

**IMMEDIATE RESPONSE ACTION
STATUS REPORT**

**BARGE B120 SPILL
BUZZARDS BAY, MASSACHUSETTS
RTN 4-17786**

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March 24, 2006

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IMMEDIATE RESPONSE ACTION STATUS REPORT

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1.0 INTRODUCTION

GeoInsight, Inc. (GeoInsight) prepared this Immediate Response Action (IRA) Status Report on behalf of Bouchard Transportation Company, Inc. (Bouchard or RP), and under the direction of the Licensed Site Professional (LSP)-of-Record, Richard J. Wozmak, for the release of oil from the Bouchard Barge #120 (B120) into Buzzards Bay, Massachusetts. The response actions described in this report were conducted pursuant to the September 15, 2003 IRA Plan (the “IRA Plan”) prepared by GeoInsight. The IRA Plan was prepared in response to a September 8, 2003 *Request for IRA with Interim Deadline* letter from the Massachusetts Department of Environmental Protection (MADEP). Several modifications were made to the September 15, 2003 IRA Plan in consultation with MADEP, the National Oceanic & Atmospheric Administration (NOAA), and the U.S. Coast Guard (USCG). These modifications to the IRA Plan were summarized in a September 29, 2003 Errata Sheet. Additional modifications to the IRA Plan were proposed to conduct cleanup activities at selected shoreline segments in 2004 and 2005. This status report covers IRA activities conducted during the period from July 1, 2005 until December 31, 2005. Response actions conducted after December 31, 2005 will be summarized in subsequent status reports.

The activities conducted pursuant to the IRA Plan supplement the activities conducted in accordance with the May 23, 2003 Immediate Response Action: Treatment and Completion Guidelines Plan (IRATCGP) that was developed for this incident by the Unified Command. The Unified Command was comprised of representatives from the USCG, MADEP, and the RP. Field activities conducted as part of the IRATCGP were completed as of September 3, 2003. The IRA activities bridge the transition period from the end of the IRATCGP activities to the

performance of post-IRA response actions conducted under the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000 and the Oil Pollution Act of 1990 (OPA 1990).

As part of response actions conducted under the MCP, a Phase I Initial Site Investigation (Phase I) and Conceptual Site Model (CSM), Tier Classification, Tier 1A Permit Application, and Phase II Conceptual Scope of Work were submitted to MADEP on May 3, 2004. The release was classified as a Tier 1A disposal site in accordance with the site scoring guidelines in the MCP. On May 21, 2004, a Partial Class A-2 Response Action Outcome (RAO) statement was submitted for a portion of the shoreline impacted by the release; specifically, the 57 shoreline segments where the maximum degree of oiling was categorized as “very light” or “light” as well as three sandy shoreline segments where the maximum degree of oiling was characterized as “moderate.” As described in the partial RAO, a condition of No Significant Risk (NSR) was achieved for these 57 segments and additional response actions were not required under the MCP. Please refer to the May 21, 2004 Partial RAO statement for specific information regarding the 57 segments included in the partial RAO.

On August 24, 2005, a Phase II Scope of Work (SOW) and Updated Conceptual Site Model (CSM) were submitted to MADEP. In response to the July 27, 2004 Decision to Grant Permit letter from MADEP, the Phase II SOW was prepared. The proposed activities were to characterize residual oil impacts at the remaining 63 segments and evaluate potential risk to human health and ecological receptors.



2.0 RELEASE BACKGROUND AND ENVIRONMENTAL SETTING

On April 27, 2003, a release of No. 6 fuel oil was reported from the B120 into Buzzards Bay, Massachusetts. The exact location where the release occurred is unknown. Winds and currents moved the oil primarily to the north, northwest, and northeast, and the oil came ashore on sections of shoreline abutting Buzzards Bay in Westport, Dartmouth, New Bedford, Fairhaven, Mattapoisett, Marion, Wareham, Bourne, and Falmouth. Isolated occurrences of tarballs/patties to the south and southeast on the Elizabeth Islands and in Rhode Island to the west also were observed, although some of these occurrences were later determined not to be related to the B120 release.

An Updated CSM was included as part of the Phase II SOW submitted to MADEP on August 24, 2005 that supplemented the initial CSM that was included as part of the May 3, 2004 Phase I and CSM Report. The Updated CSM summarized the fate and transport of the released oil, the areas where residual oil impacts may be present, and the potential exposure pathways that may potentially exist. The Updated CSM identified locations where residual oil from the B120 release could potentially be located, and human and ecological receptors associated with these exposure pathways based on pertinent literature on oil spills, updated field results, updated field data, and modeling information on the transport and fate of released oil. The Updated CSM indicated that the majority of the released oil stranded in the intertidal zone of the shoreline was removed by the initial cleanup operations. The majority of the remaining oil on the shoreline is present on exposed rock surfaces and subject to natural weathering processes.

2.1 SHORELINE IDENTIFICATION

Unified Command initially divided the oiled shorelines into 15 geographical divisions to facilitate cleanup operations. The divisions extending from the Elizabeth Islands and Cape Cod (to the east and south of the Cape Cod Canal) were labeled with an “E” prefix, and the divisions to the west of the Cape Cod Canal were labeled with a “W” prefix. The divisions were

subdivided into 149 individual shoreline segments during Shoreline Cleanup Assessment Team (SCAT) reconnaissance visits (Table 1). For example, shoreline segment W1E-04 corresponds to Crescent Beach in Mattapoisett (west of the Cape Cod Canal in geographical division 1E, segment 04). The shoreline segments are identified on Figure 1. Of the original 149 segments, 29 were subsequently confirmed to be unoiled and were not included in response actions.

Therefore, the remaining 120 segments were oiled to varying degrees and considered to be part of the “disposal site” as defined in the MCP. Of these 120 segments, a condition of No Significant Risk (NSR) was found to be present at 57 segments, and a partial Class A-2 RAO was filed for these segments. A list of the remaining 63 segments where response actions are being conducted is presented in Table 2.

2.2 SHORELINE CLASSIFICATION

Individual shoreline segments were classified based upon the shoreline composition, public use, and habitat. As described in the IRATCGP, the shoreline in the vicinity of the release area was divided into the following shoreline classifications:

Shoreline Classification	Shoreline Type
1A	Heavily utilized, public recreational sand beaches
1B	Less utilized, semi-public and private sand beaches
1C	Mixed sand and gravel, gravel (pebble to boulder) and rip rap groins (jetties)
1D	Rip rap seawalls, bulkheads, piers, docks, and pilings
1E	Rocky shorelines
1F	Salt marshes
2	Roseate tern habitat (Ram Island, Bird Island, and Penikese Island, in particular)
3	Piping plover habitat

More than one classification type may be present at a particular shoreline segment. This site-specific classification was developed using the Environmental Sensitivity Index (ESI) codes, which were developed by NOAA (1999) in response to other oil spills in the context of evaluating shoreline habitat type. This approach for shoreline classification has been widely utilized by the scientific community in assessing and responding to oil spills.

2.3 SENSITIVE RECEPTORS

Potential sensitive receptors identified in the project area include water resources (aquifers, public and private water supply wells), critical habitats, threatened and endangered species, and humans.

Review of information provided by MassGIS indicated that areas to the east and southeast of the Cape Cod Canal, as well as the Elizabeth Islands to the south, are within a Medium Yield Potentially Productive Aquifer and a United States Environmental Protection Agency (USEPA)-Designated Sole Source Aquifer. A High Yield Potentially Productive Aquifer is located near the Cape Cod Canal. Municipal public supply wells near the shoreline are located in Bourne, Falmouth, Fairhaven, Mattapoisett, and on Cuttyhunk Island (part of the Elizabeth Islands). Non-community public water supplies are located near the shoreline in Westport, Dartmouth, and Wareham.

The intertidal zone of the shoreline provides habitat for wildlife species, such as shorebirds and marine invertebrates. Information obtained from the Natural Heritage and Endangered Species Program (NHESP) indicated that several threatened or endangered species are present in certain areas of Buzzards Bay. For example, two bird species that utilize the intertidal zone of the shoreline for foraging habitat in this area include the roseate tern (*Sterna dougallii*), an endangered species under Massachusetts and Federal law, and the piping plover (*Charadrius melodus*), a threatened species under Massachusetts and Federal law. Several Buzzards Bay areas are designated as rare and critical habitats according to NHESP information. Naushon and Pasque Islands (Elizabeth Islands) are designated as areas that may contain rare wetland habitats.



Areas west of the Cape Cod Canal also may contain rare wetland habitats as well as Protected Open Spaces. An area of Critical Environmental Concern is also present near Phinney's Harbor in Bourne. Maps from MassGIS and NHESP showing sensitive receptor information were included in the May 3, 2004 Phase I report.

Buzzards Bay is comprised of various public and privately owned shoreline types, including sand beaches, mixed sand/gravel beaches and rocky shorelines. In general, public sand beaches are heavily utilized by visitors, local residents and fishermen, who are considered sensitive receptors. People use the shoreline primarily for seasonal recreational activities, such as swimming, fishing, or walking. Rocky shorelines are also used for recreational activities, but to a lesser extent.



3.0 RESPONSE ACTIONS

The objectives of the IRA Plan are to address potential Imminent Hazards, if present, and to respond to time-critical conditions that necessitate immediate response actions. These objectives were developed to meet the applicable General Provisions for Immediate Response Actions listed in 310 CMR 40.0411(1), which are to assess the release, threat of release, or site conditions and, where appropriate, contain, isolate, remove or secure a release or threat of release of oil in order to:

- (a) abate, prevent or eliminate any Imminent Hazard to health, safety, public welfare or the environment; and/or
- (b) respond to any other time-critical release, threat of release and/or site conditions.

The IRA response action strategies include:

1. Removing potentially mobile oil (oil that has the potential to mobilize and impact other areas); and
2. Addressing potential Imminent Hazards to human health, public welfare, safety, and the environment, as listed in 310 CMR 40.0321.

IRA activities conducted during this monitoring period consisted of:

1. Evaluating the potential presence of buried oil at Leisure Shores and Howard's Beach, which are portions of segment W1F-02 Brandt Island West;
2. Conducting cleanup operations to remove residual oil at portions of the following segments: Brandt Island West (W1F-02); West Island West (W2A-11); Long Island and Causeway South (W2A-10); Harbor View (W2A-02); and Crescent Beach (W1E-04);
3. Performing beach elevation profiles as part of the buried oil and cleanup evaluation at Leisure Shores beach, a portion of the Brandt Island West segment (segment W1F-02);



4. Conducting visual inspections for residual oil at selected segments (these inspections were focused upon segments that did not pass the original IRAC process and segments where the maximum degree of oiling was identified as “heavy”);
5. Collecting intertidal sediment samples for fingerprinting and EPH analysis at Harbor View (W2A-02) to identify the source of “black sediment” observed; and
6. Responding to a citizen’s concern about potential beach erosion at a private beach (identified by GeoInsight as “Brower Beach”) in segment W2A-10 Long Island and Causeway South. The evaluation included performing beach elevation profiles. Note that the start of this evaluation was included in the last IRA Status report (dated September 22, 2005), but the location was incorrectly identified as being part of the segment W2A-09 Sconticut Neck East.

Specific information regarding these activities is summarized in the remaining sections of this report.

Additional assessment and intertidal sediment sampling activities were conducted during this status period at selected shoreline segments to characterize particular intertidal shoreline and shallow subtidal classifications, as part of the Phase II Comprehensive Site Assessment (CSA) evaluation. These activities were proposed in the August 24, 2005 Phase II SOW. Information regarding these field activities will be presented in the forthcoming Phase II Comprehensive Site Assessment Report that is expected to be completed by July 27, 2006.



3.1 IRA CLEANUP ACTIVITIES

3.1.1 W1F-02 Brandt Island West in Mattapoissett

3.1.1.1 Leisure Shores

Inspections for potentially buried oil were initially conducted at nine shoreline segments between November 2003 and April 2004 as part of the activities described in the September 15, 2003 IRA Plan. These inspections for potentially buried oil were completed in April 2004. However, particles of residual oil were encountered at segment W1F-02 during the inspections; therefore, periodic inspections have continued at this segment after April 2004 in conjunction with cleanup activities.

In September 2004, discontinuous oil sheens, and small (generally less than 0.5 centimeters in diameter), flattened particles of oil were encountered in a discrete, limited area of the intertidal zone at the Leisure Shores Beach bounded by a rock groin to the west (with a small stream crossing the groin), and a smaller groin to the east, near a grill in the shape of a torpedo. IRA cleanup activities were conducted in September 2004 to remove residual oil, as described in a letter to the Massachusetts Department of Environmental Protection (MADEP) dated September 21, 2004. The cleanup activities consisted of manually raking the intertidal zone to expose the particulate residual oil and using oil absorbent material to remove the exposed oil.

Inspections for residual oil continued in the spring of 2005 to evaluate whether the residual oil in the intertidal zone of Leisure Shores Beach had dissipated after cleanup activities and scouring associated with winter storms and tides. The degree of impacts appeared to be less in 2005 than encountered in 2004, suggesting that the cleanup activities and/or winter scouring were effective in removing some of the residual oil mass; however, very small particles of oil (approximately 1 to 7 millimeters in diameter) were encountered in some of the test pits excavated in the cleanup area. A small area on the eastern portion of the beach (an approximate 30-foot by 10-foot zone) within the cleanup area had slightly larger particles of oil (some up to 3 centimeters in diameter).

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Therefore, additional cleanup activities to remove residual oil in the same approximate area were proposed to MADEP in a letter dated July 7, 2005. Due to the discontinuous nature of the oil distribution, cleanup activities consisted of mechanically mixing and turning over the top 10 to 12 inches of beach sediment in the area of concern using two Roto Tiller machines to expose the residual oil.

On July 18, 2005, prior to cleanup activities, a beach profile survey was conducted using an auto level and standard surveying techniques to measure the elevation at existing transects, H2, H3, H4, and H5, and one new transect, H7. As part of the proposed cleanup activities, beach profile surveys were conducted at transects located near and within the boundaries of the cleanup area to evaluate potential erosional effects and/or changes in shoreline topography caused by roto tilling cleanup activities. The approximate locations of the survey transects is presented in Figure 2.

On July 19 and 20, 2005, GeoInsight, ENTRIX, and Fleet Environmental, Inc. representatives conducted cleanup activities in the intertidal zone of Leisure Shores in the area of concern. In general, the Roto Tillers operated nearly continuously at low tide and covered the proposed cleanup area. Each portion of the cleanup area was roto-tilled at least once on each of the two days. Selected areas observed to have more than minimal residual oil in the sediment were roto-tilled several times. On the first day of cleanup activities, the top 4 to 6 inches of sediment in the cleanup area were mixed, and on the second day the top 8 to 12 inches of sediment were mixed in the same area. Oil absorbent pads were placed on the sediment or water surface to remove observed floating oil particles. Rocks and shells with observed oil were wiped with absorbent material. Oil absorbent material (“snare”) was anchored across the lower intertidal zone in the work area overnight between cleanup operations to remove additional oil particles that might be suspended during high tide. Generally, less residual oil and sheening was observed by the inspection team on the second day of cleanup activities.

The oiled absorbent material was placed in polyethylene bags and removed from the beach for off-site disposal (see Section 4.0). Sediment was not removed from Leisure Shores Beach during this cleanup operation. The approximate area of cleanup activities is shown in Figure 3.

On August 2, 2005, approximately two weeks after the completion of the proposed cleanup activities, a post cleanup inspection was conducted by advancing a series of trenches by hand to depths of approximately 6 inches in a grid pattern. The focus of this buried oil inspection was to evaluate the effectiveness of the cleanup activities and assess the amount of residual oil remaining in the area of concern. Residual oil, primarily between pinhead-size to 7 millimeters in diameter or sheen was observed in some of the excavated trenches. The trenches were allowed to equilibrate and fill with water for approximately 10 to 20 minutes. The presence of sheen or oil particles in each trench was recorded. After the data were recorded, the trenches were filled in with the excavated sediment.

Comparison of the pre-cleanup and post-cleanup inspections indicated that the amount of oil observed during the post-cleanup inspection was less than during the pre-cleanup inspection, indicating that the cleanup activities were effective in removing some of the residual oil mass. Prior to the proposed 2005 cleanup activities, the oil observed floating in trenches primarily consisted of rainbow sheen surrounding particles on oil. After the cleanup activities were conducted on July 19 and July 20, 2005, the floating oil observed in trenches primarily consisted of a thin silver sheen or a silver sheen surrounding particles of oil. The change of sheen coloration from rainbow to mostly silver suggests breakdown of petroleum compounds. Mechanical mixing of the sediment may have increased exposure to the sunlight, ambient air, and other natural influences that could potentially increase the rate of volatilization of the residual oil found in the sediment. However, residual oil was observed during the post-cleanup inspection, and, therefore, additional inspections (including trench excavation) will be conducted in 2006 to evaluate residual oil and whether additional cleanup activities should be conducted.

It is important to note that in some trenches, the sheen observed was identified as natural inorganic iron-oxide sheen, and though similar in appearance, is not associated with oil. It is

also important to note that during this monitoring period, it was observed that evidence of oil in many trenches appeared after the trenches were allowed to remain for over 10 minutes. This is in contrast to the trenches excavated in 2004, where the sheen or oil was typically immediately visible as the trenches were excavated. These observations suggest that the overall mass of residual oil present at this location has decreased substantially between 2004 and 2005.

On August 18, September 29, and October 18, 2005, transects H3, H4, H5, and H7 were resurveyed after the cleanup activities were completed. According to the Massachusetts Office of Environmental Affairs Coastal Zone Management, the average long term horizontal erosion rate in this approximate area recorded between 1845 and 1994 was approximately 0.96 feet per year. The beach profile surveys show that between July and October 2005, the elevation profiles in the cleanup area were generally consistent, suggesting that the cleanup activities conducted in July 2005 did not pose an adverse affect on the sediment elevation. Additional information regarding cleanup activities is included in Table 3. The approximate locations of the survey transects is presented in Figure 2. The recorded beach profile of Transect H2 through H5, and H7 are presented in Figures 4 through 8, respectively.

Please refer to IRA Status Reports dated February 10, 2004, September 16, 2004, March 23, 2005, and September 22, 2005 for additional information regarding previous inspection and cleanup activities at this segment. Detailed information regarding the buried oil inspections including graphical depictions of the trench results and summaries of the field observations is summarized in Appendices A and B.

3.1.1.2 Howard's Beach

On August 18, 2005, during a shoreline inspection, a small localized amount of residual oil was observed on a portion of Howard's Beach in the upper portion of the intertidal zone.

Approximately 12 tarballs were removed from the surface near a dry channel in the general location of previous cleanup activities conducted in 2003 and 2004. In addition, several test pits were advanced in the vicinity of this location. A few tarballs were removed from the trenches and

the area (that filled a one-gallon plastic bag). Further evidence of oil in this area was not observed.

A detailed summary of this residual oil inspection is included in the cleanup activity summary, attached as Table 3. Refer to previous IRA status reports for information regarding previous cleanup conducted at Howard Beach.

3.1.2 W2A-11 West Island West in Fairhaven

On July 21, 2005, GeoInsight, ENTRIX, and Fleet Environmental, Inc. representatives removed pockets of oily sand (approximately one inch in diameter) mixed with organic sediment in the middle intertidal zone of West Island West (in segment W2A-11), as part of the IRA Plan Modification submitted to MADEP on July 7, 2005. In addition, several trenches were advanced in the vicinity of the cleanup. No further evidence of oil was observed with the exception of one oil-coated cobble that was removed.

On August 17, 2005 a post-cleanup inspection was conducted via trenching and overturning cobbles. Evidence of oil was not observed. Figure 9 shows the approximate location of the cleanup activities. Refer to Table 3 for additional information regarding cleanup activities at this location.

3.1.3 W2A-10 Long Island and Causeway South (Hoppys Landing) in Fairhaven

Inspection activities conducted in July and August 2005 documented the presence of residual oil, primarily near the southern tip of Long Island. The residual oil primarily consisted of hardened “splatter” on rock and marsh surfaces, but a small portion of the residual oil was also present on the underside of some rocks and cobbles in the intertidal zone. The top surface of these rocks are mostly unoiled, as natural weathering processes have scoured and degraded the small quantities of oil that were formerly present on the surface of the rocks. The small amount of residual oil present on the top of rock surfaces is mostly hard splatter that generally crumbles to the touch and



does not smear on skin. The undersides of the rocks are comparatively sheltered, not directly exposed to weathering processes and, as a result, a thin coating of residual oil is present on the undersides of the rocks that is less viscous and may come off to the touch or create small isolated sheens on the surface water when disturbed. Small amounts of residual oil also are present on the sediment directly beneath these rocks. Based on these inspections, and the reconnaissance and cleanup activities conducted at Hoppys Landing since the B120 spill, an IRA Plan Modification was submitted to MADEP on November 18, 2005, to address the residual oil present on the underside of the rocks (fewer than 25 rocks) in the intertidal zone near the southern point of Hoppys Landing. The proposed IRA activities consisted of turning over rocks by hand where oil is present on the underside of the rocks to allow natural weathering and degradation of the residual oil on the underside of the rocks and on the sediment within the depressions where the rocks were located.

On December 15, 2005, GeoInsight and ENTRIX representatives visited the area to conduct the IRA activities. Evidence of oil mixed with sediment under or surrounding cobbles was observed in less than one percent of inspected rocks on the west side and southern tip of the Hoppys Landing peninsula. Up to a few inches of sand accretion was observed on the west side of the Hoppys Landing peninsula, which may be attributable to the low percentage of oiled cobbles observed. Five areas of residual oil were identified and the coordinates of these areas were recorded using a hand-held Global Positioning System (GPS). In general, the residual oil under the cobbles was tacky and on the bottom or on sides of rock depressions, primarily in the middle to upper intertidal zone. The residual oil observed ranged from 7 millimeters in diameter to 1 foot in diameter, and up to 3 inches thick.

Figure 10 shows the approximate location of the cleanup activities. Refer to Table 3 for a detailed summary of cleanup activities. Additional inspections will be conducted in the spring of 2006.



3.1.4 W2A-02 Harbor View in Fairhaven

On June 28, 2005, during the previous IRA monitoring period, GeoInsight received a phone call from a citizen who reported residual oil along the shoreline at the 17 Turner Avenue property in Fairhaven (a portion of segment W2A-02). The following day, representatives from GeoInsight, ENTRIX, and Gallagher Marine Services responded to the report of oil. The field team performed a visual inspection and manually excavated several test trenches to check for oil. The shoreline at this location consists of mixed sandy beach and marsh with isolated marsh “hummocks” interspersed along the beach. The field team observed oil during the inspection that appeared to be consistent with B120 oil, primarily in three areas near the 17 Turner Avenue residence. The three areas where the majority of residual oil was observed included two localized areas (less than 1 foot square) where discontinuous pavement was observed on two peat hummocks in the intertidal zone, and one localized area (approximately 30 feet by 10 feet) in the upper intertidal zone where weathered pavement in the sand beach and stuck to wooden planks was observed. The observed pavement was weathered and did not smear off when handled; however, when a piece of pavement was broken apart the center was tacky. GeoInsight collected a sample of two tarballs observed in the fringing marsh at this location for fingerprint analysis to compare to B120 oil. Laboratory analysis for this June sampling round indicated that the oil was consistent with weathered B120 oil. Slightly elevated concentrations of pyrogenic polynuclear aromatic hydrocarbons (PAH) were detected in the samples, suggesting that non-B120 oil PAH source may also be present. Refer to the September 22, 2005 IRA Status report for further details about the initial inspection and sampling results.

As part of an August 16, 2005 IRA Plan Modification that was verbally approved by MADEP, GeoInsight, ENTRIX, and Fleet Environmental, Inc. representatives conducted cleanup activities in the vicinity of 17 Turner Avenue on August 17, 2005. Cleanup activities were conducted by hand and by using hand tools (i.e., buckets and shovels.) Residual oil was primarily present in the middle to upper intertidal zone of the sandy beach portion of the shoreline and on marsh hummocks situated in the middle intertidal zone of the sandy beach near 17 Turner Avenue.

Residual pavement was also found surrounding three wooden planks, which was also removed, (ranging approximately 2 feet to 15 feet in length) in the sandy beach of the upper intertidal zone. Residual oil in the marsh areas was removed by hand to minimize adverse impacts to nearby vegetation. The removed oil and oiled wood was placed into polyethylene bags for off-site disposal. In addition, approximately 100 trenches were advanced in a grid pattern in the sandy beach area of the intertidal zone in the vicinity of 17 Turner Avenue to evaluate the potential presence of oil at the segment. Five pinhead-size oil particles were observed floating in the trenches. The small size of the oil particles and limited area of impacts did not warrant additional cleanup activities in this area. Additional inspection activities, including rock overturning and trench-digging, were conducted on the northern undeveloped portion of the segment. A few small tarballs were found and removed from the lower and middle intertidal zone. Further evidence of B120 oil was not observed. GeoInsight observed “black sediment” starting approximately less than one inch below the surficial light brown and tan sediment in the intertidal zone, both in front of the 17 Turner Avenue residence and in the northern undeveloped portion of the segment. This observation was further investigated on September 29, 2005, as discussed below.

On August 29, 2005, GeoInsight and ENTRIX representatives conducted a post cleanup inspection at this location. Several tarballs (up to 4 inches in diameter) were found and removed from areas where the cleanup activities were conducted, including the areas where wooden planks and tarballs in peat hummocks were removed.

On September 29, 2005, GeoInsight representatives conducted an additional inspection with MADEP in response to the citizen’s concern about the presence of “black sediment” at the segment. The inspection included excavating several small trenches in the upper intertidal zone in the vicinity of previous cleanup activities. “Black sediment” was observed approximately less than one inch below surficial light brown and tan sediment. A fire pit was observed at the 17 Turner Avenue residence, and pieces of hardened slag (ranging approximately from 1 to 6 inches in diameter) were observed near the 17 Turner Avenue residence and along the northern undeveloped portion of the segment.

Two samples of the “black sediment” were collected on September 29, 2005. One sample was submitted to a laboratory for fingerprinting analysis, and one sample was submitted to a laboratory for analysis of extractable petroleum hydrocarbon (EPH) and polynuclear hydrocarbons (PAH). Elevated concentrations of pyrogenic PAH (i.e., PAH derived from combustion products) were detected in the samples. The chemical analyses indicated that these samples had heavier PAH compounds than the B120 source oil, with a signature consistent with a combustion source (i.e., coal or wood ash), and the remaining PAH signature cannot be accounted for by weathering of B120 oil based on known processes. In conclusion the PAH signatures of the “black sediment” were not related to B120.

Figure 11 shows the approximate location of the cleanup activities and Figure 12 shows the approximate locations of the samples collected on August 29 and September 29, 2005. The black sediment chemical analysis report and the laboratory analytical report are included as Appendix C. Refer to Table 3 for a detailed summary of cleanup activities.

3.1.5 W1E-04 Crescent Beach in Mattapoisett

On August 31, 2005, GeoInsight and ENTRIX representatives visited segment W1E-04 as part of Phase II field activities, and an area (approximately 5 by 15 feet and 1 to 4 inches thick) of discontinuous pavement was observed between cobbles in the middle intertidal zone. On September 13, 2005, the field team returned to remove the pavement present in this area. A total of approximately 15 pounds of oil mixed with sediment was removed. The residual oil was placed into polyethylene bags and removed for off-site disposal.

Figure 13 shows the approximate location of the cleanup activities. Refer to Table 3 for a detailed summary of cleanup activities.

3.2 OTHER IRA SEGMENT INSPECTIONS

Between July 1, 2005 and December 31, 2005, GeoInsight and ENTRIX conducted visual IRA inspections of selected shoreline segments to evaluate the presence or absence of residual visible oil. The visual inspections focused upon an array of segments with differing shoreline types and degree of oiling to evaluate current conditions of the Buzzards Bay shoreline. The primary focus of the inspections was to continue to evaluate residual oil conditions at segments where the initial degree of relative oiling was characterized as “heavy,” with the exception of Strawberry Point West, where the initial degree of relative oiling was characterized as “moderate.” The inspections generally entailed an evaluation of the entire segment, uplifting rocks, and revisiting locations within the segments where previous evidence of oil was observed or cleanup activities were conducted prior to this status period. With the exception of the areas warranting cleanup activities (described above), the inspections found very little evidence of residual oil. The residual oil that was observed was generally hardened “splatter” and did not come off the skin when touched. These inspections are described by segment below.

In addition to the segments described below, inspections of unoiled and oiled segments with areas of marsh were conducted during the last status period to evaluate whether areas of marsh grass die-back were either associated with the oil spill or were the result of naturally-occurring conditions. Other reports have mischaracterized the algal mats as B120 oil. As part of this evaluation, on September 12, 2005, samples of the marsh surface in areas of marsh grass die back at Long Island and Causeway South (W2A-10), Long Island and Causeway North (W2A-16), and Pope’s Beach (W2A-03) were collected. The samples were identified as part of an algal mat composed of cyanobacteria algae (blue-green algae), a naturally-occurring species in New England salt marsh environments. The species identification report prepared by Doctor Jim Sears is included in Appendix D. A list of the inspected segments and a summary of the field observations are included in Table 4.



3.2.1 W3C-04 Barney's Joy (East of Barb Wire) in Dartmouth

On July 20, 2005, GeoInsight, ENTRIX, Bouchard, and MADEP representatives conducted a shoreline inspection of the majority of the segment. The inspection focused upon the potential presence of residual oil from the B120 release at a segment that was initially heavily oiled. Several cobbles were turned over by hand to check for residual oil during inspection activities. Limited, trace splatter was observed in the crevices in between cobbles in the intertidal zone.

3.2.2 W1E-03 Strawberry Point West in Mattapoisett

On July 20, 2005, GeoInsight, ENTRIX, Bouchard, and MADEP representatives conducted a shoreline inspection where previous cleanup activities occurred in 2004. The inspection focused upon the potential presence of residual oil from the B120 release at a segment that was initially heavily oiled. Several cobbles were turned over by hand to check for residual oil during inspection activities. Trace splatter (less than 1 inch in diameter) was observed on marsh sediment in the intertidal zone.

3.2.3 W1E-04 Crescent Beach in Mattapoisett

On July 20, 2005, GeoInsight, ENTRIX, and MADEP representatives conducted a shoreline inspection of the majority of the segment to evaluate for potential presence of residual oil. Small (generally less than one inch in diameter) hardened splatter drops were observed on a few isolated rocks.

3.2.4 W1G-00 Ram Island in Mattapoisett

On September 29, 2005, GeoInsight, ENTRIX, MADEP, and Massachusetts Division of Fisheries and Wildlife representatives conducted a shoreline inspection of the majority of the intertidal zone of the segment. The inspection focused upon the potential presence of residual oil from the B120

release at a segment that was initially heavily oiled. Trace residual splatter (dime to quarter-size) was observed on marsh sediment in the intertidal zone.

3.3 RESPONSE TO CITIZEN REPORTS OF OIL

After the closure of the incident command post on September 3, 2003, local residents were directed to call GeoInsight to report oil potentially associated with the B120 spill. Personnel from GeoInsight, and, when available, a representative from Gallagher Marine Services, responded to reports of oil within 24 hours of the call. GeoInsight did not receive reports of oil during this monitoring period, with the exception of a concern of a citizen during the cleanup activities conducted at segment W2A-11, West Island West, on July 21, 2005. In response to this concern, the cleanup team dug several test pits approximately 50 yards north of the cleanup area near the citizen's residence. The citizen had observed evidence of oil near a jetty in front of his home. One oiled cobble (approximately 3 inches in diameter) was found and removed from a test pit in the intertidal zone of the sandy beach (approximately 4 to 6 inches below the surface). Other evidence of oil was not encountered. Refer the Section 3.1.2 of this report for further information about these cleanup activities.

In addition, as described in the September 2005 IRA Status Report, a resident who owns property on Goulart Memorial Drive in Fairhaven raised concerns regarding shoreline erosion in this area during the June 2, 2005 public meeting at the New Bedford Whaling Museum. Although this is not a report of B120 oil, GeoInsight responded as part of IRA activities. During this monitoring period, GeoInsight conducted a limited evaluation of shoreline erosion in this area. The evaluation concluded that although erosion had occurred in that area, in particular in an area near a wooden platform and utility pole, the observed erosion was within the range of natural erosion documented for this area by the Massachusetts Coastal Zone Management. In addition, it is possible that the presence of these structures may have contributed to natural erosion through turbulence and scouring. The results of the evaluation are included in Appendix E.



4.0 REMEDIATION WASTE

Remediation waste was generated during IRA cleanup activities at the following segments: Brandt Island West (W1F-02); West Island West (W2A-11); Long Island and Causeway South (W2A10); Harbor View (W2A-02), and Crescent Beach (W1E-04). The remediation waste was removed from the cleanup locations, and transported by Fleet to the American Ref-Fuel (SEMASS) facility on July 22 and September 22, 2005 in West Wareham, Massachusetts for disposal in accordance with applicable requirements. A total of approximately 2.61 tons (5,220 pounds) of remediation waste were generated during this period. Documentation is included in Appendix F.