20 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS93-94 | remove derelict piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS92 | remove 26 creosote piling and pier remnants | 3 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 60 | 69 |
| NS105 | remove 20 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS106 | remove 25 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS110 | remove derelict wharf piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS119 | remove 25 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS138 | remove 35 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS153 | remove 12 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS174 | remove 5 creosote piling and derelict dock | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS8A | remove 20 creosote piling from intertidal zone | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| **Piling Removal—Greater than 50 Piling** | | | | | | | | | | | |
| NS67 | remove approximately 100 creosoted piling from lower intertidal | 3 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 60 | 69 |
| NS74 | remove 5 dolphins, 80 creosote piling, and concrete rubble | 3 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 60 | 69 |

| Action ID[1] | Action Description | Certainty | P or SS | Magnitude High Productivity LHT | Magnitude Low Productivity LHT | Life Stages | Process, Structure, Function | Links to CHS | Scale | Composite Productivity (C1) *(weighted B)* | LHT-specific Productivity *(weighted B)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NS85 | remove creosote piling and failed pier | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS86 | remove 50 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS98 | remove 50 creosote piling | 2 | 3 | 1 | 2 | 2 | 4 | 5 | 2 | 42 | 48 |
| NS103 | remove 70 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS135 | remove derelict pier and 50 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS176 | remove 70 creosote piling | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS17A | remove approximately 50 creosote piling and failed creosote soldier pile bulkhead | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| **Combined Piling and Fill Removal** | | | | | | | | | | | |
| NS29 | remove 35 creosote piling and boulders | 3 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 60 | 69 |
| NS51 | remove 20 creosote piling and riprap | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS55 | remove 8 creosote piling and 2 derelict structures | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS118 | remove 4 concrete structures and 10 creosote piling | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |

| Action ID[1] | Action Description | Certainty | P or SS | Magnitude High Productivity LHT | Magnitude Low Productivity LHT | Life Stages | Process, Structure, Function | Links to CHS | Scale | Composite Productivity (C1) *(weighted B)* | LHT-specific Productivity *(weighted B)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NS172 | remove 3 creosote piling and intertidal rockery | 3 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 60 | 69 |
| NS 10A | remove decaying barge and two creosote dolphins from intertidal | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 2 | 38 | 38 |
| **Combined Piling and Groin Removal** | | | | | | | | | | | |
| NS35 | remove creosote piling and groins | | | | | | | | | | |
| NS37 | remove 15 creosote piling and groins | | | | | | | | | | |
| **Combined Piling and Bulkhead Removal** | | | | | | | | | | | |
| NS46 | remove 30 creosote piling and failed creosote bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS49 | remove creosote piling and failed bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS56 | remove 2 creosote piling and failed bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS64 | remove 10 creosote piling and failed bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS65 | remove 20 creosote piling and failed bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS99 | remove creosote piling, failed bulkhead, derelict house | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |

| Action ID[1] | Action Description | Certainty | P or SS | Magnitude High Productivity LHT | Magnitude Low Productivity LHT | Life Stages | Process, Structure, Function | Links to CHS | Scale | Composite Productivity (C1) *(weighted B)* | LHT-specific Productivity *(weighted B)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NS151-152 | remove 8 creosote piling and bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS154 | remove 12 creosote piling and bulkhead remnants | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS155 | remove 8 creosote piling and bulkhead remnants | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS179 | remove 4 creosote piling and failed bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS53 | remove 11 creosote piling and failed bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS54 | remove 16 creosote piling and bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| **Combined Piling Removal and Revegetation** | | | | | | | | | | | |
| NS84 | remove creosote piling and revegetate | 2 | 3 | 1 | 2 | 2 | 2 | 5 | 2 | 38 | 44 |
| NS91 | remove creosote piling, dolphins, and pier; revegetate | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| **Bulkhead Removal** | | | | | | | | | | | |
| NS25 | remove abandoned cabin and associated debris | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS26 | remove failed bulkhead and debris | 2 | 3 | 1 | 3 | 2 | 4 | 5 | 3 | 46 | 62 |
| NS30 | remove derelict bulkhead and groin | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 66 | 84 |
| NS34 | remove creosote bulkhead | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 1 | 15 | 15 |
| NS39 | remove failing bulkhead and debris | 2 | 3 | 1 | 3 | 2 | 4 | 5 | 2 | 42 | 54 |
| NS41 | remove failing bulkhead | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS42 | remove failing bulkhead | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS43 | remove failing bulkhead | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS44 | remove failing bulkhead | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS45 | remove unnecessary bulkhead | 1 | 3 | 1 | 3 | 2 | 2 | 5 | 3 | 20 | 28 |
| NS50 | remove failing bulkhead | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS57 | remove failing creosote bulkhead | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS61 | remove creosote bulkhead | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 63 | 81 |
| NS62 | remove failing bulkhead | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 63 | 81 |
| NS112 | remove small groins and bulkhead | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 1 | 57 | 69 |

| Action ID[1] | Action Description | Certainty | P or SS | Magnitude High Productivity LHT | Magnitude Low Productivity LHT | Life Stages | Process, Structure, Function | Links to CHS | Scale | Composite Productivity (C1) *(weighted B)* | LHT-specific Productivity *(weighted B)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NS117 | remove failing bulkhead and debris | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS141 | remove bulkhead materials from backshore | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 2 | 18 | 18 |
| NS142-143 | remove bulkhead | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS144-145 | remove telephone poles and bulkhead | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 2 | 17 | 17 |
| NS146-147 | remove failing bulkhead and creosote piling | 4 | 3 | 1 | 3 | 2 | 4 | 5 | 3 | 100 | 132 |
| NS149-150 | remove bulkhead and riprap | 1 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 18 | 24 |
| NS162 | remove concrete rubble wall | 1 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 18 | 24 |
| NS178 | remove remnants of failed bulkhead | 1 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 18 | 24 |
| NS181 | remove bulkheads | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 3 | 72 | 96 |
| NS183 | remove bulkhead | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 3 | 72 | 96 |
| NS184 | remove gabion wall | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 2 | 17 | 17 |
| NS1A | remove fill, bulkhead, and pavement over intertidal | 2 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 34 | 34 |
| NS11A | remove creosote soldier pile bulkhead from intertidal | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 1 | 34 | 42 |
| **Restoration of Sub-estuaries** | | | | | | | | | | | |
| NS33 | enhance mouth of Fauntleroy Creek | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 16 | 16 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS38 | enhance sub-estuary | 4 | 3 | 1 | 3 | 2 | 4 | 5 | 3 | 100 | 132 |
| NS40 | restore sub-estuary | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 63 | 81 |
| NS66 | restore sub-estuary | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 63 | 81 |
| NS111 | enhance sub-estuary | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 16 | 16 |
| NS126 | remove creosote logs from marsh | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 16 | 16 |
| NS158-159 | restore sub-estuary | 3 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 60 | 78 |
| NS166-168 | restore sub-estuary | 3 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 60 | 78 |
| NS180 | | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 3 | 69 | 93 |
| NS16A | remove riprap, enhance riparian vegetation, and add LWD | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 3 | 69 | 93 |
| **Removal of Intertidal Fill or Debris** | | | | | | | | | | | |
| NS27 | remove lumber and debris | 3 | 3 | 1 | 3 | 2 | 4 | 5 | 3 | 72 | 96 |
| NS52 | remove riprap | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 2 | 38 | 50 |
| NS75 | remove creosote bulkhead, fill, and rockery | 4 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 88 | 112 |
| NS77 | remove fill and creosote bulkhead | 4 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 88 | 112 |
| NS81 | remove downed shed on backshore | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 6 | 6 |
| NS89 | remove large concrete block | 4 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 88 | 112 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS96 | remove creosote LWD across intertidal | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 1 | 15 | 15 |
| NS100 | remove creosote dock and barge | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 1 | 34 | 42 |
| NS114 | remove concrete rubble | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 8 | 8 |
| NS115 | remove creosote log secured to beach | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 8 | 8 |
| NS120 | remove derelict barge/cannery | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 63 | 81 |
| NS128 | remove creosote wood bulkhead | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 1 | 57 | 69 |
| NS131 | remove ecology blocks | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 1 | 34 | 42 |
| NS140 | remove house remnants | 1 | 3 | 1 | 3 | 2 | 2 | 5 | 1 | 16 | 20 |
| NS164-165 | remove boulders | 2 | 3 | 1 | 3 | 2 | 2 | 5 | 1 | 34 | 42 |
| NS167[2] | remove dock stored on intertidal | | | | | | | | | | |
| NS171 | remove steel structure from intertidal zone | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 8 | 8 |
| NS173 | remove creosote pier and derelict structures | 4 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 88 | 112 |
| NS185 | retrofit stormwater pipe and remove fill | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 2 | 63 | 81 |
| NS2A | remove concrete footings of a derelict boat ramp | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 16 | 16 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS4A | remove concrete rubble in intertidal | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 16 | 16 |
| NS6A | remove creosote logs and 12 piling east of stream mouth | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 16 | 16 |
| NS9A | remove heavily creosoted dolphin that has washed ashore | 1 | 3 | 1 | 1 | 2 | 2 | 5 | 1 | 16 | 16 |
| NS13A-14A[2] | remove tires buried in intertidal zone | | | | | | | | | | |
| **Removal of Invasive Species** | | | | | | | | | | | |
| NS71 | eradicate invasive species | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 1 | 15 | 15 |
| NS170 | eradicate invasive species | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 1 | 15 | 15 |
| NS5A | eradicate Japanese knotweed from Poverty Bay Park | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 1 | 15 | 15 |
| NS7A | eradicate Japanese knotweed from backshore | 1 | 3 | 1 | 1 | 2 | 1 | 5 | 1 | 15 | 15 |
| **Removal of Groins** | | | | | | | | | | | |
| NS60[3] | remove creosote groin | | | | | | | | | | |
| NS70[3] | remove concrete groins | | | | | | | | | | |
| NS83[3] | | | | | | | | | | | |
| NS95[3] | remove wood groin | | | | | | | | | | |
| NS175[3] | remove groins | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| NS177[3] | remove wooden groin remnants | | | | | | | | | | |
| NS3A[3] | remove boulders and concrete acting as groin | | | | | | | | | | |
| LG | artificial rearing channel in LG | 2 | 4 | 3 | 4 | 2 | 3 | 5 | 4 | 70 | 80 |
| LG Composite | LG 38, 40, 41; and ERP | 4 | 4 | 2 | 3 | 3 | 3 | 5 | 5 | 144 | 168 |
| NC1[1] | riparian restoration | 3 | 3 | 4 | 2 | 5 | 5 | 5 | 5 | 150 | 114 |
| NC2 | LDS floodplain restoration | 3 | 1 | 1 | 1 | 5 | 1 | 5 | 2 | 60 | 60 |

Notes:
1. NS = marine nearshore; LG = lower Green; NC = Newaukum Creek in Middle Green
2. Inadequate information
3. Not rated--see text