

7.0 REMEDIAL ACTION ALTERNATIVES

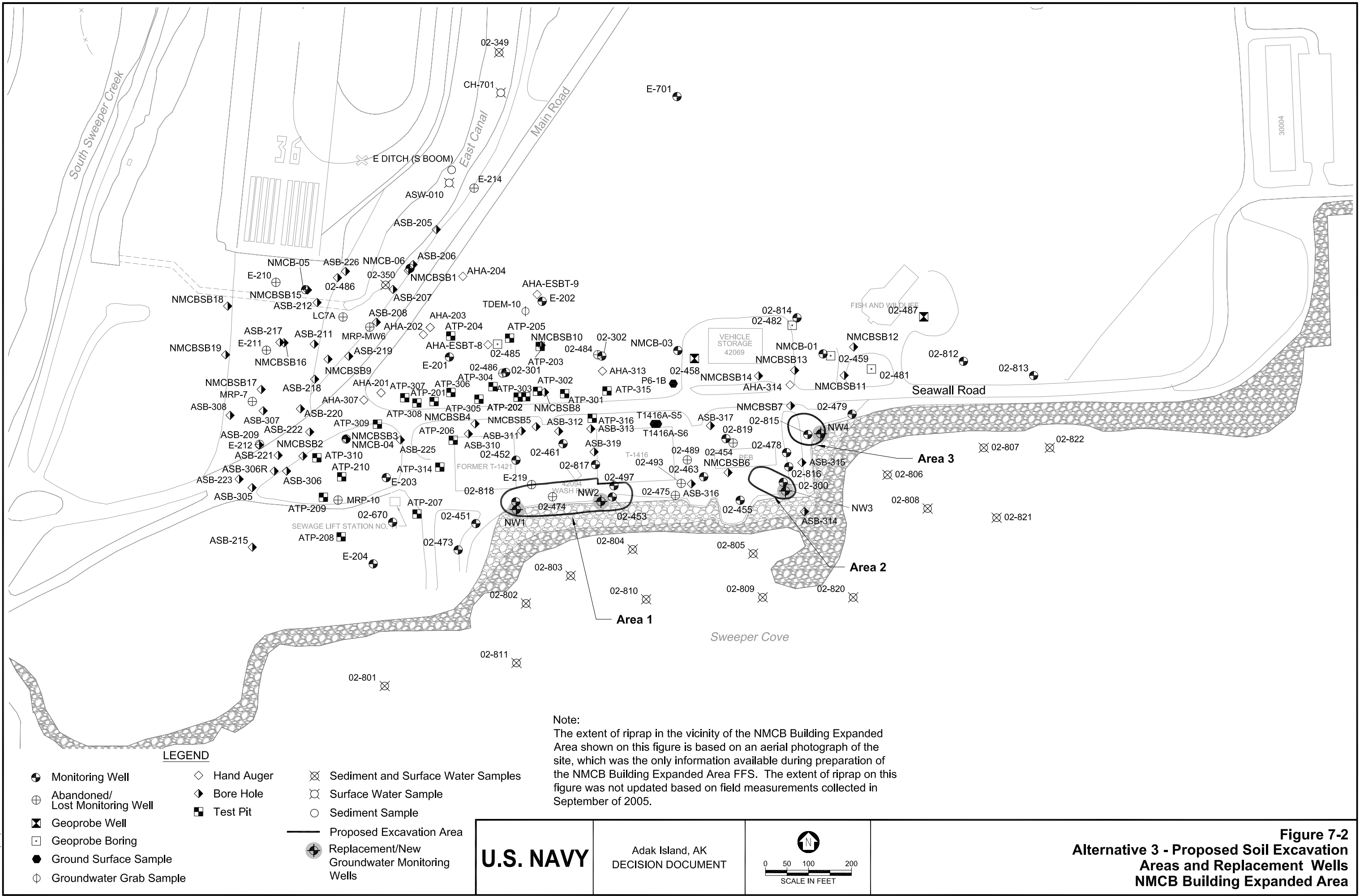
Remedial technology types and process options were identified and screened first for the downtown sites as a group, because FFSs will be prepared for four downtown Adak petroleum sites (NMCB Building Expanded Area, South of Runway, SWMU 17, and SWMU 62) that have similar characteristics. Then, the technology types and process options determined to be applicable to the downtown petroleum sites (i.e., the “short list”) were evaluated using site-specific information to identify those applicable to the NMCB Building Expanded Area. This evaluation was conducted with respect to protectiveness, ability to meet cleanup levels, and implementability, which are the three criteria identified in Alaska DEC guidance (Alaska DEC 1999a). The technologies and process options that passed the screening steps were combined to form candidate remedial alternatives for the NMCB Building Expanded Area. These candidate remedial alternatives represent the most effective combination of actions for meeting the RAOs. A conceptual design for each alternative was developed and used to estimate capital, operation and maintenance (O&M), and present worth costs for each alternative.

Brief descriptions of the candidate remedial alternatives, including costs, are as follows:

- **Alternative 1 – No Action:** No action or monitoring would be implemented with this alternative. Institutional controls (equitable servitude restrictions), as described in the ICMP, are currently in place for the site. Equitable servitude restrictions applicable to this site include restrictions on land development (i.e., residential land development would be prohibited), the downtown groundwater use prohibition, and the soil excavation notification requirements. This alternative would rely solely on natural attenuation to reduce concentrations of petroleum in the soil and groundwater. However, because monitoring is not included as part of this alternative, there would be no way to verify whether the cleanup levels and RAOs had been achieved. This alternative was retained as the baseline alternative with which the other alternatives were compared.
Cost: \$0
- **Alternative 2 – Institutional Controls, Free-Product Recovery, and MNA:** This alternative consists of institutional controls that are already in place for soil and groundwater as described in the ICMP, installation of three new wells for free-product recovery and groundwater monitoring, free-product recovery from new and existing wells, and MNA for groundwater (see Figure 7-1). Free product would be removed from seven wells (three new and four existing) using passive skimmers, petroleum concentrations in groundwater would be reduced through natural attenuation, and institutional controls would be used to protect human

health and the environment as long as groundwater concentrations were greater than groundwater cleanup levels.

- **Cost:** Capital - \$210,000, Annual O&M for recovery - \$180,000, Annual O&M for MNA - \$80,000, Total Present Worth Cost - \$1.9 million
- **Alternative 3—Hot Spot Soil Excavation and MNA:** This alternative consists of excavation of 8,300 cy of soil with the highest concentrations of petroleum hydrocarbons (see Figure 7-2). The excavated soil would be treated using thermal desorption to meet soil ACLs, and the treated soil would be replaced in the excavation area. Petroleum concentrations in groundwater would be reduced through MNA; and institutional controls, which are currently in place as described in the ICMP, would be used to protect human health and the environment as long as groundwater concentrations were greater than the groundwater cleanup levels.
Cost: Capital - \$8.5 million, Annual O&M for MNA - \$76,000, Total Present Worth Cost - \$9.5 million
- **Alternative 4—Hot Spot Soil Excavation, In Situ Soil Treatment, and MNA:** This alternative consists of excavation and thermal treatment of 8,300 cy of soil with the highest concentrations of petroleum hydrocarbons. In addition, this alternative includes biological treatment of soil that exceeds the ACLs in areas outside the excavation areas (see Figure 7-3). Petroleum concentrations in groundwater would be reduced through MNA and institutional controls, which are currently in place as described in the ICMP, would be used to protect human health and the environment as long as groundwater concentrations were greater than the groundwater cleanup levels.
Cost: Capital - \$14 million, Annual O&M for in situ treatment - \$140,000, Annual O&M for MNA - \$76,000, Total Present Worth Cost - \$15 million



FILENAME: T:\ADAK\IDQ\Sub-Tasks\DO 3\NMCB DEC DOC\Fig 7-3 ALT 4.dwg
EDIT DATE: 03/17/06 AI: 10:47

