

Naval Facilities Engineering Command Southwest
Contracts Department
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CONTRACT NO. N62473-07-D-3211
CTO No. 0008

FINAL
FALL 2010 & WINTER 2011 ANNUAL POST-CLOSURE
INSPECTION AND MAINTENANCE REPORT
July 20, 2011

INSTALLATION RESTORATION PROGRAM SITE 7 AREA 1
(FORMER STATION LANDFILL)
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA

DCN: ECSD-3211-0008-0009

Prepared by:



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A handwritten signature in blue ink that reads "Mark Cutler".

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ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
DON	Department of the Navy
IRP	Installation Restoration Program
NAVWPNSTA	Naval Weapons Station
NTCRA	non-time-critical removal action
PCIMP	Post-Closure Inspection and Maintenance Plan
RWQCB	Regional Water Quality Control Board
TtEC	Tetra Tech EC, Inc.

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1.0 INTRODUCTION

This report describes the results and findings of the fall 2010 and winter 2011 annual post-closure inspection activities conducted at the Installation Restoration Program (IRP) Site 7 Area 1, also referred to as the Former Station Landfill, located at Naval Weapons Station (NAVWPNSTA) Seal Beach in Seal Beach, California (Figures 1-1 and 1-2).

The purpose of this report is to document the condition of the landfill cover and access roads, any changes to the landfill cover such as settlement or erosion, changes to the surface water management system, the condition of the vegetative cover, and any maintenance activities that were completed during the fall 2010 and winter 2011 inspection events.

Tetra Tech EC, Inc. (TtEC) conducted the post-closure inspections described in this report under the Department of the Navy's (DON's) directive and under Remedial Action Contract Number N62473-07-D-3211. The inspections were conducted in accordance with the Post-Closeout Inspection and Maintenance Plan (PCIMP) (TtFW 2004a). The PCIMP outlines and describes the procedures and requirements for post-closure inspections and maintenance activities for IRP Site 7 Area 1.

The post-closure inspection conducted on October 4, 2010, serves as the annual pre-rainy season landfill cover inspection for fall 2010. The inspections conducted on October 28, 2010, and December 23, 2010, serve as periodic inspections following heavy rain events, and the final inspection conducted on March 30, 2011, serves as the annual inspection after the 2010–2011 rainy season had ended. This report describes the inspections conducted, documents the inspection findings, and provides recommendations.

This report documents the condition of the cover at the time of the inspections to ensure that 1) the soil cover is functioning adequately to isolate the buried waste from the surface; 2) the cover continues to provide adequate drainage, minimizing its erosion; and 3) any settlement and subsidence of the cover are not jeopardizing the cover integrity. The inspections conducted during this reporting period focused on the functional aspects of the cover. Therefore, the soil cover was inspected to document whether it is intact and free of major cracking (defined as cracks 2 inches or wider, deeper than 12 inches, and longer than 20 feet). The cover was also inspected to detect erosion (deeper than 6 inches) and surface depressions (defined as deeper than 6 inches) that could cause ponding or any unusual surface conditions. A visual inspection of surface drainage slopes was also conducted. The vegetative cover was inspected to document any soil losses caused by precipitation, wind, and lack of vegetative cover, and to identify the causes of erosion problem areas. All inspections were conducted by, or under the supervision of, a state of California registered civil engineer who has experience in landfill design and site development.

The inspections were conducted as part of 3 years of monitoring and inspection described and proposed in the PCIMP (TtFW 2004a). Results of the previous inspection and maintenance activities are documented in the Final Fall 2009 and Winter 2010 Annual Post-Closure Inspection and Maintenance Report (TtEC 2010).

The pertinent PCIMP (TtFW 2004a) inspection forms completed during each inspection are attached as Appendix A. Included with the forms for each of the inspection events is a figure (Figure A-1) depicting the areas covered with vegetation as noted during each event, and photographs taken during each inspection event. Photographs taken of site restoration activities are provided as Appendix B.

This report will be kept on file with the NAVWPNSTA Seal Beach Administration Records. Copies will also be kept in the Naval Facilities Engineering Command Southwest Administrative Record files.

1.1 SITE HISTORY AND BACKGROUND

This section describes the facility and site locations and provides a description of the past history of operations at IRP Site 7, which consists of six distinctive areas (designated as Areas 1 through 6), along with a brief description of the nature and extent of the contamination at the site.

IRP Site 7 totals approximately 33 acres located near the southern boundary of NAVWPNSTA Seal Beach and at the eastern boundary of the Seal Beach National Wildlife Refuge. Landfill activities were reportedly conducted at the site from approximately 1955 to 1973. A large variety of wastes generated by NAVWPNSTA Seal Beach during the period of active landfilling may have been buried in trenches at IRP Site 7. Almost any type of waste generated on the station may have been disposed of at IRP Site 7. The major types of waste reportedly disposed of in the landfill include small, mostly empty containers that once contained paints, petroleum products, various solvents, used rags, batteries, asbestos, and inert construction debris.

IRP Site 7 Area 1 covers approximately 10 acres. Most of the waste disposal and landfilling activities took place in IRP Site 7 Area 1 in a series of unlined trenches lying in an east-west orientation (Naval Energy and Environmental Support Activity 1985). Exploration during a supplemental characterization indicated that the depth of the debris varied between 5.5 and 9 feet below ground surface (bgs), with an average depth of 6.4 feet bgs (SWDIV 1999).

A non-time-critical removal action (NTCRA) was completed at IRP Site 7 in April 2004. The intent of the NTCRA was to minimize any potential threats to human health and the surrounding environment. The removal action decision for IRP Site 7 was documented in the joint Final Action Memorandum/Non-Time-Critical Remedial Action Plan (DON 2004).

Under the DON's directive, TtEC implemented the removal action at the site under Remedial Action Contract Number N68711-98-D-5713. The removal action was conducted in accordance

with the Comprehensive Environmental Response, Compensation, and Liability Act and National Oil and Hazardous Substances Pollution Contingency Plan requirements.

The removal action at IRP Site 7 Area 1 involved repair to the existing soil cover by placing additional cover in areas where waste was exposed or where cover thickness was deficient. The intent of the removal action at IRP Site 7 Area 1 was to repair the existing landfill soil cover and ensure a minimum of 2 feet of soil cover over the buried waste, thus preventing direct contact with buried waste and eliminating the potential migration of contamination through windblown dust, infiltrations, and surface runoff. Removal action at the remaining areas of IRP Site 7 involved removal of buried and surface debris. The removal action at IRP Site 7 (Areas 1 through 6) is documented in the Final Project Closeout Report (TtFW 2004b). Only IRP Site 7 Area 1 (Former Station Landfill) requires post-closure inspection and maintenance.

A PCIMP (TtFW 2004a) was developed following the completion of the removal action to describe the post-closure annual inspections and maintenance activities for IRP Site 7 Area 1.

Based on the recommendations made in the Final 2005 First Semiannual Post-Closure Inspection and Maintenance Report (TtEC 2005) following the March 2005 inspections, landfill cover maintenance was conducted to repair several settlement and ponding areas at the western portion of the landfill, and to reseed the western portion following the grading and repairs of the settlement areas. Landfill maintenance was conducted in September 2005. The second 2005 semiannual post-closure inspection was conducted in October and November 2005 (TtEC 2006a). Subsequent third semiannual inspection and maintenance activities were conducted in March 2006, the results of which were discussed and documented in the Final 2006 First Semiannual Post-Closure Inspection and Maintenance Report (TtEC 2006b). Results of the 2006 report indicated that no areas needed repairs or corrective action and that the landfill cover grading provided adequate sheet flow drainage to minimize future ponding. Landfill post-closure inspections and maintenance activities were temporarily suspended after the March 2006 event and resumed with the winter 2008/2009 inspections (TtEC 2009). Previous reports were submitted semiannually, but at a meeting between the DON and the Regional Water Quality Control Board (RWQCB) held on January 12, 2010, a decision was made to submit the future reports annually. Therefore, inspections conducted during fall 2009 and winter 2010 were documented in the Final Fall 2009 and Winter 2010 Annual Post-Closure Inspection and Maintenance Report (TtEC 2010).

1.2 SCOPE OF FALL 2010 AND WINTER 2011 ANNUAL INSPECTIONS

This report addresses landfill cover maintenance, cover inspection, vegetation inspection, drainage inspection, and site restoration activities conducted for fall 2010 and winter 2011. This report and the inspections conducted during this time frame do not include groundwater monitoring, landfill gas monitoring, or leachate monitoring.

The DON had developed a groundwater monitoring program for IRP Site 7 to monitor the status and condition of groundwater at this site. Results of the Third Annual Groundwater Monitoring Report for IR Sites 5 & 7 (BEI 2007) recommended discontinuing groundwater monitoring at the site based on findings of a fate and transport evaluation. The Department of Toxic Substances Control and the RWQCB concurred with the findings of this report and the recommendation to discontinue groundwater sampling at IRP Site 7 in their letters dated August 1 and July 12, 2007, respectively (DTSC 2007, RWQCB 2007).

IRP Site 7 Area 1 does not have a landfill gas control, recovery, or emissions and migration monitoring system. There are no landfill gas migration monitoring wells at this site. Previous investigations conducted at IRP Site 7 Area 1 have indicated insignificant landfill gas (CH₂M Hill 2002). No surface or subsurface emissions of landfill gas, including methane gas, have been detected at IRP Site 7 Area 1 during previous site investigations.

IRP Site 7 Area 1 does not have a liquid management system, and none is planned for this site. The site neither produces any liquids associated with collection, nor does it have monitoring and disposal of landfill gas condensate, groundwater seepage, a leachate collection system, groundwater extraction wells, or groundwater storage tanks and sumps.

1.3 LAND USE CONTROL

No structures or buildings are on the site and none are planned for the future. No regular station activities have taken place at IRP Site 7 Area 1. Future developments or agricultural activities on the landfill are highly unlikely. The future land use at this site is open space and the site will continue to be maintained as such.

2.0 SOIL COVER INSPECTION AND MAINTENANCE

This section addresses and describes landfill soil cover inspections conducted in October 2010 (two events), December 2010, and March 2011. The inspection and field observation results were evaluated relative to the performance standards and requirements provided in the PCIMP (TtFW 2004a).

The purpose and the primary function of the soil cover are to isolate the buried waste from the surface, promote drainage and minimize erosion or abrasion of the cover, and accommodate settlement and subsidence so that the cover integrity is maintained. To perform these functions, the soil should remain intact and free of major cracking (defined as cracks 2 inches or wider, deeper than 12 inches, and longer than 20 feet), erosion (deeper than 6 inches), and surface depressions that could cause ponding.

2.1 SOIL COVER INSPECTION

Routine visual inspection of the soil cover was conducted in October 2010 (two events), December 2010, and March 2011. The following inspection procedures were followed in accordance with the PCIMP:

- Inspection and observation for any surface cracking, ponding, localized depressions, or unusual surface conditions; and
- Inspection and observation of all surface drainage swales and slopes (all slopes and drainage areas were visually inspected and documented on Forms 101 and 102 in Appendix A).

2.2 SUMMARY OF FIELD OBSERVATIONS

During the inspections, a lack of complete vegetation cover, some minor erosion (less than 2 inches deep and less than 6 inches wide), and some shallow depressions (less than 4 inches deep) were observed in the western portion of the landfill. No cover failures resulting from stormwater runoff and no waste exposure due to lack of soil cover, cracks, unstable cover, or unusual surface conditions (burrowing, etc.) were observed during the inspections. The landfill cover was determined to be stable. It was observed that there are more areas with vegetation in the western portion than was noted during previous inspections (March 2010) (TtEC 2010), which indicates some plant growth.

2.3 SOIL COVER FINDINGS AND RECOMMENDATIONS

There were no unstable surface depressions, cracks, major soil losses, or excessive rodent burrowing observed during each inspection for this reporting period. No vector controls for the soil cover is required at this time.

The eastern two-thirds of the landfill contains good vegetative soil cover and was found to satisfy the requirements of the PCIMP (TtFW 2004a) and project specifications. The western third of the landfill cover does not have complete vegetation ground cover. However, significant soil erosion due to the lack of complete vegetation cover was not evident during the inspection period. Vegetation inspection and maintenance are discussed in more detail in Section 3.0.

The Final Fall 2009 and Winter 2010 Annual Post-Closure Inspection and Maintenance Report (TtEC 2010) included recommendations that maintenance of the vegetation ground cover occur in order to avoid potential loss of soil in the future. The recommendations included reseeding and planting small salt-tolerant plants in select areas having no vegetation. In March 2011, the DON implemented this recommendation by hydroseeding approximately 3.5 acres of bare areas in the western portion of the landfill, and planting approximately 3,100 plug plants of native salt-tolerant species (Section 3.3).

3.0 VEGETATIVE COVER INSPECTION AND MAINTENANCE

The purpose and the primary function of the vegetative cover are to provide erosion control and visual enhancement across the landfill. The vegetative cover at IRP Site 7 Area 1 was designed to evolve into a natural climax vegetation community, which would enable long-term succession of the vegetation to blend with the natural character of adjacent open spaces. The vegetative cover is intended to turn green during the rainy season and is expected to fade to brown during the dry season. The plants will need to survive on seasonal rainfall. This section reviews the vegetative cover inspection, discusses the findings, and provides recommendations for restoration, if needed, and any maintenance that occurred during this reporting period.

3.1 PROTECTIVE VEGETATIVE COVER INSPECTION

During the October 2010 (two events), December 2010, and March 2011 inspections, the overall condition of the vegetative growth on the eastern portion of the landfill cover (approximately 8 acres) was observed to be satisfactory. The western portion of the landfill had some patches of vegetative growth as shown on Figure 2-1. The lack of vegetation in the western portion (approximately 2 acres) is likely due to relatively elevated salinity levels in soil inhibiting plant growth rather than soil erosion, since soil loss was not observed during the inspection period.

Form 103 in Appendix A, completed for each inspection conducted for this reporting period, indicated there are no significant issues with vegetation loss due to soil erosion, non-native plants, shrubs, fire hazards, or dead vegetation. The only concern is the lack of complete vegetative cover at the western part of the landfill.

3.2 VEGETATIVE COVER INSPECTION FINDINGS

The majority of the site (the central and eastern portion) is covered with suitable native and non-native vegetation. Although the vegetation on the eastern portion of the landfill is in good condition, the western portion lacks complete coverage. The satisfactory condition of vegetation in the eastern portion of the landfill may be attributed to the slightly higher surface elevations in that area allowing for better drainage, which may help inhibit salt buildup.

The western portion of the site, which has slightly lower surface elevations, supports only spotty vegetation and stunted live plants. The lack of vegetation in the western area is likely attributed to a relatively high salinity content in the soil due to tidal influences and slow drainage. The area, however, does currently support some salt marsh plants in many of the previously bare areas, and there has been a general slow increase in vegetation cover in this area since the prior reporting period. This could be attributed to the seeding that was completed in late 2009. The western portion of the landfill was tilled and reseeded in December 2009, and as a result is anticipated to show increased vegetation growth. The current plant growth could also be related to the relatively

abundant rainfall that has occurred in the past 2 years. It is possible that the fresh water from rain has helped leach some of the salt from surface soils, thus helping the plants grow.

3.3 RESTORATION OF VEGETATIVE COVER

As was recommended in the last PCIM Report (TtEC 2009), small 2-inch-tall live plug plants (suitable salt marsh tolerant species) were planted in a grid pattern in six areas where the ground was bare of vegetation. Photographs of the planting are included in Appendix B. The addition of these plug plants is intended to supplement the existing population of young native plant seedlings. Patch planting involved planting the following combination of salt-tolerant plants provided in liners (small, 2-inch by 2-inch containers) or plug plants.

- Pickleweed (*Salicornia virginica*) 1,600 units
- Alkali heath (*Frankenia salina*) 500 units
- Saltwort (*Batis maritima*) 1,000 units

The plants were spaced 24 inches apart in five 50-foot by 50-foot square patches and one smaller 25-foot by 25-foot square patch (Figure 2-1). Careful consideration was provided by an on-site project biologist for the selection of appropriate planting locations. The planting began on March 2 and was completed on March 8, 2011, and the plants were watered regularly during that period. Because of several days of continuous rainfall, no hand watering was completed until April 22, 2011. Photographs of the watering are included in Appendix B. Some minor rains occurred in late April 2011, and the second of 10 proposed watering events was completed May 12, 2011.

Following planting, the remaining bare areas were hydroseeded with a mixture of seeds from the following plant species:

- Wild heliotrop (*Heliotropium curassavicum*) 21 pounds
- Alkali heath (*Frankenia salina*) 14 pounds
- Saltgrass (*Distichlis spicata*) 21 pounds

The seeds were mixed with wood cellulose fiber, fertilizers, and stabilizing binder in a specialty hydroseeding truck with approximately 7,000 gallons of water and applied to the ground. Photographs of the hydroseeding are included in Appendix B.

3.4 VEGETATIVE COVER MAINTENANCE

During the March 12, 2011, hand-watering event, it was observed that approximately only 5 to 10 percent of the newly planted plug plants were alive. Based on a discussion with the NAVWPNSTA Installation Restoration Coordinator, it was decided to continue the biweekly hand-watering program and to focus on watering the surviving plants and the several small patches of live native plants that are currently trying to grow on the western portion of the landfill cover.

4.0 SURFACE WATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE

This section provides the scope, data summary, and evaluation of surface water management.

4.1 SURFACE WATER MANAGEMENT SYSTEM INSPECTION

The surface water management system was inspected during the October 2010 (two events), December 2010, and March 2011 inspections. The inspections included the following:

- Visual inspection of all surface drainage swales and slopes
- Visual inspection of the cover system for any eroded areas
- Inspection and observation of surface drainage conditions

The landfill inspection conducted on October 4, 2010, was the first inspection completed since the previous reporting period ended in March 2010. One of the inspection objectives was to identify any failure of the surface drainage and sheet flow system, focusing primarily on any areas of erosion, wet or saturated cover soils, ponding, or areas where there is a potential for increased infiltration.

4.2 SUMMARY OF FIELD OBSERVATIONS

Relatively minor ponding (less than 6 inches) was observed at some areas along the western portion of the landfill during the December 2010 and March 2011 inspections (Appendix A). The larger area of ponding at the southwestern corner of the landfill (Figure 2-1) was mainly due to high tide and problems with the drainage culvert at the flood control channel. Overall, the landfill cover has positive drainage that allows precipitation to drain to the south. Minor erosion (less than 2 inches deep) and shallow depressions (less than 4 inches deep) were observed along the western portion of the cover during each of the inspections. Observations for each inspection are documented on Form 102 in Appendix A.

The eastern two-thirds of the landfill cover did not show any evidence of soil loss, which indicates that the vegetation and ground cover in this area have effectively inhibited soil erosion. The western third of the landfill cover continues to have small patches of vegetative ground cover and minor soil erosion; however, there was no vegetation washout or silt deposition observed. In general, the cover provides adequate positive drainage, with the exception of a few ponding areas mentioned above.

The two 12-inch-diameter culverts installed at the south side of the landfill along the drainage channel were also inspected to verify that they were free from debris. Grates have been placed at

the inlets to help keep debris out of the culverts. No debris or other obstructions were observed at the grates during the inspection period.

4.3 FINDINGS AND RECOMMENDATIONS

No major washouts of the landfill cover or waste exposure was observed during any of the inspections completed between October 2010 and March 2011. The overall surface water drainage system complied with the landfill cover system performance criteria described in the PCIMP (TtFW 2004a). Surface grading was not necessary during this reporting period.

As mentioned in Section 3.3, young salt-tolerant plants were planted in small plots, and other bare areas were hydroseeded in the western portion of the landfill to help increase vegetation cover. Wattles that were placed on the landfill in March 2009 (Figure 2-1) continue to function as intended to slow down surface sheet flow and help inhibit surface erosion.

Based on the inspections completed during this reporting period, it is recommended that the areas with minor erosion (less than 2 inches deep) along the western slopes of the access road be hand-graded and covered with jute mesh to prevent potential further erosion and deepening. These areas are indicated on Figure A-1D in Appendix A.

5.0 LANDFILL SURVEY

This section provides the scope, data summary, and evaluation of landfill settlement.

5.1 SURVEY SCOPE

The scope of this survey is to identify and address settlement of the landfill as it relates to the performance of the cover system.

5.2 SUMMARY OF FIELD OBSERVATIONS

Visual site inspections of settlement of the landfill cover were completed during each site visit. Some minor depressions (less than 4 inches deep) were observed along the western portion of the cover. These minor depressions typically became small, shallow ponds during rain events. The areas of ponding are indicated on the figures in Appendix A for the December 2010 and March 2011 inspections.

No major earthquakes, and no significant sloughing, cracks, or cover deformation occurred during this reporting period that would require a topographic survey by a licensed land surveyor.

5.3 FINDINGS AND RECOMMENDATIONS

Based on the inspections completed during this reporting period, settlement of the landfill cover is considered minor. Surface water runoff to the south is not significantly impacted, and additional surface grading is not necessary at this time.

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6.0 ACCESS ROADS INSPECTION AND MAINTENANCE

This section addresses and describes observations made during the fall 2010 and winter 2011 inspections of the access roads.

6.1 SUMMARY OF ACCESS ROADS OBSERVATIONS

The unpaved access road along the western side of the landfill was found to be well-graded and in good condition. The access road is expected to continue to provide access to the site in all weather conditions. The access road along the western side of the site is partially paved and partially covered with gravel; therefore, it is considered adequate for providing the necessary safe access to the site in the event of an emergency or for maintenance equipment.

6.2 FINDINGS AND RECOMMENDATIONS

No unstable ground surfaces and no major erosion or loss of road base was observed on the access road along the west side of the landfill during the inspection period. No maintenance is recommended for the access road.

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7.0 SUMMARY OF RECOMMENDATIONS

This section summarizes the recommendations included in the previous sections.

Based on the inspections completed during this reporting period, it is recommended that the areas with minor erosion (less than 2 inches deep) along the western slopes of the access road be hand-graded and covered with jute mesh to prevent further potential erosion and deepening. These areas are indicated on Figure A-1D in Appendix A.

It is also recommended that the biweekly hand-watering program continue and focus on watering the surviving plants from the planting completed in March 2011, and on the several small patches of live native plants that are currently trying to grow on the western portion of the landfill cover.

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8.0 REFERENCES

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- TtEC (Tetra Tech EC, Inc.). 2005. Final 2005 First Semiannual Post-Closure Inspection and Maintenance Report, Installation Restoration Program Site 7 (Former Station Landfill), Naval Weapons Station Seal Beach, Seal Beach, California. September 28.
- _____. 2006a. Final 2005 Second Semiannual Post-Closure Inspection and Maintenance Report, Installation Restoration Program Site 7 (Former Station Landfill), Naval Weapons Station Seal Beach, Seal Beach, California. Revision 1. April 17.
- _____. 2006b. Final 2006 First Semiannual Post-Closure Inspection and Maintenance Report, Installation Restoration Program Site 7 (Former Station Landfill), Naval Weapons Station Seal Beach, Seal Beach, California. September 29.
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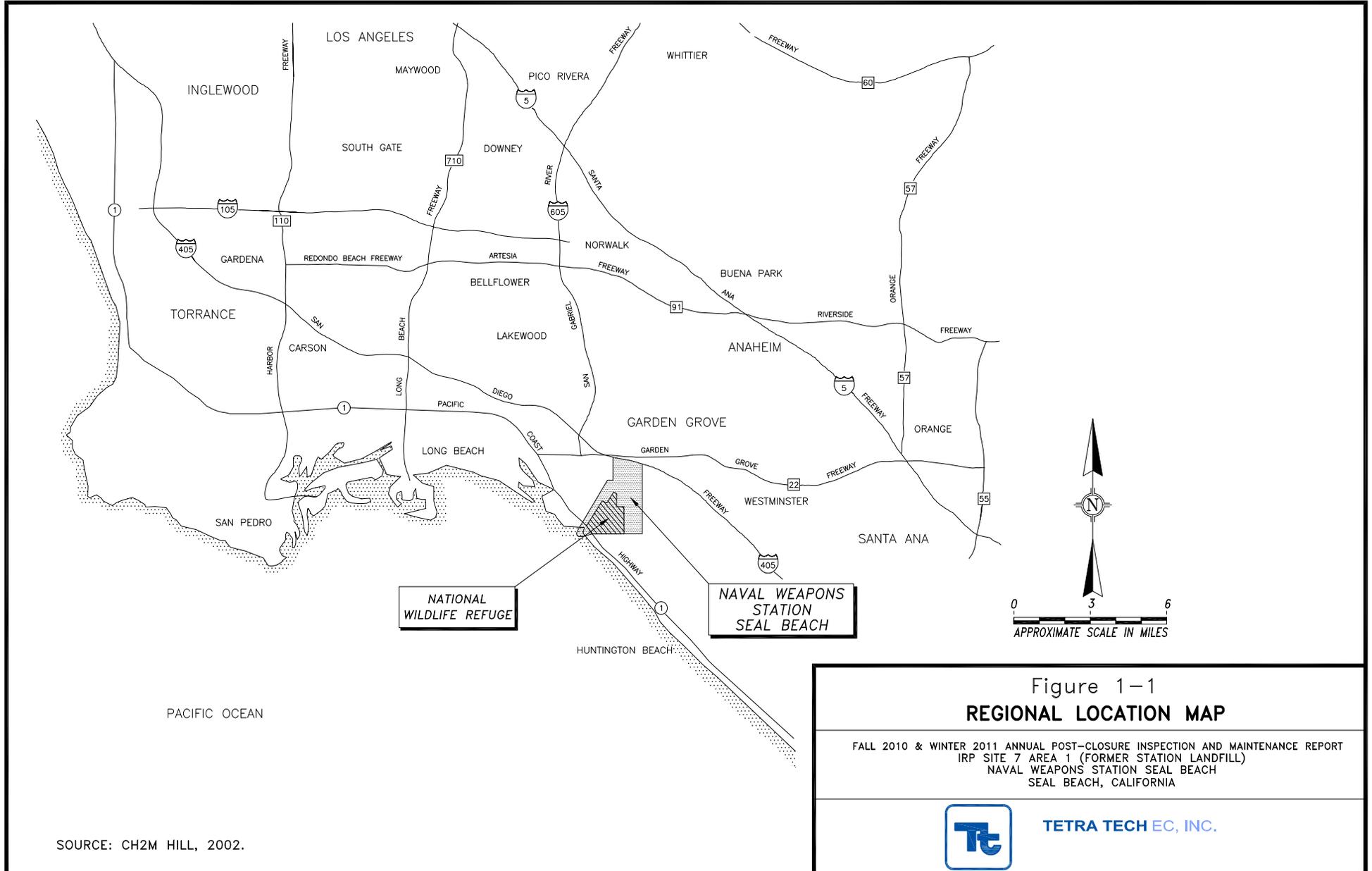
_____. 2010. Final Fall 2009 and Winter 2010 Annual Post-Closure Inspection and Maintenance Report, Installation Restoration Program Site 7 (Former Station Landfill), Naval Weapons Station Seal Beach, Seal Beach, California. May 21.

TtFW (Tetra Tech FW, Inc.) 2004a. Final Post-Closeout Inspection and Maintenance Plan, Installation Restoration Program Site 7 (Station Landfill), Naval Weapons Station Seal Beach, Seal Beach, California. December 8.

_____. 2004b. Final Project Closeout Report, Non-Time-Critical Remedial Action Installation Restoration Program Site 7 (Station Landfill) and Site 4 (Perimeter Road AOPCs 1A and 2A), Naval Weapons Station Seal Beach, Seal Beach, California. August 20.

FIGURES

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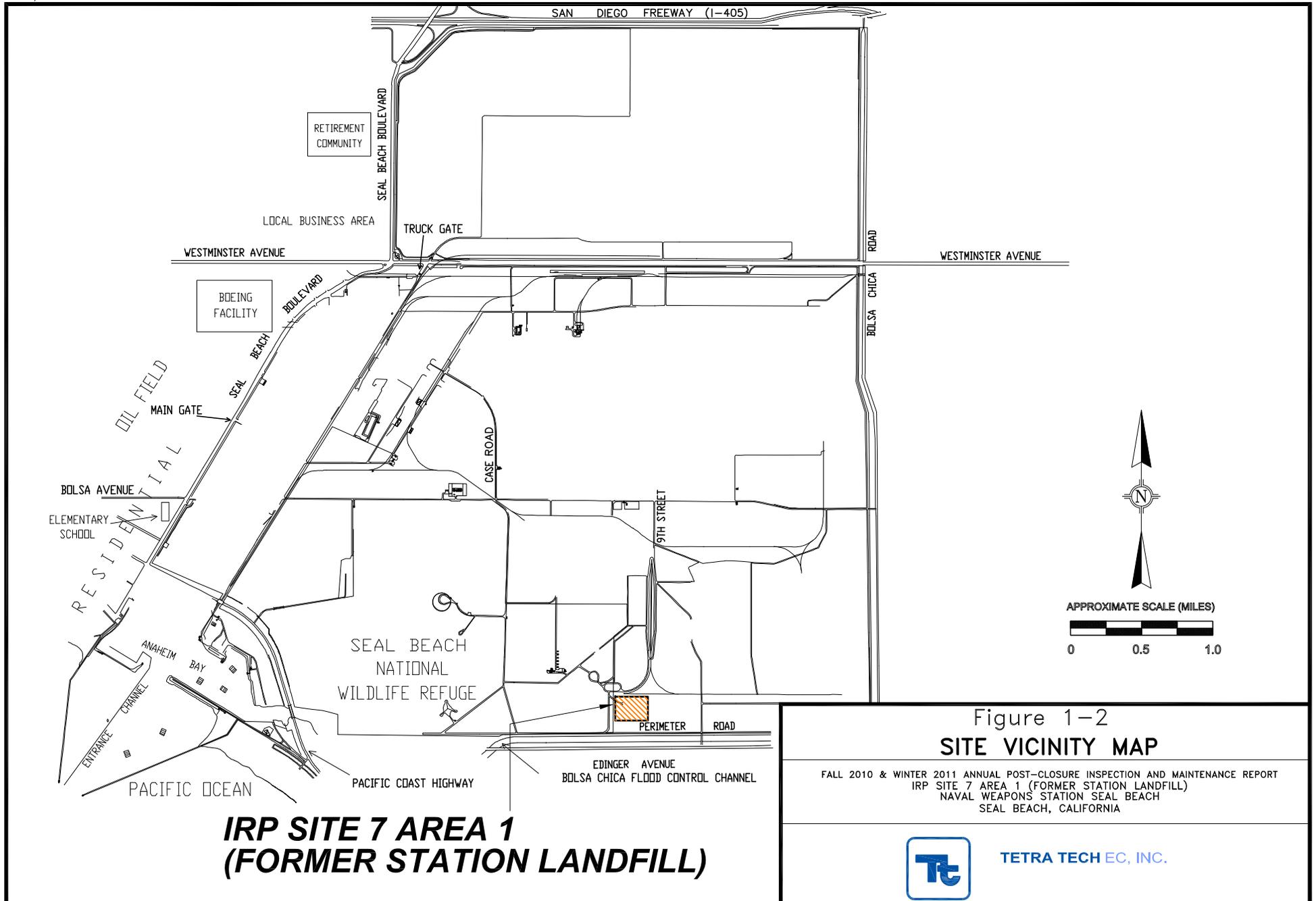
SOURCE: CH2M HILL, 2002.

Figure 1-1
REGIONAL LOCATION MAP

FALL 2010 & WINTER 2011 ANNUAL POST-CLOSURE INSPECTION AND MAINTENANCE REPORT
IRP SITE 7 AREA 1 (FORMER STATION LANDFILL)
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA



TETRA TECH EC, INC.



APPENDIX A

INSPECTION REPORTS

APPENDIX A-1 – OCTOBER 4, 2010, INSPECTION REPORT

APPENDIX A-2 – OCTOBER 28, 2010, INSPECTION REPORT

APPENDIX A-3 – DECEMBER 23, 2010, INSPECTION REPORT

APPENDIX A-4 – MARCH 30, 2011, INSPECTION REPORT

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APPENDIX A-1 – OCTOBER 4, 2010, INSPECTION REPORT

FORM 101 – SOIL COVER INSPECTION

FORM 102 – STORMWATER/EROSION CONTROL INSPECTION

FORM 103 – PROTECTIVE VEGETATIVE COVER INSPECTION

FIGURE A-1A – LANDFILL COVER INSPECTION MAP

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FORM 101

SOIL COVER INSPECTION (OCTOBER 4, 2010)

Type of Inspection: Periodic

Inspector Name: Anna Baldenegro, P.E. Affiliation (Name of Navy Consultant or Representative): Tetra Tech EC, Inc. (TtEC)

Date: 10/4/10 Time: 10:30 a.m. Weather Condition: Overcast

OBSERVATION TYPE AND DETAILED DESCRIPTION:

Erosion Sloughing/Sliding Cracks/Fissures Subsidence/Depression Evidence of Excessive Borrowing Rodents Others

The soil was moist due to the light rain that occurred on 10/1, 10/2, and during the morning of the inspection on 10/4/10. Minor erosion was found southeast of the southern most wattle in the western area of the landfill. Shell fragments were noticeable imbedded on the top of the soil.

LOCATION OF OBSERVATION (Shown on the attached Figure A-1A): _____

The approximate location of the minor erosion is indicated on Figure A-1A.

RECOMMENDATIONS: _____

Monitor the area of minor erosion.

REMARKS: _____

No cracking was observed.

Signature

Site Inspector/Engineer



Date 10/4/10

FORM 102

**STORMWATER/EROSION CONTROL INSPECTION
(OCTOBER 4, 2010)**

Date: 10/4/10 **Name of Inspector/Engineer:** Anna Baldenegro, P.E.

Observations Types:

- | | |
|---|---|
| <u> </u> 1. Ponding | <u> </u> 5. Lack of Positive Drainage
(the depressions) |
| <u> </u> 2. Downstream Drainage Obstructions | <u> </u> 6. Silt Deposition at Low Areas |
| <u> </u> 3. Cover Washouts | <u> </u> 7. Vegetation Washout |
| <u> </u> 4. Gully Erosion | |

TYPE OF DEFICIENCY: _____

Minor erosion was observed near the southern most wattle located on the landfill.

LOCATION OF OBSERVATION (shown on the attached Figure A-1A): _____

See Figure A-1A for the approximate location of the minor eroded area and the location of newer jute mesh.

RECOMENDATIONS: _____

Monitor the area of minor erosion.

COMMENTS: _____

No ponding was observed.

Signature

Site Inspector/Engineer



Date 10/4/10

FORM 103

PROTECTIVE VEGETATIVE COVER INSPECTION (OCTOBER 4, 2010)

Location: IRP Site 7 Landfill **Date and Time:** 10/4/10 10:30 a.m.

Boundary Roads: Good condition **Inspector Name:** Anna Baldenegro, P.E.

General Soil Condition: Wet Dry **Weather:** Overcast

ITEM	COMMENTS	RECOMMENDATIONS
Vegetation Cover	Lacking in the western third of landfill	Monitor changes in vegetation growth and coverage.
Shrubs	None	N/A
Vegetation Loss with Soil Erosion	None noticed	N/A
Non-native Plants	Present	Monitor if a concern
Fire Hazard, Dead Vegetation, and Deep Rooted Plants	Not apparent	N/A

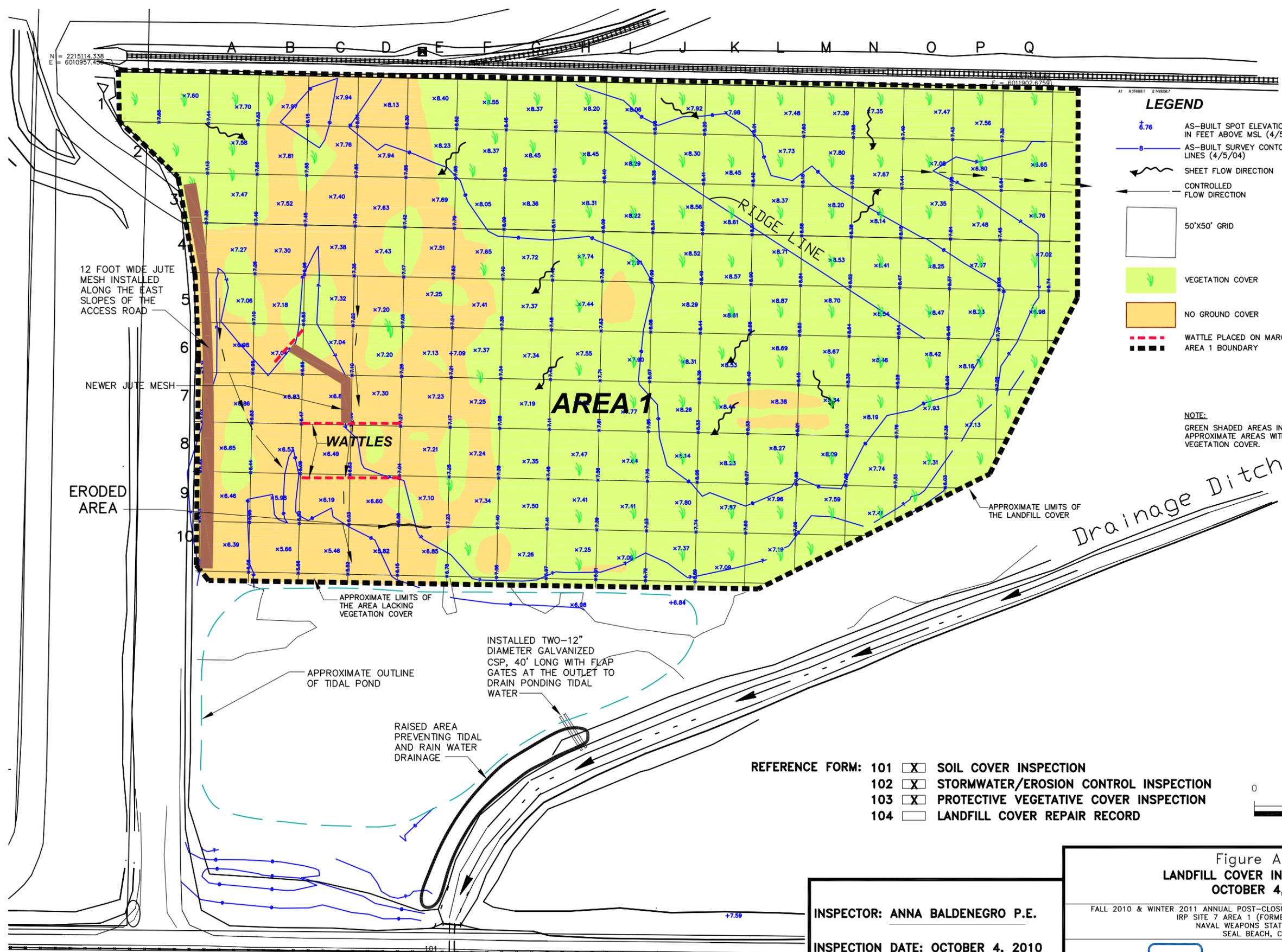
Signature

Site Inspector/Engineer



Date 10/4/10

P:\3570-RAC\CTO-0008\DWG\2010.10.04 SITE INSPECTION\08000XA1A.DWG
 PLOT/UPDATE: OCT 14 2010 13:10:43



LEGEND

- x 6.76 AS-BUILT SPOT ELEVATIONS IN FEET ABOVE MSL (4/5/04)
- AS-BUILT SURVEY CONTOUR LINES (4/5/04)
- SHEET FLOW DIRECTION
- CONTROLLED FLOW DIRECTION
- 50'X50' GRID
- VEGETATION COVER
- NO GROUND COVER
- WATTLE PLACED ON MARCH 6, 2009
- AREA 1 BOUNDARY

NOTE:
 GREEN SHADED AREAS INDICATE APPROXIMATE AREAS WITH VEGETATION COVER.

- REFERENCE FORM:**
- 101 SOIL COVER INSPECTION
 - 102 STORMWATER/EROSION CONTROL INSPECTION
 - 103 PROTECTIVE VEGETATIVE COVER INSPECTION
 - 104 LANDFILL COVER REPAIR RECORD

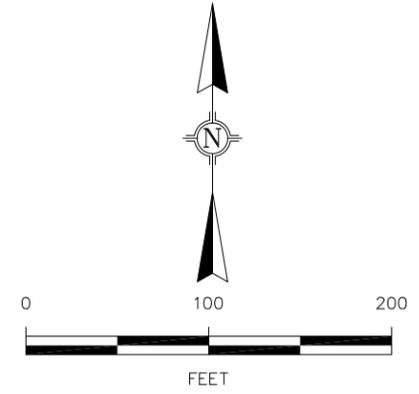


Figure A-1A
LANDFILL COVER INSPECTION MAP
 OCTOBER 4, 2010

FALL 2010 & WINTER 2011 ANNUAL POST-CLOSURE INSPECTION AND MAINTENANCE REPORT
 IRP SITE 7 AREA 1 (FORMER STATION LANDFILL)
 NAVAL WEAPONS STATION SEAL BEACH
 SEAL BEACH, CALIFORNIA



TETRA TECH EC, INC.

INSPECTOR: ANNA BALDENEGRO P.E.
INSPECTION DATE: OCTOBER 4, 2010



October 4, 2010 - IRP Site 7 landfill cover (near west end). Looking east from northern most wattle – lack of vegetation and newer jute mesh is observed.



October 4, 2010 - IRP Site 7 landfill cover (near west end). Looking west towards boundary road - new plant is observed.



October 4, 2010 - IRP Site 7 landfill cover (western side). Looking north – newer jute mesh & imbedded shells are observed.



October 4, 2010 - IRP Site 7 landfill cover (southwestern area). Looking west – minor erosion southeast of southern most wattle is observed.

APPENDIX A-2 – OCTOBER 28, 2010, INSPECTION REPORT

FORM 101 – SOIL COVER INSPECTION

FORM 102 – STORMWATER/EROSION CONTROL INSPECTION

FORM 103 – PROTECTIVE VEGETATIVE COVER INSPECTION

FIGURE A-1B – LANDFILL COVER INSPECTION MAP

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FORM 101

SOIL COVER INSPECTION (OCTOBER 28, 2010)

Type of Inspection: Periodic

Inspector Name: Anna Baldenegro, P.E. Affiliation (Name of Navy
Consultant or Representative): Tetra Tech EC, Inc. (TtEC)

Date: 10/28/10 Time: 11:15 a.m. Weather Condition: Sunny

OBSERVATION TYPE AND DETAILED DESCRIPTION:

Erosion Sloughing/Sliding Cracks/Fissures Subsidence/
Depression Evidence of Excessive
Borrowing Rodents Others

The soil was moist due to the rainfall that occurred during the week of October 18. Shallow depressions were observed in the northern part of the western side of the landfill. Erosion was observed in the southern part of the western side of the landfill. Limited vegetation growth was observed.

LOCATION OF OBSERVATION (Shown on the attached Figure A-1B): _____
The approximate locations of the shallow depressions and eroded areas are indicated on Figure A-1B.

RECOMMENDATIONS: _____
Regrade shallow depressions and eroded areas so that flow is positive. Install plug plants and revegetate as recommended by project biologist.

REMARKS: _____
Major cracks were not observed.

Signature

Site Inspector/Engineer



Date 10/28/10

FORM 102

**STORMWATER/EROSION CONTROL INSPECTION
(OCTOBER 28, 2010)**

Date: 10/28/10 **Name of Inspector/Engineer:** Anna Baldenegro, P.E.

Observations Types:

- | | | | |
|---------------|-------------------------------------|---------------|---|
| <u> </u> | 1. Ponding | <u> X </u> | 5. Lack of Positive Drainage
(the depressions) |
| <u> </u> | 2. Downstream Drainage Obstructions | <u> </u> | 6. Silt Deposition at Low Areas |
| <u> </u> | 3. Cover Washouts | <u> </u> | 7. Vegetation Washout |
| <u> X </u> | 4. Gully Erosion | | |

TYPE OF DEFICIENCY: Shallow depressions and erosion was observed in various places in the western side of the landfill.

LOCATION OF OBSERVATION (shown on the attached Figure A-1B): See Figure A-1B for the approximate locations of the depressions and eroded areas.

RECOMENDATIONS: Regrade depressions and eroded areas so that flow is positive.

COMMENTS: No ponding was observed.

Signature

Site Inspector/Engineer



Date 10/28/10

FORM 103

PROTECTIVE VEGETATIVE COVER INSPECTION (OCTOBER 28, 2010)

Location: IRP Site 7 Landfill **Date and Time:** 10/28/10 11:15 a.m.

Boundary Roads: Good condition **Inspector Name:** Anna Baldenegro, P.E.

General Soil Condition: Wet Dry **Weather:** Sunny

ITEM	COMMENTS	RECOMMENDATIONS
Vegetation Cover	Limited growth observed	Install plug plants and revegetate as recommended by project biologist
Shrubs	None	N/A
Vegetation Loss with Soil Erosion	None noticed	N/A
Non-native Plants	Present	Monitor if a concern
Fire Hazard, Dead Vegetation, and Deep Rooted Plants	Not apparent	N/A

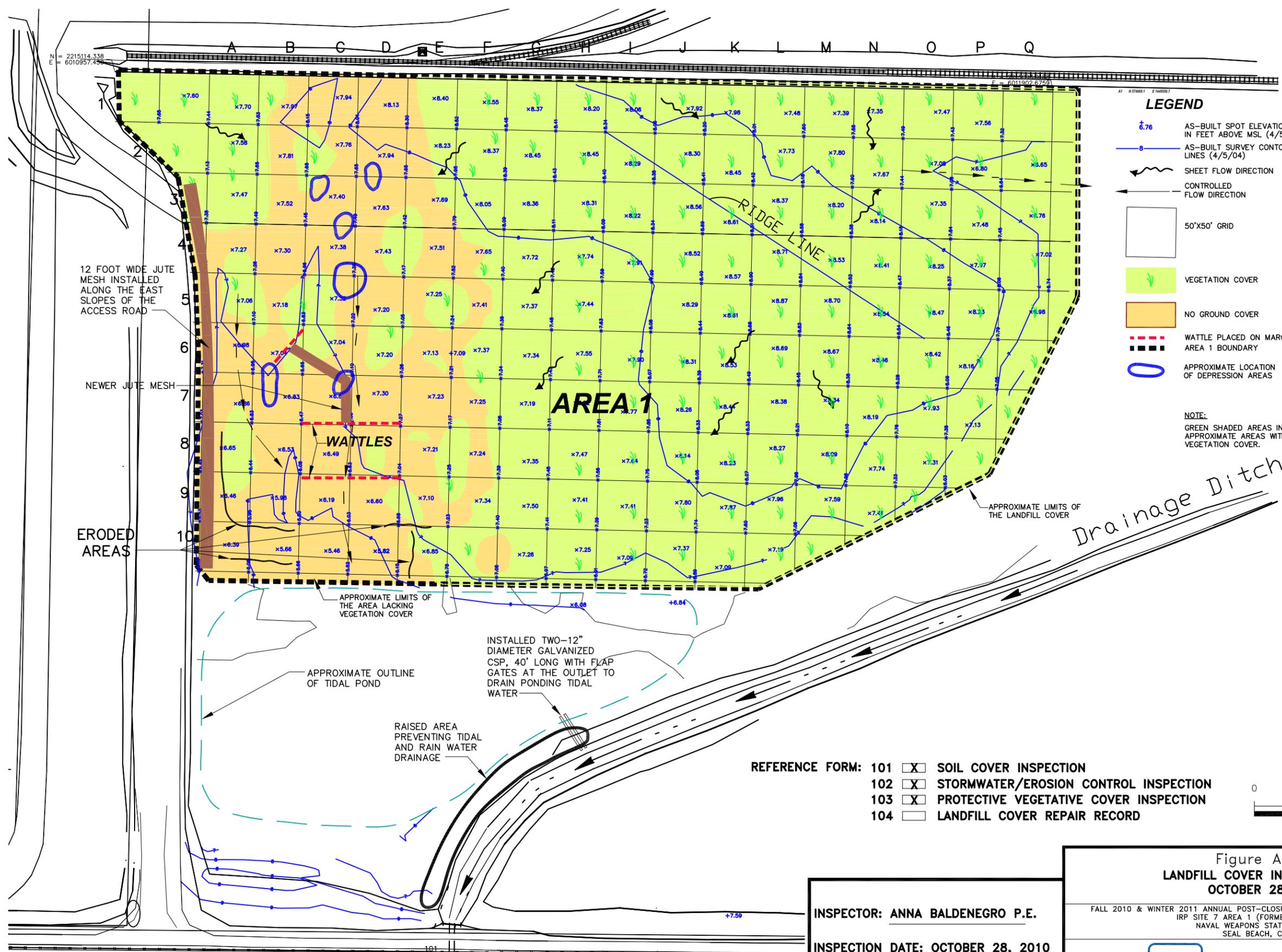
Signature

Site Inspector/Engineer



Date 10/28/10

P:\3570-RAC\CTO-0008\DWG\2010.10.28 SITE INSPECTION\08000XA1B.DWG
 PLOT/UPDATE: NOV 09 2010 13:43:26



LEGEND

- AS-BUILT SPOT ELEVATIONS IN FEET ABOVE MSL (4/5/04)
- AS-BUILT SURVEY CONTOUR LINES (4/5/04)
- SHEET FLOW DIRECTION
- CONTROLLED FLOW DIRECTION
- 50'X50' GRID
- VEGETATION COVER
- NO GROUND COVER
- WATTLE PLACED ON MARCH 6, 2009
- AREA 1 BOUNDARY
- APPROXIMATE LOCATION OF DEPRESSION AREAS

NOTE:
 GREEN SHADED AREAS INDICATE APPROXIMATE AREAS WITH VEGETATION COVER.

- REFERENCE FORM:**
- 101 SOIL COVER INSPECTION
 - 102 STORMWATER/EROSION CONTROL INSPECTION
 - 103 PROTECTIVE VEGETATIVE COVER INSPECTION
 - 104 LANDFILL COVER REPAIR RECORD

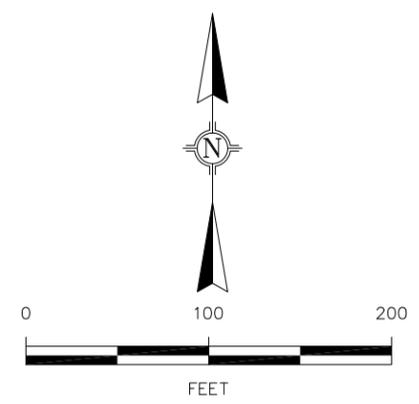


Figure A-1B
LANDFILL COVER INSPECTION MAP
OCTOBER 28, 2010

FALL 2010 & WINTER 2011 ANNUAL POST-CLOSURE INSPECTION AND MAINTENANCE REPORT
 IRP SITE 7 AREA 1 (FORMER STATION LANDFILL)
 NAVAL WEAPONS STATION SEAL BEACH
 SEAL BEACH, CALIFORNIA



TETRA TECH EC, INC.

INSPECTOR: ANNA BALDENEGRO P.E.
INSPECTION DATE: OCTOBER 28, 2010



October 28, 2010 - IRP Site 7 landfill cover (near northwest corner). Looking east – vegetation growth is observed.



October 28, 2010 - IRP Site 7 landfill cover (western portion). Looking northeast – depressions are observed.



October 28, 2010 - IRP Site 7 landfill cover (western side). Looking northwest – vegetation growth is observed.



October 28, 2010 - IRP Site 7 landfill cover (near southern boundary). Looking east – vegetation growth and erosion is observed.



October 28, 2010 - IRP Site 7 landfill cover (near southern boundary). Looking southeast – erosion is observed.



October 28, 2010 - IRP Site 7 landfill cover (near southern boundary). Looking west – erosion is observed.



October 28, 2010 - IRP Site 7 landfill cover (southwest corner). Looking southwest – erosion is observed.



October 28, 2010 - IRP Site 7 landfill cover (western boundary). Looking north – erosion is observed.

APPENDIX A-3 – DECEMBER 23, 2010, INSPECTION REPORT

FORM 101 – SOIL COVER INSPECTION

FORM 102 – STORMWATER/EROSION CONTROL INSPECTION

FORM 103 – PROTECTIVE VEGETATIVE COVER INSPECTION

FIGURE A-1C – LANDFILL COVER INSPECTION MAP

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FORM 101

SOIL COVER INSPECTION (DECEMBER 23, 2010)

Type of Inspection: Periodic

Inspector Name: Hamlet Hamparsumian Affiliation (Name of Navy Consultant or Representative): Tetra Tech EC, Inc. (TtEC)

Date: 12/23/10 Time: 9:40 a.m. Weather Condition: Sunny with scattered clouds

OBSERVATION TYPE AND DETAILED DESCRIPTION:

Erosion Sloughing/Sliding Cracks/Fissures Subsidence/Depression Evidence of Excessive Borrowing Rodents Others

Minor erosion in a very few areas was observed. These small erosions were no deeper than 2 inches and about 6 inches wide near the southwest area close to the adjacent access road.

LOCATION OF OBSERVATION (Shown on the attached Figure A-1C): _____

The approximate locations of the minor eroded areas are indicated on Figure A-1C.

RECOMMENDATIONS: _____

Grade and fill with rake and place jute mesh.

REMARKS: _____

No maintenance necessary at this time. Minor grading can be performed after the rainy season and when the ground is dry.

Signature

Site Inspector/Engineer



Date 12/23/10

FORM 102

STORMWATER/EROSION CONTROL INSPECTION (DECEMBER 23, 2010)

Date: 12/23/10 **Name of Inspector/Engineer:** Hamlet Hamparsumian

Observations Types:

- | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|---------------------------------|
| <input checked="" type="checkbox"/> | 1. Ponding | <input checked="" type="checkbox"/> | 5. Lack of Positive Drainage |
| <input checked="" type="checkbox"/> | 2. Downstream Drainage Obstructions | <input type="checkbox"/> | 6. Silt Deposition at Low Areas |
| <input type="checkbox"/> | 3. Cover Washouts | <input type="checkbox"/> | 7. Vegetation Washout |
| <input checked="" type="checkbox"/> | 4. Gully Erosion | | |

TYPE OF OBSERVATION: _____

The southwestern portion of the landfill has ponded mainly due to high tide and problems with the drainage culvert at the flood control channel. The gate at the culvert allows water from the channel to back into the southwestern portion of the landfill. Other ponding areas were observed, however, they were not deeper than 6 inches.

LOCATION OF OBSERVATION (shown on the attached Figure A-1C): _____

See Figure A-1C for the approximate locations of the ponding areas.

RECOMENDATIONS: _____

COMMENTS: _____

Signature

Site Inspector/Engineer



Date 12/23/10

FORM 103

PROTECTIVE VEGETATIVE COVER INSPECTION (DECEMBER 23, 2010)

Location: IRP Site 7 Landfill **Date and Time:** 12/23/10 9:40 a.m.

Boundary Roads: Good condition **Inspector Name:** Hamlet Hamparsumian

General Soil Condition: Wet Dry **Weather:** Sunny with scattered clouds

ITEM	COMMENTS	RECOMMENDATIONS
Vegetation Cover	The western portion still lacks vegetation cover and is mostly bare	
Shrubs	None was observed	
Vegetation Loss with Soil Erosion	None was observed	
Non-native Plants	Significant amounts were not observed	
Fire Hazard, Dead Vegetation, and Deep Rooted Plants	None was observed	

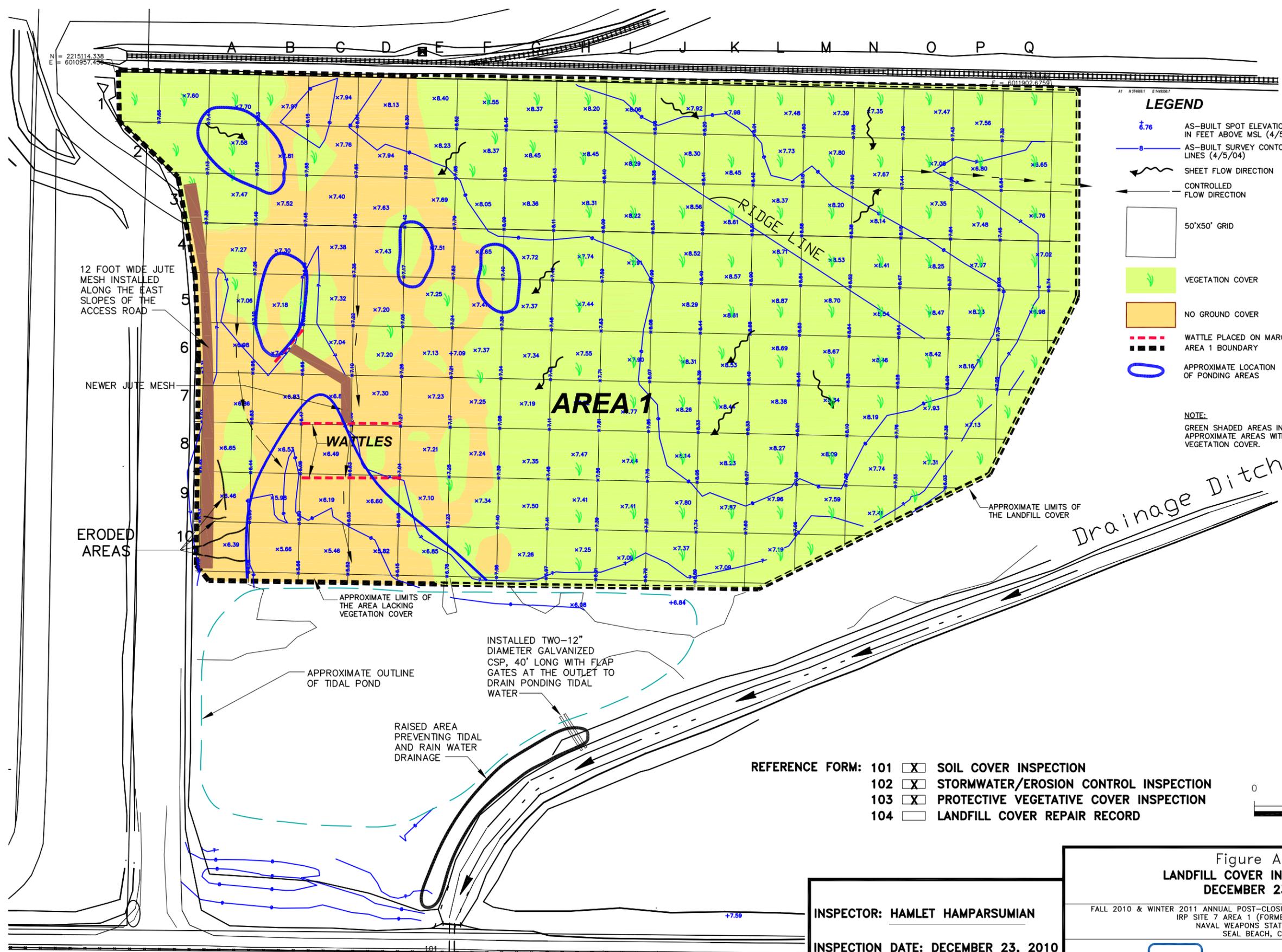
Signature

Site Inspector/Engineer



Date 12/23/10

P:\3570-RAC\CTO-0008\DWG\2010.12.23 SITE INSPECTION\08000XATC.DWG
 PLOT/UPDATE: JAN 11 2011 16:51:21



LEGEND

- x 6.76 AS-BUILT SPOT ELEVATIONS IN FEET ABOVE MSL (4/5/04)
- AS-BUILT SURVEY CONTOUR LINES (4/5/04)
- SHEET FLOW DIRECTION
- CONTROLLED FLOW DIRECTION
- 50'X50' GRID
- VEGETATION COVER
- NO GROUND COVER
- WATTLE PLACED ON MARCH 6, 2009
- AREA 1 BOUNDARY
- APPROXIMATE LOCATION OF PONDING AREAS

NOTE:
 GREEN SHADED AREAS INDICATE APPROXIMATE AREAS WITH VEGETATION COVER.

- REFERENCE FORM:**
- 101 SOIL COVER INSPECTION
 - 102 STORMWATER/EROSION CONTROL INSPECTION
 - 103 PROTECTIVE VEGETATIVE COVER INSPECTION
 - 104 LANDFILL COVER REPAIR RECORD

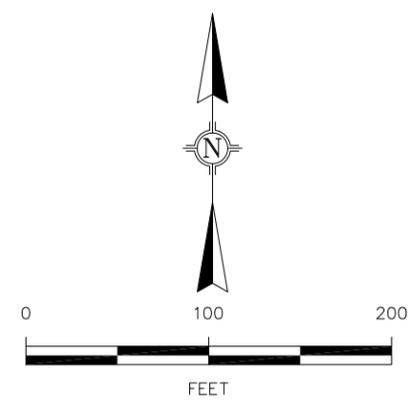


Figure A-1C
LANDFILL COVER INSPECTION MAP
DECEMBER 23, 2010

FALL 2010 & WINTER 2011 ANNUAL POST-CLOSURE INSPECTION AND MAINTENANCE REPORT
 IRP SITE 7 AREA 1 (FORMER STATION LANDFILL)
 NAVAL WEAPONS STATION SEAL BEACH
 SEAL BEACH, CALIFORNIA



TETRA TECH EC, INC.

INSPECTOR: HAMLET HAMPARSUMIAN
INSPECTION DATE: DECEMBER 23, 2010



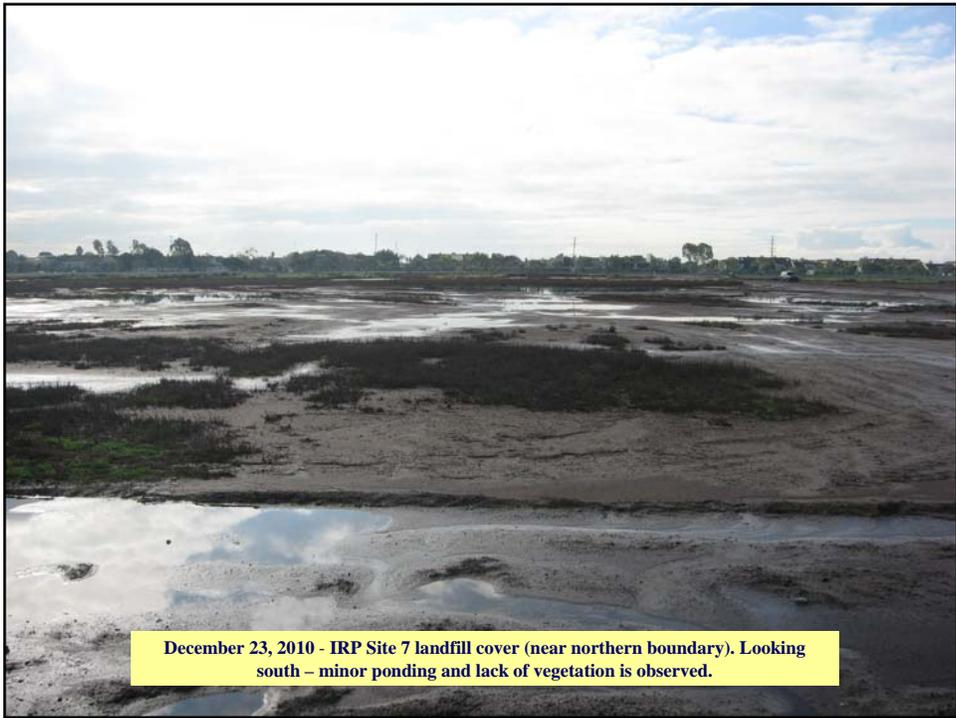
December 23, 2010 - IRP Site 7 landfill cover (southwest corner). Looking northeast – ponding along southern boundary is observed.



December 23, 2010 - IRP Site 7 landfill cover (western side). Looking northeast – minor ponding and lack of vegetation is observed.



December 23, 2010 - IRP Site 7 landfill cover (northwest corner). Looking northeast – ponding is observed.



December 23, 2010 - IRP Site 7 landfill cover (near northern boundary). Looking south – minor ponding and lack of vegetation is observed.

APPENDIX A-4 – MARCH 30, 2011, INSPECTION REPORT

FORM 101 – SOIL COVER INSPECTION

FORM 102 – STORMWATER/EROSION CONTROL INSPECTION

FORM 103 – PROTECTIVE VEGETATIVE COVER INSPECTION

FIGURE A-1D – LANDFILL COVER INSPECTION MAP

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FORM 101

SOIL COVER INSPECTION (MARCH 30, 2011)

Type of Inspection: Periodic

Inspector Name: Hamlet Hamparsumian Affiliation (Name of Navy Consultant or Representative): Tetra Tech EC, Inc. (TtEC)

Date: 03/30/11 Time: 10:55 a.m. Weather Condition: Sunny with scattered clouds

OBSERVATION TYPE AND DETAILED DESCRIPTION:

Erosion Sloughing/Sliding Cracks/Fissures Subsidence/Depression Evidence of Excessive Borrowing Rodents Others

Minor reel erosion in a very few areas was observed. These small reel erosions were no deeper than 2 inches and about 6 inches wide near the southwest area close to the adjacent access road. There were no significant changes since the last inspection conducted on December 23, 2010.

LOCATION OF OBSERVATION (Shown on the attached Figure A-1D): _____

The approximate locations of minor reel erosion are indicated on Figure A-1D. However, these areas were hydroseeded on March 8, which is expected to protect them from further erosion.

RECOMMENDATIONS: _____

None necessary at this time.

REMARKS: _____

No maintenance necessary at this time. Minor grading may be performed after the rainy season and when the ground is dry, and jute mesh may be placed over these areas to help prevent potential further erosion.

Signature

Site Inspector/Engineer



Date 03/30/11

FORM 102

STORMWATER/EROSION CONTROL INSPECTION (MARCH 30, 2011)

Date: 03/30/11 **Name of Inspector/Engineer:** Hamlet Hamparsumian

Observations Types:

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|---------------------------------|
| <input checked="" type="checkbox"/> | 1. Ponding | <input type="checkbox"/> | 5. Lack of Positive Drainage |
| <input type="checkbox"/> | 2. Downstream Drainage Obstructions | <input type="checkbox"/> | 6. Silt Deposition at Low Areas |
| <input type="checkbox"/> | 3. Cover Washouts | <input type="checkbox"/> | 7. Vegetation Washout |
| <input type="checkbox"/> | 4. Gully Erosion | | |

TYPE OF OBSERVATION: _____

The southwestern portion of the landfill has ponded mainly due to high tide and problems with the drainage culvert at the flood control channel. The gate at the culvert allows water from the channel to back into the southwestern portion of the landfill. Other small areas with ponded water were observed, however, they were shallow and not deeper than 6 inches. In general the area has positive drainage that allows precipitation to drain to the south side of the landfill.

LOCATION OF OBSERVATION (shown on the attached Figure A-1D): _____

See Figure A-1D for the approximate locations of the ponded areas.

RECOMENDATIONS: _____

Because of the recent hydroseeding and planting that was completed on March 9, 2011, it is advisable not to disturb the restored areas.

COMMENTS: _____

Signature

Site Inspector/Engineer



Date 03/30/11

FORM 103

PROTECTIVE VEGETATIVE COVER INSPECTION (MARCH 30, 2011)

Location: IRP Site 7 Landfill **Date and Time:** 03/30/11 11:30 a.m.

Boundary Roads: Good condition **Inspector Name:** Hamlet Hamparsumian

General Soil Condition: Moist X Dry **Weather:** Sunny with scattered clouds

ITEM	COMMENTS	RECOMMENDATIONS
Vegetation Cover	Approximately 3.5 acres of the western portion was hydroseeded on March 8 and 9, 2011. In addition, approximately 3,100 plug plants were installed within five 50-foot by 50-foot and one 25-foot by 25-foot plots in this area. It is anticipated that the new plants and hydroseeding will result in additional vegetation growth in the bare areas in the western portion of the landfill. There has been noticeable increase in vegetation cover in this area likely due to more than normal precipitation during this past rainy season.	
Shrubs	None was observed	
Vegetation Loss with Soil Erosion	None was observed	
Non-native Plants	Significant amounts were not observed	
Fire Hazard, Dead Vegetation, and Deep Rooted Plants	None was observed	

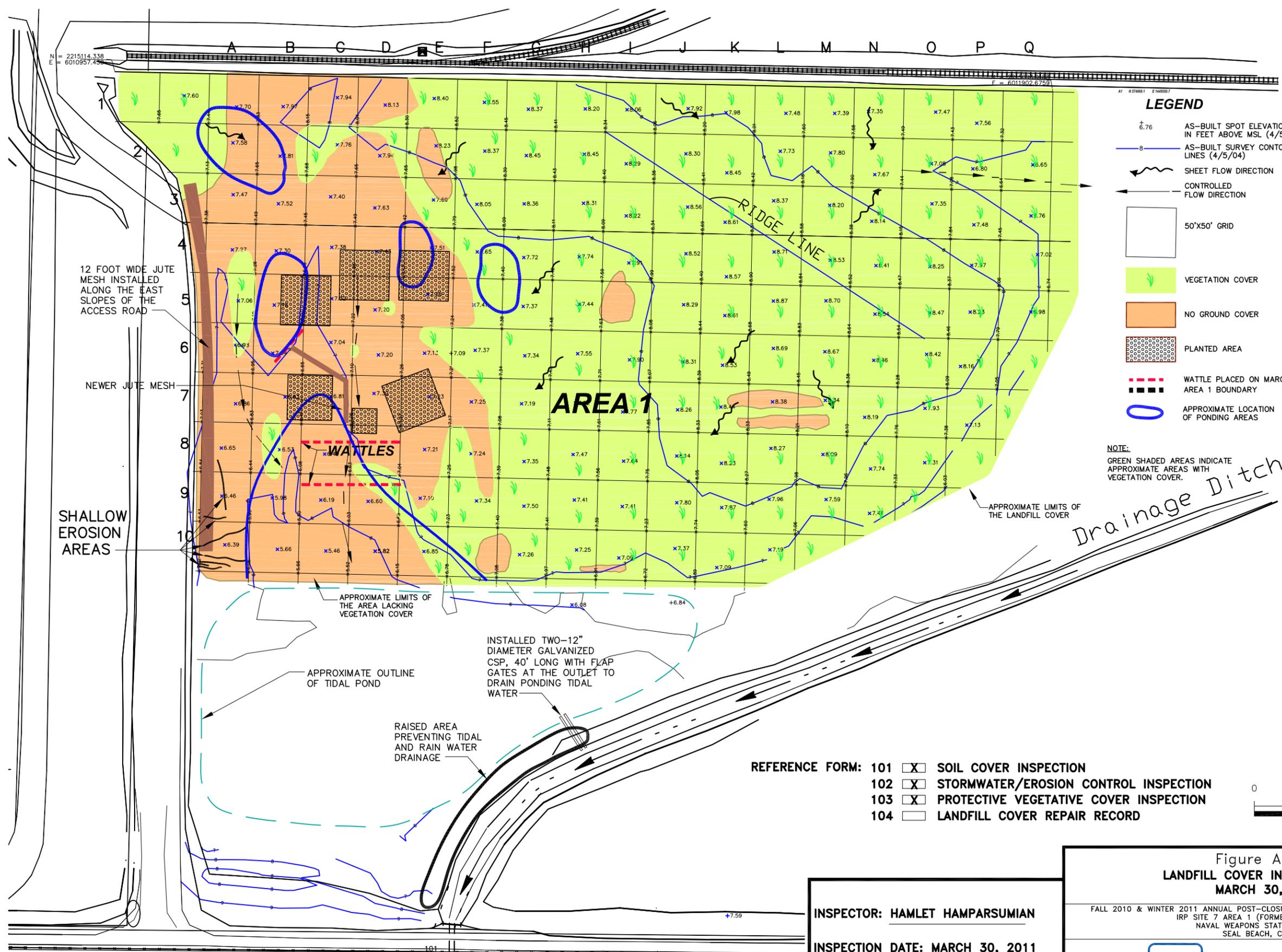
Signature

Site Inspector/Engineer



Date 03/30/11

P:\3570-RAC\CTO-0008\DWG\2010.03.31 SITE INSPECTION\08000XATC.DWG
 PLOT/UPDATE: MAY 17 2011 9:39:00



LEGEND

- ± 6.76 AS-BUILT SPOT ELEVATIONS IN FEET ABOVE MSL (4/5/04)
- AS-BUILT SURVEY CONTOUR LINES (4/5/04)
- SHEET FLOW DIRECTION
- ← CONTROLLED FLOW DIRECTION
- 50'X50' GRID
- VEGETATION COVER
- NO GROUND COVER
- PLANTED AREA
- WATTLE PLACED ON MARCH 6, 2009
- AREA 1 BOUNDARY
- APPROXIMATE LOCATION OF PONDING AREAS

NOTE:
 GREEN SHADED AREAS INDICATE APPROXIMATE AREAS WITH VEGETATION COVER.

- REFERENCE FORM: 101 SOIL COVER INSPECTION
 102 STORMWATER/EROSION CONTROL INSPECTION
 103 PROTECTIVE VEGETATIVE COVER INSPECTION
 104 LANDFILL COVER REPAIR RECORD

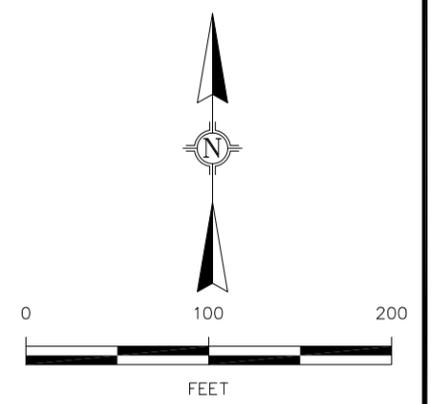


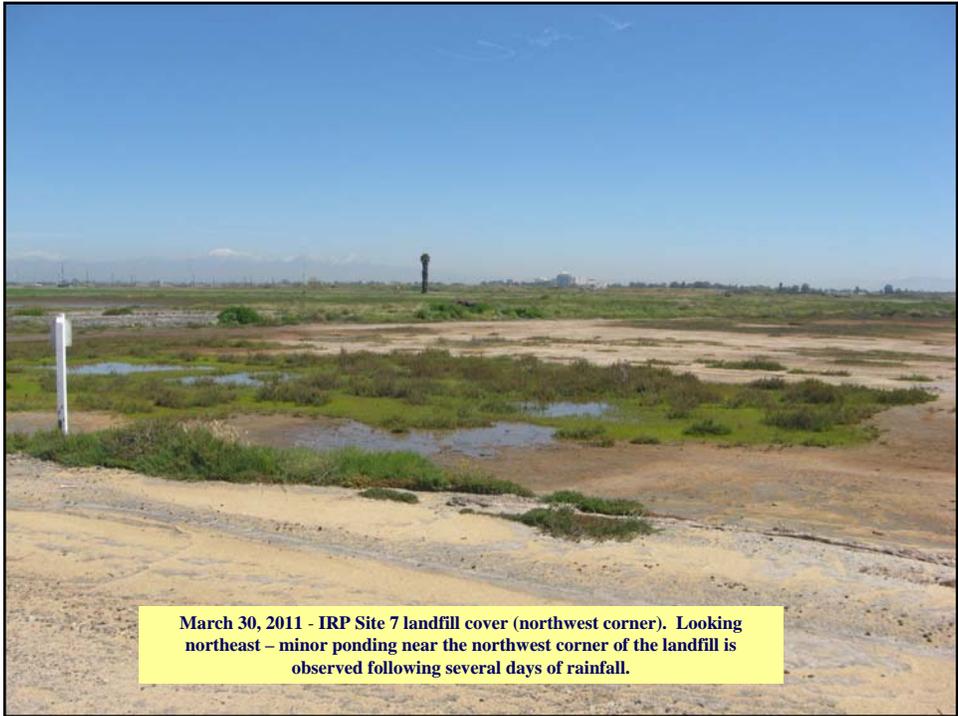
Figure A-1D
LANDFILL COVER INSPECTION MAP
 MARCH 30, 2011

FALL 2010 & WINTER 2011 ANNUAL POST-CLOSURE INSPECTION AND MAINTENANCE REPORT
 IRP SITE 7 AREA 1 (FORMER STATION LANDFILL)
 NAVAL WEAPONS STATION SEAL BEACH
 SEAL BEACH, CALIFORNIA



TETRA TECH EC, INC.

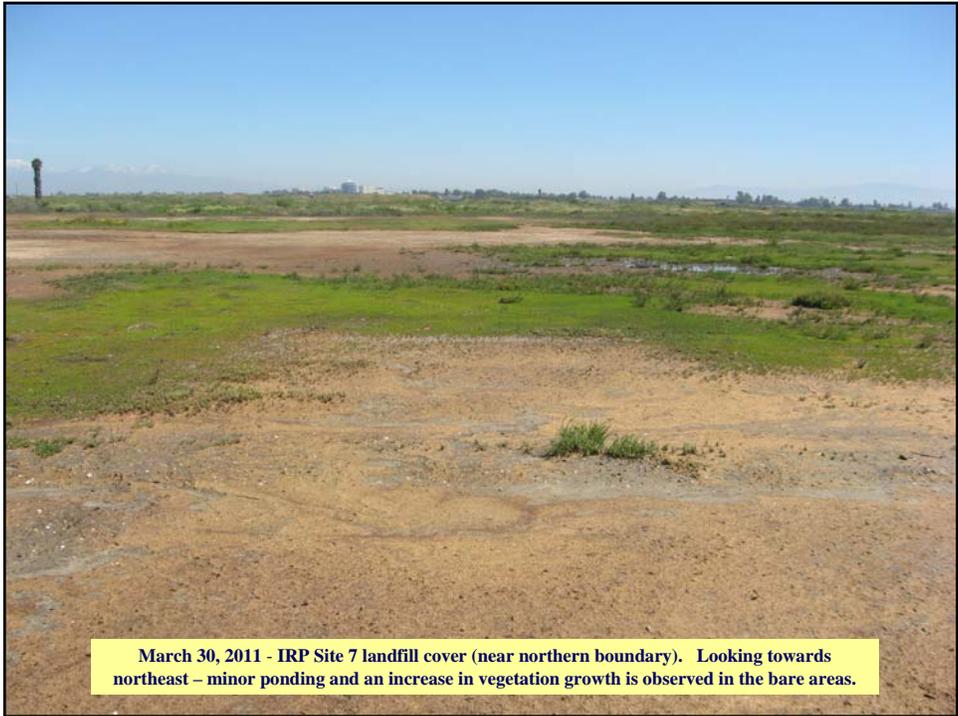
INSPECTOR: **HAMLET HAMPARSUMIAN**
 INSPECTION DATE: **MARCH 30, 2011**



March 30, 2011 - IRP Site 7 landfill cover (northwest corner). Looking northeast – minor ponding near the northwest corner of the landfill is observed following several days of rainfall.



March 30, 2011 - IRP Site 7 landfill cover (western side). Looking east – no ponding is observed following several days of rainfall. Planted areas are shown in the background









March 30, 2011 - IRP Site 7 landfill cover (near southern boundary). Looking east – This photo shows gradual invasion and spreading of the pickle weed inward, towards north and over the southern bare areas of the landfill.



March 30, 2011 - IRP Site 7 landfill cover (central portion). Looking north – This photo shows good vegetation cover over majority of the central and eastern portion of the landfill.



March 30, 2011 - IRP Site 7 landfill cover (near southern boundary). Looking northwest – This photo shows increasingly more new vegetation sprouting in the bare areas of the western portion of the landfill.



March 30, 2011 - IRP Site 7 landfill cover (near southern boundary). Looking northeast – Photo shows no ponding following several days of heavy rainfall. Signs of maturing vegetation growth is observed in large patches in the western portion of the landfill.



APPENDIX B
SITE RESTORATION PHOTOGRAPHS

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March 2, 2011 – IRP Site 7 landfill cover prior to site restoration activities (southwest corner). Looking northeast – some patches of recent vegetation growth is observed.



March 2, 2011 – IRP Site 7 landfill cover prior to site restoration activities (southwest corner). Looking east/southeast – some patches of recent vegetation growth is observed.



March 2, 2011 – IRP Site 7 landfill cover prior to site restoration activities. Looking south – some larger patches of recent vegetation growth is observed near the access road to the west.



March 2, 2011 – IRP Site 7 landfill. A total of 3,100 plug plants consisting of frankenia salina, salicornia virginica, and batis maritima were purchased from Tree of Life nursery and installed at the site.



March 2, 2011 – IRP Site 7 landfill cover. Workers are shown measuring 50-foot by 50-foot islands for installing the plug plants.



March 3, 2011 – IRP Site 7 landfill. Workers are shown digging small holes for planting the plug plants. The plug plants were installed 2-foot on center within each of the 50-foot by 50-foot islands.



March 3, 2011 – IRP Site 7 landfill cover. Plug plants were installed in five 50-foot by 50-foot size islands. The various plant species were mixed.



March 3, 2011 – IRP Site 7 landfill cover. The plug plants inside the liners are shown placed next to the holes dug out prior to planting.



March 3, 2011 – IRP Site 7 landfill cover. Plug plants are shown after they are planted.



March 8, 2011 – IRP Site 7 landfill cover. Plug plants were installed in a 50-foot by 50-foot size islands following heavy rains during the previous day. The various plant species were mixed.



March 9, 2011 – IRP Site 7 landfill cover. Workers are shown watering the newly installed plug plants.



March 8, 2011 – IRP Site 7 landfill cover. A worker is shown hydroseeding the bare areas of the western portion of the landfill and between the areas with patches of vegetation growth.



March 8, 2011 – IRP Site 7 landfill cover (near northern boundary). A seed mix consisting of 6 pounds per acre (lbs/AC) of *heliotropium curassavicum* (wild heliotrope), 4 Lbs/AC of *frankenian salina* (alkali heath), and 6 lbs/AC of *distichlis spicata* (salt grass) was applied over a 3.5 acres area.



March 8, 2011 – IRP Site 7 landfill cover. Approximately 3.5 acres of the western portion of the landfill was hydroseeded.

