

Naval Facilities Engineering Command, Southwest
Contracts Department
1220 Pacific Highway, Building 127, Room 112
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CONTRACT NO. N68711-98-D-5713
CTO No. 0023

FINAL
2005 SECOND SEMIANNUAL POST-CLOSURE
INSPECTION AND MAINTENANCE REPORT
Revision 1

April 17, 2006

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

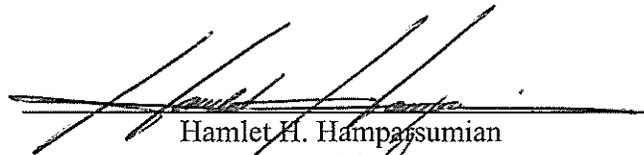
DCN: FWSD-RAC-06-0341

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TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF FIGURES	ii
ABBREVIATIONS AND ACRONYMS	iii
1.0 INTRODUCTION	1-1
1.1 SITE HISTORY AND BACKGROUND	1-2
1.2 SCOPE OF SECOND SEMIANNUAL INSPECTION	1-3
1.3 LAND USE CONTROL.....	1-4
2.0 SOIL COVER MAINTENANCE AND INSPECTION	2-1
2.1 MAINTENANCE ACTIVITIES.....	2-1
2.2 INSPECTION PROCEDURES.....	2-3
2.3 SUMMARY OF FIELD OBSERVATIONS.....	2-4
2.3.1 Soil Cover Stability	2-4
2.4 EVALUATION OF FIELD INSPECTION OBSERVATIONS.....	2-4
2.5 FINDINGS AND RECOMMENDATIONS	2-4
3.0 VEGETATION COVER MAINTENANCE AND INSPECTION.....	3-1
3.1 PROTECTIVE VEGETATION COVER.....	3-2
4.0 SURFACE WATER MANAGEMENT SYSTEM INSPECTION.....	4-1
4.1 SCOPE OF SURFACE WATER MANAGEMENT SYSTEM INSPECTION	4-1
4.2 SUMMARY OF FIELD OBSERVATIONS.....	4-1
4.3 FINDINGS AND RECOMMENDATIONS	4-1
5.0 LANDFILL SURVEY	5-1
5.1 SURVEY SCOPE.....	5-1
5.2 SUMMARY OF FIELD OBSERVATIONS.....	5-1
5.3 DATA EVALUATION	5-1
5.4 FINDINGS AND RECOMMENDATIONS	5-1
6.0 ACCESS ROADS MAINTENANCE AND INSPECTION	6-1
6.1 ACCESS AND BENCH ROADS SCOPE.....	6-1
6.2 DATA EVALUATION	6-1
6.3 FINDINGS AND RECOMMENDATIONS	6-1
7.0 REFERENCES.....	7-1

APPENDICES

Appendix A	Inspection Forms 101, 102, and 103
Appendix B	Photographic Log

LIST OF FIGURES

Figure 1-1	Regional Location Map
Figure 1-2	Site Vicinity Map
Figure 2-1	Depression and Repair Areas Identified During March 2005 Inspections
Figure 2-2	Landfill Cover Contour Map and Regraded Areas

ABBREVIATIONS AND ACRONYMS

ASTM	American Society for Testing and Materials
bgs	below ground surface
DON	Department of the Navy
EPA	U.S. Environmental Protection Agency
IR	Installation Restoration
IRP	Installation Restoration Program
NAVFAC SW	Naval Facilities Engineering Command, Southwest
NAVWPNSTA	Naval Weapons Station
NTCRA	non-time-critical removal action
PCIMP	Post-Closure Inspection and Maintenance Plan
SBNWR	Seal Beach National Wildlife Refuge
SIM	Selective Ion Monitoring
TtEC	Tetra Tech EC, Inc.
TtFW	Tetra Tech FW, Inc.

1.0 INTRODUCTION

This report describes the results and findings of the 2005 second post-closure inspection conducted in October and November 2005 at the Installation Restoration Program (IRP) Site 7 Area 1, Former Station Landfill, located at Naval Weapons Station (NAVWPNSTA) Seal Beach in Seal Beach, California (Figures 1-1 and 1-2), as required and in accordance with procedures outlined in the Post-Closure Inspection and Maintenance Plan (PCIMP) [Tetra Tech FW, Inc. (TtFW), 2004a]. The PCIMP (TtFW, 2004a) describes the procedures and requirements for post-closure inspections and maintenance activities for IRP Site 7 Area 1.

A Registered Civil Engineer (CE-41963) in the state of California, with experience in landfill design and site development, conducted the landfill cover inspections. The report was prepared under the direct supervision of a Registered Civil Engineer. This report contains information generated during the inspections, as well as information from other sources.

The purpose of this report is to document the landfill repair activities conducted during September 2005 in accordance with the recommendations provided in the *Final 2005 First Semiannual Post-Closure Inspection and Maintenance Report* [Tetra Tech EC, Inc. (TtEC, 2005)], which was submitted to the Department of the Navy (DON) and the agencies in September 2005. This report also summarizes information gathered during the inspections that were conducted in October and November of 2005 in compliance and in accordance with the PCIMP (TtFW, 2004a). This report describes any changes to the landfill cover such as settlements observed during the inspections and evaluates its effects on the performance of the cover system. This report also documents any changes to the surface water management system, the condition and performance of the vegetation cover, and the access roads. The settlement and cover performance site inspection surveys were conducted on November 14 following the completion of the landfill cover maintenance. Several minor rainfall events had occurred following the completion of cover maintenance during October and early November 2005.

The monitoring and inspection of the landfill cover, drainage, and vegetation cover conducted in October and November 2005 is the second annual monitoring conducted at IRP Site 7. The inspection was conducted as part of 3 years of monitoring and inspection described and proposed in the PCIMP (TtFW, 2004a). This report will be kept on file with the NAVWPNSTA Installation Restoration (IR) Program Coordinator and NAVWPNSTA Seal Beach Administration Records. Copies will also be kept in the Naval Facilities Engineering Command, Southwest (NAVFAC SW) Administrative Record files. This report includes a description of inspections conducted, documents the monitoring and inspection results and findings, and provides recommendations.

This report documents the condition of the cover at the time of the inspection to ensure that the soil cover is 1) functioning adequately to isolate the buried waste from the surface, 2) that it

continues to provide adequate drainage and minimize erosion of the cover, and 3) that 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 that could cause ponding or any unusual surface conditions. A visual inspection of surface drainage swales and slopes was also conducted, in detail by grid walking. The vegetation cover was inspected to document any soil losses due to precipitation, lack of vegetation cover, and winds, and to identify the causes of erosion problem areas. The vegetation inspection also focused on characterizing the vegetation species composition and vegetation cover at the site.

The pertinent PCIMP (TtFW, 2004a) inspection forms completed during the inspections are attached as Appendix A to this report. Photographs taken during the inspections are provided in Appendix B.

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, along with a brief description of the nature and extent of the contamination.

IRP Site 7 consists of six distinctive areas (designated as Areas 1 through 6) totaling approximately 33 acres located near the southern boundary of NAVWPNSTA Seal Beach and at the eastern boundary of the Seal Beach National Wildlife Refuge (SBNWR) (Figure 1-2). 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.

Area 1 lies in the northeast portion of the IRP Site 7. It covers approximately 8 acres. Most of the waste disposal and landfilling activities took place in 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 (Southwest Division, Naval Facilities Engineering Command, 1999).

The DON completed a non-time-critical removal action (NTCRA) 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 at the Naval Weapons Station Seal Beach, California, Site 7 and Site 4 Areas of Potential Concern 1A and 2A*, prepared by the DON (CH2M Hill, 2004).

Under the DON's directive, TtEC, as General Contractor, conducted 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 there was cover thickness deficiency. 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 and surface runoff.

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.

The first semiannual post-closure inspection was conducted in March of 2005. Based on the recommendations made in the *Final 2005 First Semiannual Post-Closure Inspection and Maintenance Report* (TtEC, 2005), landfill cover maintenance was conducted to repair several settlement and ponding areas at the western portion of the landfill and to reseed and revegetate the western portion following the regrading and repairs of the settlement areas. Landfill maintenance was conducted in September 2005.

1.2 SCOPE OF SECOND SEMIANNUAL INSPECTION

This report addresses landfill cover maintenance, cover inspection, vegetation inspection, and drainage inspections conducted as part of the second semiannual inspection for 2005. This report and the inspections conducted during this event do not include groundwater monitoring, landfill gas monitoring, or leachate monitoring.

The DON has developed a groundwater monitoring program for IRP Site 7 to monitor the status and condition of groundwater at this site which is currently being implemented at the landfill by another DON consultant. Hence, groundwater monitoring data, findings and recommendations are not addressed in this report.

The IRP Site 7 landfill does not have a landfill gas control, recovery or emissions and migration monitoring system. There are no perimeter landfill gas migration monitoring wells at this site. Previous investigations conducted at IRP Site 7 have indicated insignificant landfill gas at this

site (CH2M Hill, 2002). No surface or subsurface emissions of landfill gas, in particular methane gas, have been detected at IRP Site 7 during previous site investigations.

The IRP Site 7 landfill does not have a liquid management system and none is planned for this site. The site does not produce any liquids associated with collection, monitoring and disposal of landfill gas condensate, groundwater seepage, leachate collection system, groundwater extraction wells, or groundwater storage tanks and sumps.

1.3 LAND USE CONTROL

Currently, there are no structures or buildings present 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 very 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 MAINTENANCE AND INSPECTION

This section addresses and describes landfill cover maintenance conducted in September 2005 and observations made during the two site inspections conducted on October 17 and November 14, 2005, of the IRP Site 7 landfill cover soil and cover vegetation. 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. In order 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 MAINTENANCE ACTIVITIES

The maintenance performed at the IRP Site 7 landfill in September 2005 was to implement the recommendations made in *Final 2005 First Semiannual Post-Closure Inspection and Maintenance Report* (TtEC, 2005). The primary purpose for maintenance recommendations was to ensure that the integrity of the final cover system is maintained over the long term. The inspection forms completed during the first 2005 semiannual inspection were used for planning and implementation of the necessary maintenance and repairs to the cover system and cover irregularities that were performed in September 2005. Cover maintenance and repair were conducted in accordance with the procedures and specifications described in the PCIMP (TtFW, 2004a) and were undertaken to maintain the cover compliance with performance standards described in the PCIMP (TtFW, 2004a).

As indicated in the *Final 2005 First Semiannual Post-Closure Inspection and Maintenance Report* (TtEC, 2005), there were seven depressions within the western portion of the landfill, which required backfilling and grading to alleviate future ponding and promote sheet flow. The size of the depressions were approximately 17 feet wide by 32 feet long, 30 feet wide by 90 feet long, 15 feet wide by 65 feet long, 35 feet wide by 95 feet long, 10 feet wide by 42 feet long, and 20 feet wide by 70 feet long. A triangular-shaped area located at the south side of the landfill, with a base length of approximately 275 feet and distance of approximately 125 feet, had water ponding and also required re-grading (see Figure 2-1). Corrective actions taken were intended to minimize future pondings in these areas. In addition, the western half of the landfill cover required reseeding and revegetation in order to adequately protect the cover soil from erosion.

These areas were recommended to be backfilled to the surrounding grade to promote sheet flow drainage. Sediment soil that accumulated along the southern perimeter silt fence was removed and mixed with imported clean soil obtained from an off-site source and reused to backfill and grade the depressions at the site. Additional imported topsoil material was also obtained from off-site borrow sources for backfilling and grading the depressions. The repairs were conducted in accordance with the PCIMP procedures and requirements. Topsoil was obtained from Redwood Products of Chino, Inc., located in Chino, California. Soil samples were collected for agronomic analysis to properly identify the soil amendments necessary for vegetation growth and sustenance. Agronomic analysis was conducted by Wallace Laboratories of El Segundo, California. Agronomic analysis included fertility testing and testing for pH, cations, anions, metals, phosphate, salinity, organic matter content, and relative infiltration rate. Test results indicated that the soil was suitable as topsoil and sustenance of vegetation at the site. In addition, a soil sample was collected and sent to Applied P and CH Laboratories located in Chino, California, for chemical analysis, prior to delivery of the topsoil to the site. The soil sample was tested for semivolatile organic compounds [U.S. Environmental Protection Agency (EPA) test Method 8270C], polynuclear aromatic hydrocarbons [EPA test Method 8270C-Selective Ion Monitoring (SIM)], metals (EPA test Method 60101B), pesticides (EPA test Method 8081A), and polychlorinated biphenyls (EPA test Method 8082) to ensure that the imported soil was free of contamination prior to hauling it to the site.

Prior to mobilization, Coast Survey, Inc., a subcontractor to TtEC conducted a survey of the western portion of the landfill on August 30, 2005. The surveying subcontractor also provided grade stakes for backfill placement. Figure 2-1 provides the as-built survey contours conducted on April 5, 2004, at the completion of the landfill cover repair, conducted as part of the NTCRA at IRP Site 7 in early 2004. The August 30, 2005, survey (shown on Figure 2-2) was conducted to determine the locations of the depressions and ponding areas and to determine the thickness and amount of fill needed to raise the elevation of the depressions and re-grade the landfill cover to the design elevations. The design grades were compared with the August 30, 2005, survey elevations to determine the amount of fill needed.

TtEC mobilized personnel and equipment to the site on September 6, 2005. The old silt fences were first removed and disposed. A John Deere JD750 dozer was used to grub the vegetation in the western portion (approximately 3.5 acres in size) of the landfill, for backfilling the depressions, and to fine grade this area prior to topsoil placement. After grubbing was completed, the top minimum 4 inches of the areas requiring additional fill, were scarified prior to fill placement, moisture conditioned, reworked, and compacted. None of the depression or ponding areas required more than an additional 6 inches of fill material to bring them to the design elevations. A 2,000-gallon capacity water truck was at the site at all times for moisture conditioning of the fill material during placement and compaction and for dust control. Fill placed in the depressions was compacted to a minimum of 90 percent of the maximum dry density as measured by the modified Proctor test [American Society for Testing and Materials

(ASTM) D 1557]. A minimum of one in-place density test was performed for each lift and per each 10,000 square feet area. Associated Soils Engineering, Inc., a geotechnical engineering and soils testing company located in Signal Hill, California, was retained to conduct the laboratory and field soil testing during the cover maintenance implementation. Fill placement began on September 8, 2005, and was completed on September 15, 2005. Approximately 2,690 cubic yards of topsoil were used for backfilling the depressions and re-grading approximately 3.5 acres of the western portion of the landfill. Topsoil for the cover repair was amended with high organic content at the vendor's facility to adequately support vegetation growth.

Following the completion of grading, a tractor with Brillion seeder was used for placing a blend of native vegetation species seed mix in the topsoil. Refer to Section 3.0 for additional details regarding reseeding and the seed mix used. Seeding was conducted on September 19 and 20, 2005. Afterward, a Ditch Witch machine was used to trench and install approximately 1,500 linear feet of silt fence at the site. Approximately 1,000 linear feet of silt fence were placed along the western and southern boundaries of the landfill, and approximately 500 linear feet of silt fence were installed at two locations on the 7-foot contour elevation. The silt fence along the western landfill boundary was installed to prevent run-on from the adjacent dirt road over the landfill. The southern silt fence was installed to prevent runoff from the landfill from depositing sediments or silts into the wetlands located south of the landfill. Any sediments and silt generated from the cover runoff will be contained on the north side of this silt fence. The silt fence installed on the 7-foot contour line is intended to slow down sheet flow runoff and contain potential sediments and prevent it from accumulating at the southern boundary of the landfill.

The maintenance work was completed on September 23, 2005, and all equipment and personnel were demobilized from the site.

It is expected that the implementation of the recommended repairs to the western portion of the landfill cover will restore the sheet flow drainage in the western portion of the landfill and minimize future pondings.

2.2 INSPECTION PROCEDURES

Routine visual inspection of the soil cover was conducted on October 17 and November 14, 2005. A California-registered Civil Engineer performed the visual inspections of the soil cover. The following inspection procedures were followed in accordance with the PCIMP:

- Inspection and observation for any surface cracking, ponding or unusual surface conditions.
- Inspection and observation of all surface drainage swales and slopes. All slopes and drainage areas were visually inspected in detail by grid walking and documented on Forms 101 and 102 in Appendix A.

2.3 SUMMARY OF FIELD OBSERVATIONS

No cover damage was detected or identified during the October 17 and November 14, 2005, inspections. No slope failures due to stormwater runoff were identified. No waste exposure due to lack of soil cover, unstable cover, or unusual surface conditions were identified or observed during the inspections. No rainwater ponding areas were observed.

The cover in the western portion of the landfill was reworked, regraded, and reseeded prior to the rainy season or fall of 2005.

2.3.1 Soil Cover Stability

No localized settlement/depressions were observed during the November 14, 2005, inspections. No wet areas, standing water, and depressions with ponded water were noted over the landfill during the second semiannual inspection event. The landfill cover was determined to be stable and no settlements were noted during the inspections.

2.4 EVALUATION OF FIELD INSPECTION OBSERVATIONS

This section evaluates the field observation and cover inspection data and evaluates the conditions that require repairs.

The eastern half of the landfill appears to be in good condition with good vegetation cover and was found to satisfy the requirements of the PCIMP and project specifications. The western half of the landfill cover was regraded and reseeded in September 2005. Several areas located at the south and southwest portion of the landfill and several depressions within the center of the landfill were regraded as part of the maintenance activities conducted in September 2005. The entire western portion of the landfill (an area of approximately 3.5 acres) was regraded, and a minimum of 6 inches of topsoil was placed over the regraded areas. Soil losses over the entire landfill were not observed during this inspection event.

2.5 FINDINGS AND RECOMMENDATIONS

The cover and vegetation on the landfill were in satisfactory condition, and no unstable surfaces, deep cracks, soil loss, or excessive burrowing were observed during the October and November 2005 inspections. A few small areas with poor vegetation growth were observed in the eastern half of the landfill during the November 2005 inspections.

No depressions or ponding of rainwater were observed in the cover during the inspections.

No vector controls for the cover will be required at this time. Deep rooting vegetation was not observed during the March 2005 inspections.

3.0 VEGETATION COVER MAINTENANCE AND INSPECTION

This section addresses and discusses the landfill vegetation cover maintenance. During the September 2005 maintenance activities, the settlements and ponded areas in the western portion of the landfill were repaired, regraded and reseeded. The next annual inspection and monitoring of the vegetation cover will be conducted in spring of 2006.

The *Final 2005 First Semiannual Post-Closure Inspection and Maintenance Report* (TtEC, 2005) recommended that topsoil maintenance (topsoil amendment) and supplemental seeding be initiated immediately due to prevalence of areas (in particular in the western portion of the landfill) that contained greater than 20 percent bare ground.

In September 2005, the western portion of the landfill cover was reseeded following backfilling of the settlement areas and depressions and regrading of this portion of the landfill. The purpose and the primary function of the vegetative cover are to provide erosion control and visual enhancement across the landfill top and slopes. The vegetation cover at IRP Site 7 Area 1 was designed to evolve into a natural climax vegetation community, which will enable long-term succession of the vegetation to blend with the natural character of adjacent open spaces. Restoration of the vegetation cover at the IRP Site 7 landfill, following the completion of the cover maintenance at this site, consisted of an application of a native site-specific botanical species seed mix, which was based on substantial local vegetation data, as well as general knowledge from involved resource agencies. 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.

The following seed mix was used for the landfill cover:

- *Hordeum jubatum* – 4 pounds per acre
- *Heterotheca grandiflora* – 4 pounds per acre
- *Lotus scoparius* – 3 pounds per acre
- *Lasthenia glabrata* (annual flower) – 1 pound per acre
- *Camissonia cheiranthifolia* (annual plant/ground cover) – 2 pounds per acre

Seeds used for the revegetation were obtained from S&S Seeds Inc., of Carpinteria, California. The seed mix was applied on 4- to 6-inch-thick topsoil placed over the compacted fill and over the entire western portion of the regraded landfill surface. The seed mix developed for this area was applied using mechanical seeding equipment at a rate of a minimum of 20 pounds of seed mix per acre.

3.1 PROTECTIVE VEGETATION COVER

The overall condition of the vegetation growth on the eastern half of the landfill cover is satisfactory. The western half has no vegetation growth, since this area was recently reseeded during the September 2005 maintenance. To address possible future soil loss due to erosion in this area, silt fences were constructed along the sheet flow drainage paths. The silt fences were placed at the site as a Best Management Practice. There was no evidence of soil cover erosion during this inspection event, mainly because the cover maintenance was recently completed and the wet season had not started by the time the inspection was conducted.

4.0 SURFACE WATER MANAGEMENT SYSTEM INSPECTION

The scope, data summary and evaluation of surface water management are provided herein.

4.1 SCOPE OF SURFACE WATER MANAGEMENT SYSTEM INSPECTION

This section of the report addresses and describes observations of the surface water management system made during the November 14, 2005, inspections. The inspections included the following:

- All surface drainage swales and slopes were visually inspected.
- The visual inspection included inspection of the cover system for any eroded areas (no erosions deeper than 6 inches were observed).
- Inspection and observation of ponding areas and surface drainage conditions were conducted (no ponding of water or depressions were observed).

The landfill cover inspection was conducted subsequent to the maintenance performed in September 2005, and following several minor rainfalls, which occurred during October 2005. One of the purposes of the inspections was to identify any failure of the surface drainage and sheet flow system, paying attention in particular to observe any cover erosions, wet or saturated cover soils, ponding or areas where there is a potential for increased infiltration.

4.2 SUMMARY OF FIELD OBSERVATIONS

No pollutant-to-stormwater discharges were noted in IRP Site 7 Area 1 as of November 14, 2005, and no soil cover washouts or areas of heavy erosion were observed. Inspection observations were documented in the field on Form 102, included in Appendix A.

The eastern half of the landfill did not show any evidence of soil loss. This indicates that the vegetation and ground cover in this area have been effective in minimizing soil erosion. The western portion of the landfill cover had no vegetative ground cover since it was just recently regraded and reseeded. To prevent or minimize soil loss during the rainy season, new silt fences were erected along the southern and western boundaries and along the sheet flow path over the landfill. See photographs of the erected silt fences in Appendix B. No areas of erosion were noted at IRP Site 7 Area 1.

4.3 FINDINGS AND RECOMMENDATIONS

No cover system wash out and no waste exposure were observed during the November 14, 2005, inspection events. The surface water drainage system complied with the landfill cover system performance criteria described in the PCIMP (TtFW, 2004a). Maintenance corrective actions were conducted in September 2005 prior to the inspections to correct ponding and backfill and

grade the shallow depressions in the western portions of the landfill. The corrective actions taken as part of the maintenance of the landfill cover is expected to provide continuous sheet flow runoff and minimize future ponding.

During the prior semiannual inspections conducted in March 2005 and as it was reported in the previous semiannual inspection report (TtEC, 2005), it was observed that off-site stormwater runoff had accumulated in the wetlands at the south side of the landfill and encroached on the southern edge of the landfill. No evidence of stormwater accumulation was observed at the edge of the landfill and in the wetlands at the south side of the landfill during the September cover maintenance activities and afterward during the November 2005 semiannual inspections. The accumulation of stormwater runoff from areas surrounding the landfill at the southern edge of the landfill had subsided and completely evaporated.

In order to ensure proper operation of the surface drainage system, spot inspections shall be conducted after the first rainfall of each year's rainy season and after any rainfall event of 0.5 inches or greater. Further recommendations would be made based on the evaluation of site conditions following those inspections.

5.0 LANDFILL SURVEY

The scope, data summary and evaluation of landfill settlement are provided herein.

5.1 SURVEY SCOPE

This section of the report addresses settlement surveys of the landfill as it relates to the performance of the cover system.

5.2 SUMMARY OF FIELD OBSERVATIONS

Visual site inspection findings are documented in photographs taken of the site condition and presented in Appendix B and described below. No major earthquakes and no sloughing, cracks, or cover deformation occurred in the last year that would require a topographic survey by a licensed land surveyor.

5.3 DATA EVALUATION

A settlement-related visual site inspection was conducted for routine cover maintenance repairs. No depressions, settlements, or ponding of rainwater were observed during the second semiannual inspection conducted in November 2005, since the settlement and depressions observed during the previous inspection event were backfilled and regraded.

5.4 FINDINGS AND RECOMMENDATIONS

The September 2005 landfill cover maintenance included regrading of the landfill cover to the original design grades and elevations and backfilling the minor settlement and depressions in the western portion of the landfill. In order to assess the change in as-built grades and elevations, and the elevations in the settlement areas, a new topographic survey was conducted in August 31, 2005, prior to the cover maintenance activities. The topographic information was compared with the design grades.

The topographic survey, conducted prior to the maintenance of the cover, assisted with better identifying areas of potential settlement and indicating areas of potential rainwater ponding. The topographic survey also provided the necessary information to compare current contours and drainage flow lines (as of September 2005) with the as-built topography (conducted on April 5, 2004, following completion of the repairs to the landfill cover) and the final cover design elevations (TtFW, 2004b). Minor elevation differences were noticed in the settlement areas, which were backfilled and regraded. The topographic survey did not indicate any other anomalies that would require repair, such as grade changes with respect to the final cover design.

During September 2005, cover maintenance and repairs were conducted with regards to settlement and erosion in the western portion of the landfill. Currently, there are no other areas that need repairs or corrective action.

The seven areas of settlement and depression that were identified during the March 2005 inspections were all regraded and repaired by placing additional fill in order to maintain adequate sheet flow drainage and to minimize future ponding.

6.0 ACCESS ROADS MAINTENANCE AND INSPECTION

The scope, data summary and evaluation of access roads are discussed herein.

6.1 ACCESS AND BENCH ROADS SCOPE

This section of the report addresses and describes observations made during the November 14, 2005, inspection of the access roads.

6.2 DATA EVALUATION

The unpaved access road along the northwest and west side of the IRP Site 7 was found to be well-graded and adequately maintained and would continue to provide access to the site during all weather conditions. The access road along the northside of the site is partially paved and partially covered with gravel and, as a result, would provide the necessary safe access to the site in the event of an emergency.

6.3 FINDINGS AND RECOMMENDATIONS

The access roads around the landfill were found to be in good condition and continue to provide adequate access to the landfill for maintenance and inspections.

No unstable ground or surfaces, no major erosion or loss of road base were observed during the November 2005 inspections of the access roads along the north and west sides of IRP Site 7. No maintenance is required for the access roads.

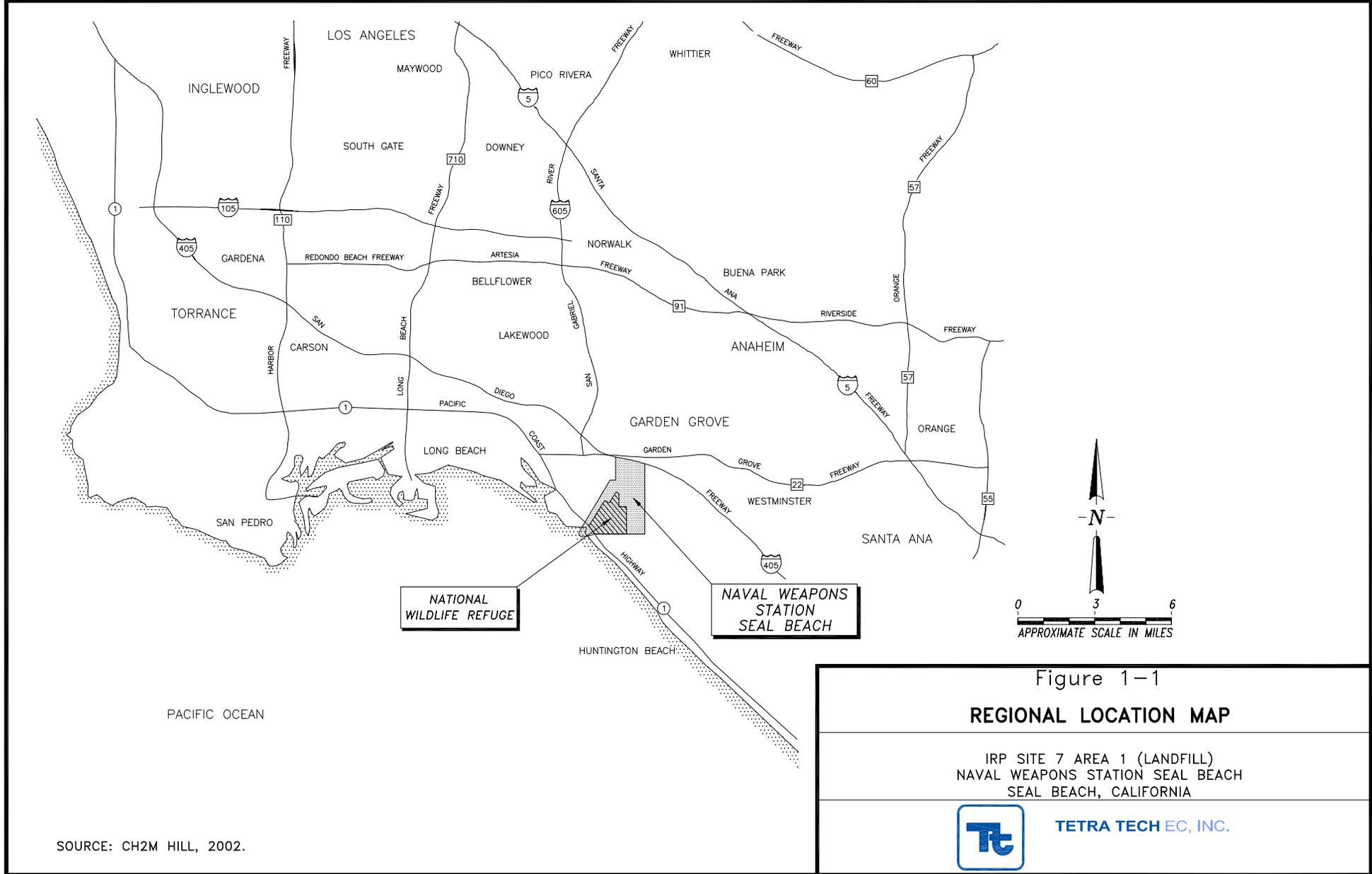
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FIGURES

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DATE: 01/13/06	REV: REVISION 0	CTO: #0023		



SOURCE: CH2M HILL, 2002.

Figure 1-1
REGIONAL LOCATION MAP

IRP SITE 7 AREA 1 (LANDFILL)
 NAVAL WEAPONS STATION SEAL BEACH
 SEAL BEACH, CALIFORNIA



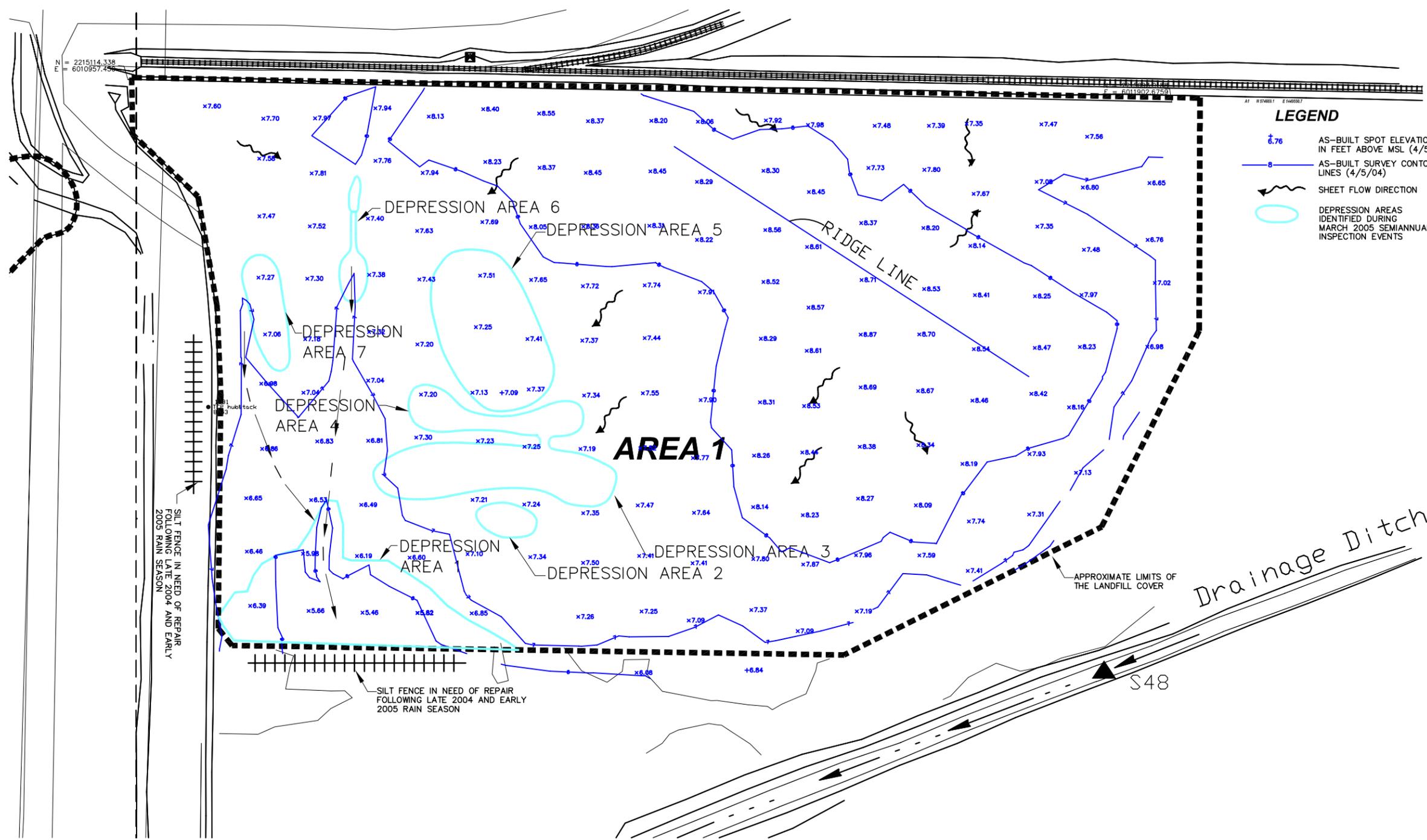
TETRA TECH EC, INC.

Figure 1-2

This detailed station map has been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

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 CTO: #0023
 APPROVED BY: HH
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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
- DEPRESSION AREAS IDENTIFIED DURING MARCH 2005 SEMI-ANNUAL INSPECTION EVENTS

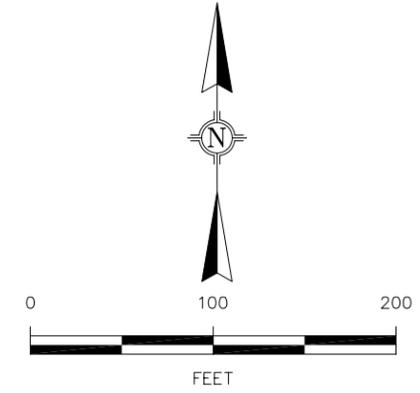


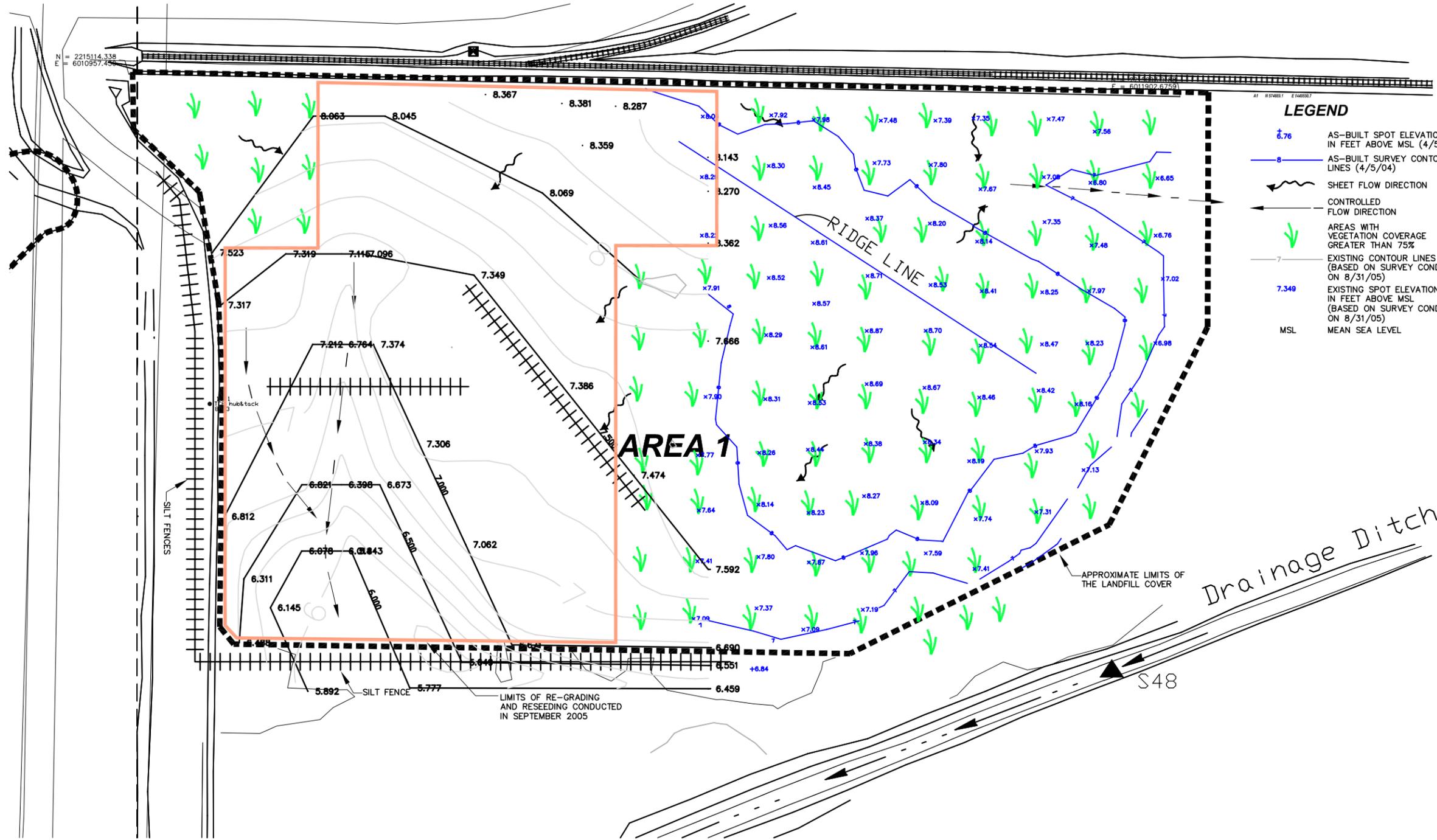
Figure 2-1
 DEPRESSION AND REPAIR AREAS IDENTIFIED DURING
 MARCH 2005 INSPECTIONS

IRP SITE 7 AREA 1 (LANDFILL)
 NAVAL WEAPONS STATION SEAL BEACH
 SEAL BEACH, CALIFORNIA

TETRA TECH EC, INC.

DRAWING NO: 06034122.DWG
 DCN: FWSO-RAC-06-0341
 CTO: #0023
 APPROVED BY: HH
 CHECKED BY: HH
 REV: REVISION 0
 DRAWN BY: MD
 DATE: 01/13/06

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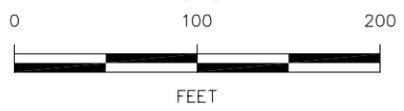
- 6.76 AS-BUILT SPOT ELEVATIONS IN FEET ABOVE MSL (4/5/04)
- 8 AS-BUILT SURVEY CONTOUR LINES (4/5/04)
- SHEET FLOW DIRECTION
- CONTROLLED FLOW DIRECTION
- AREAS WITH VEGETATION COVERAGE GREATER THAN 75%
- 7 EXISTING CONTOUR LINES (BASED ON SURVEY CONDUCTED ON 8/31/05)
- 7.349 EXISTING SPOT ELEVATIONS IN FEET ABOVE MSL (BASED ON SURVEY CONDUCTED ON 8/31/05)
- MSL MEAN SEA LEVEL

Drainage Ditch

APPROXIMATE LIMITS OF THE LANDFILL COVER

AREA 1

LIMITS OF RE-GRADING AND RESEEDING CONDUCTED IN SEPTEMBER 2005



INSPECTOR: MIKE COWAN
 INSPECTION DATE: 11/14/05

Figure 2-2
 LANDFILL COVER CONTOUR MAP AND REGRADED AREAS

IRP SITE 7 AREA 1 (LANDFILL)
 NAVAL WEAPONS STATION SEAL BEACH
 SEAL BEACH, CALIFORNIA



TETRA TECH EC, INC.

APPENDIX A
INSPECTION FORMS 101, 102, AND 103

FORM 101

SOIL COVER INSPECTION

Type of Inspection: Semiannually

Name of Inspector: Michael Cowan, P.E.

Affiliation (Name of Navy Consultant or Representative): TEC

Date: 11/14/05 Time: 9:00 a.m. Weather Condition: Sunny - Clear with partial haze, 62°F

OBSERVATION TYPE AND DETAILED DESCRIPTION:

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

The soil cover was found to be in good condition. The soil cover on the western portion of the landfill was recently regraded and seeded. Vegetation cover in this area has not yet been established, since this area was recently reseeded in September 2005. No signs of soil losses or washouts that would expose the waste were evident. No subsidence, settlement, or ponding were evident. No sediment build up was evident.

LOCATION OF OBSERVATION (Show on the attached Figure 2-1):

No evidence of borrowing rodent, cracks, or sloughing. No exposure to waste was evident.

See Figure 2-1 for areas lacking vegetation coverage.

RECOMMENDATIONS:

Maintain existing silt fences during the wet season. Conduct periodic inspections after each storm event, and inspect the landfill cover for soil loss and gully erosion in areas of limited vegetation cover.

REMARKS:

Silt fences were installed along the sheet flow path at two locations in the western portion of the landfill and along the western and southern boundaries of the landfill to prevent runoff and erosion.

The vegetation cover should establish by the end of March. However, if following any rain event, soil loss is observed in low vegetation cover or bare areas of the cover, and the soil loss form rills or gullies that are greater than 2 inches in depth, hay covering or jute-mat should be installed on the potential high erosion areas before the heavy February rains.

Signature

Site Inspector/Engineer

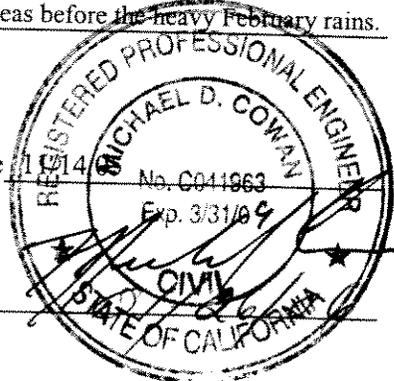
[Handwritten Signature] PE

Date: 11/14/05

NAVWPNSTA Seal Beach Representative (IR Program Coordinator or ROICC)

[Handwritten Signature]

Date



FORM 102

STORMWATER/EROSION CONTROL INSPECTION

Date: 11/14/05 Name of Inspector/Engineer: Michael Cowan, P.E.

Observations:

- 1. Ponding 2. Downstream Drainage Obstructions 3. Cover Washouts 4. Gully Erosion 5. Lack of Positive Drainage 6. Silt Deposition at Low Areas 7. Vegetation Washout

Pre-Rain Season Inspection

TYPE OF DEFICIENCY:

The western portion of the landfill cover has recently been regraded and reseeded, and the vegetation cover has not yet been established. Silt fences - Best Management Practice - were placed within this area to minimize soil loss and erosion for the coming wet season. There was no evidence of ponding, downstream drainage obstructions, cover washouts, erosion or silt deposition at the low areas. The western portion of the landfill cover was re-graded and the depressions were filled and graded to drain in accordance with the design grading plans.

LOCATION OF OBSERVATION (show on attached Figure 2-1):

No ponding areas were observed. See Figure 2-1 for areas lacking vegetation cover.

RECOMENDATIONS:

In September 2005 the cover was regraded as part of maintenance activities. The subsidence areas were filled with 4 to 6 inches of fill and seeded.

As noted in Form 101, conduct periodic inspections immediately after each rain event for potential soil loss in bare areas and the areas of limited vegetation cover.

COMMENTS:

Hay cover or jute-mat cover may be required if early rain events are heavy enough to cause future erosion.

Jute-mat may be required in the swale if runoff causes erosion during the early rainfall events.

Signature

Site Inspector/Engineer

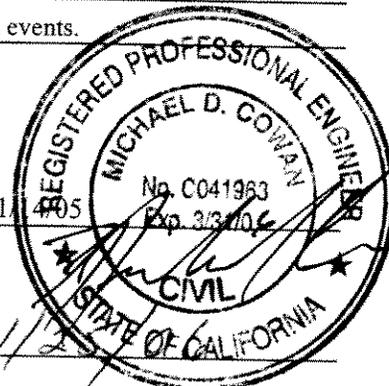
[Handwritten signature of Michael D. Cowan]

Date 11/14/05

NAVWPNSTA Seal Beach representative (IR Program Coordinator or ROICC)

[Handwritten signature of David Shawley]

Date 01/25/06



FORM 103

PROTECTIVE VEGETATION COVER INSPECTION

Location: Area 1, see Figure 2-1 **Date and Time:** 11/14/05 9:30 a.m.

Boundary Roads: _____ **Inspector:** Michael Cowan, P.E.

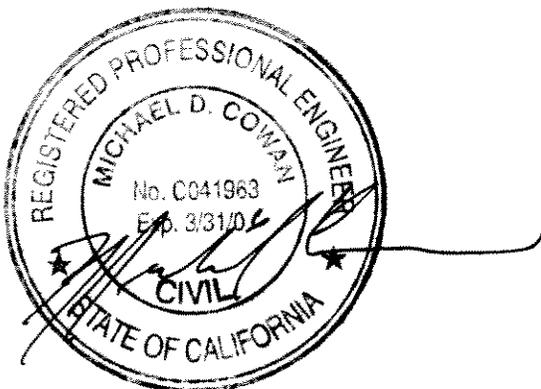
General Soil Condition: Dry Adequately graded to drain Dry Majority **Weather:** Sunny - 62°F

ITEM	COMMENTS	RECOMMENDATIONS
Grass Cover	Eastern half good Western half was recently reseeded	Inspect the western half during the annual inspections in March 2006
Shrubs	None	None needed
Vegetation Loss with Soil Erosion	Minimal, if any	A 4-inch to 6-inch-thick topsoil was placed over the western half of the landfill and reseeded. Inspect the western half during the annual inspections in March 2006
Non-native Plants	Was not inspected during this semiannual event	Will be inspected during the annual inspection event in March 2006
Fire Hazard, Dead Vegetation, and Deep-rooted Plants	None	None

Signature

Site Inspector/Engineer *[Signature]* Date 11/14/05

NAVWPNSTA Seal Beach representative (IR Program Coordinator or ROICC) *[Signature]* Date 01/25/06



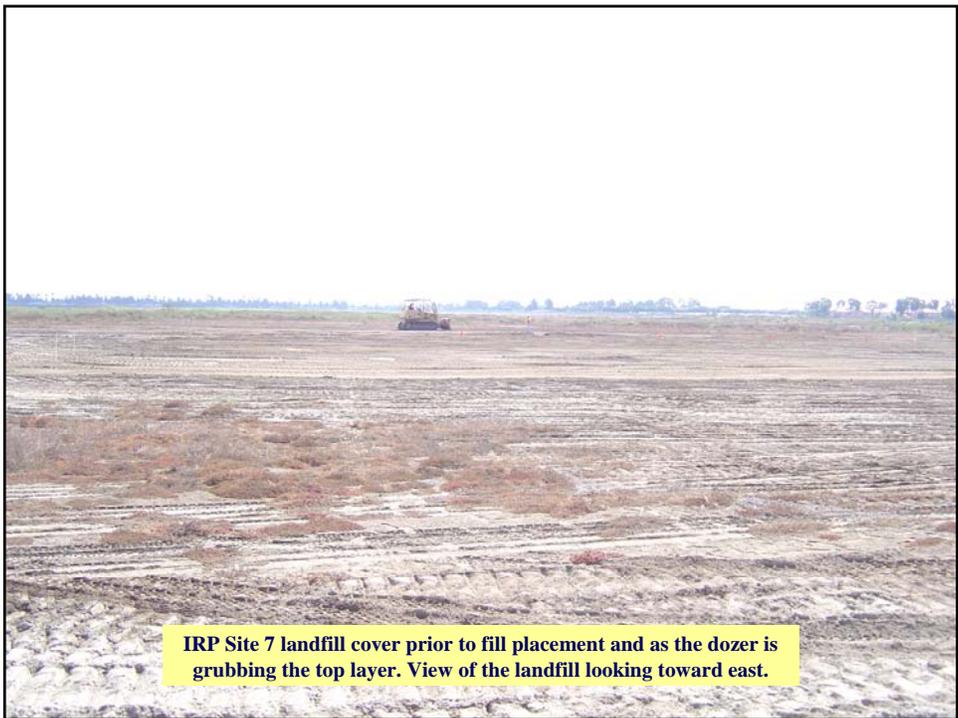
APPENDIX B
PHOTOGRAPHIC LOG



IRP Site 7 landfill cover prior to topsoil placement. View of the landfill looking toward southeast.



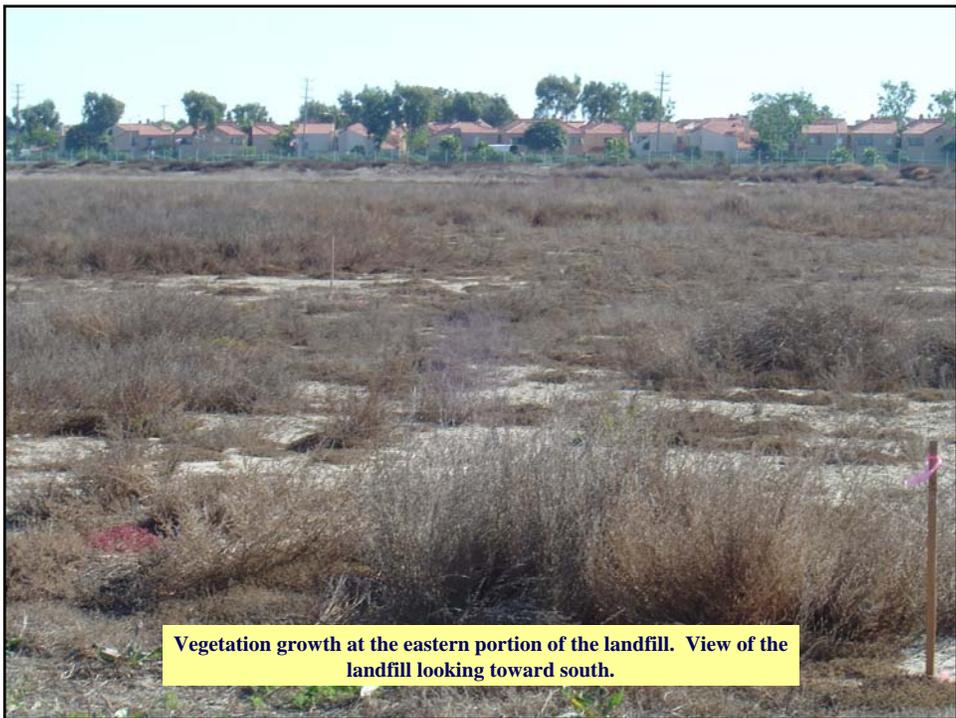
A John Deere JD750 dozer was used for grubbing and regrading. View of the landfill looking toward northeast.







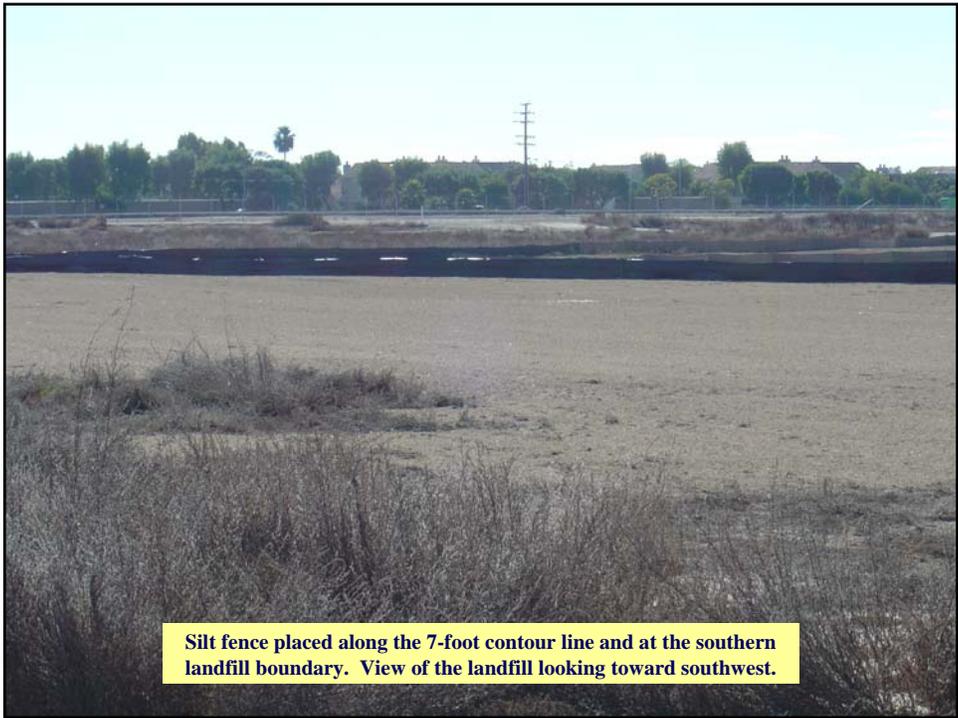
Silt fence placed along the southern limits of the landfill. View of the landfill looking toward south.



Vegetation growth at the eastern portion of the landfill. View of the landfill looking toward south.



Vegetation growth at the eastern portion of the landfill. View of the landfill looking toward south.



Silt fence placed along the 7-foot contour line and at the southern landfill boundary. View of the landfill looking toward southwest.