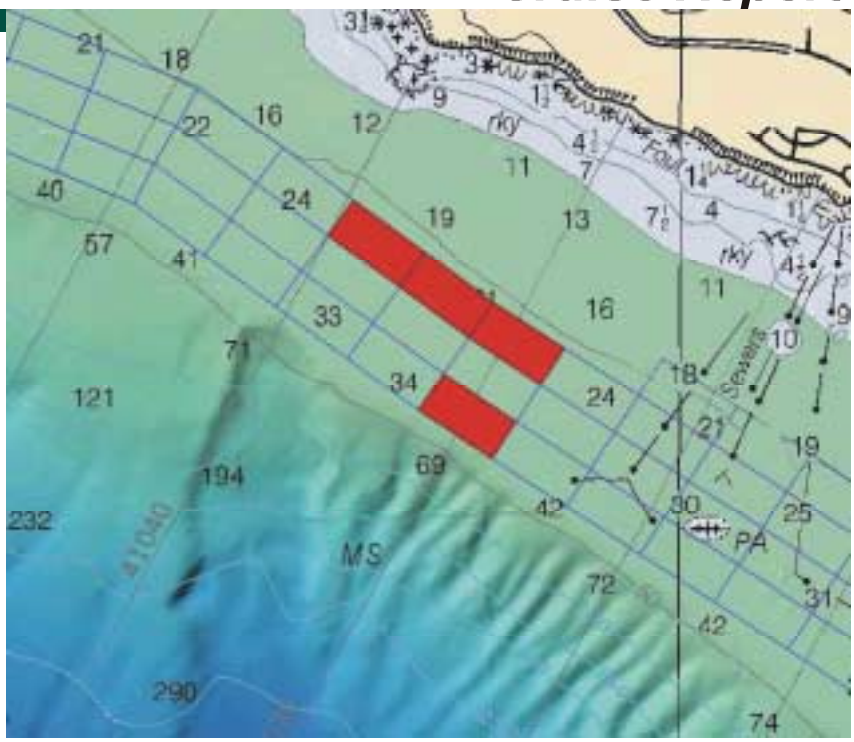
PALOS VERDES PILOT CAPPING MONITORING PROJECT
Cruise Report



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LIST OF ABBREVIATIONS

ADCP	Acoustic Doppler Current Profiler
ADISS	Automated Disposal Surveillance System
ARESS	Automated Resuspension Surveillance System (Moored Current Meter Arrays)
CTD	Conductivity-Temperature-Depth Profiler
EPA	Environmental Protection Agency
GMT	Greenwich Mean Time (GMT is the Universal reference time that officially takes the World into every new day)
NATCO	North American Trailing Company
PV	Palos Verdes
PWP	Project Work Plan
REMOTS®	Remote Ecological Monitoring of the Seafloor (Sediment Profile Camera)
SAIC	Science Applications International Corporation
SCMI	Southern California Marine Institute
SOW	Statement Of Work
SPC/PVC	Sediment Profile Camera/Plan View Camera
TRBM	Trawl Resistant Bottom Mount (containing ADCP instrument)
USACE	United States Army Corps of Engineers
UTC	Universal Time Coordinated (UTC is the time scale that is used worldwide to coordinate technical and scientific activities)

1.0 BACKGROUND AND OBJECTIVES

The U.S. Environmental Protection Agency (EPA) is currently evaluating alternatives for restoration of contaminated sediments on the Palos Verdes (PV) Shelf off the coast of Los Angeles, California. One restoration alternative under consideration is in situ capping, which involves placement of a covering or "cap" of clean material over the contaminated sediment, thereby isolating the contaminated material from the overlying marine environment. EPA, in collaboration with the U.S. Army Corps of Engineers (USACE), developed a monitoring plan (Fredette 2000) for a pilot capping program to be conducted on the PV Shelf during spring/summer of 2000. The Fredette (2000) plan became the Statement of Work (SOW) for the field components of this multidisciplinary monitoring program.

In Spring of 2000, Science Applications International Corporation (SAIC) was contracted to:

- Prepare a Project Work Plan (PWP) for the Baseline elements of the Pilot Cap Monitoring Program (SAIC 2000a);
- Implement the Baseline monitoring program in May/June 2000;
- Prepare an Addendum to the Baseline PWP (SAIC 2000b), addressing all monitoring elements of the Summer (Primary) Pilot Cap Monitoring Program; and
- Implement the Pilot Cap Monitoring Program.

The objective of the Pilot Cap Monitoring Program was to evaluate the following:

- The areal extent and thickness of the cap, immediately following placement;
- Potential mixing of cap material and contaminated sediments during cap placement operations;
- Potential resuspension of contaminated sediments into the water column during cap placement;
- Short-term benthic recolonization of the cap; and
- Short-term physical and chemical characteristics of the cap and underlying sediments immediately after capping, and following initial sediment consolidation.

The Pilot Capping Program was conducted using two types of cap material: (1) "relatively finer" mixed sediment (predominantly fine sand (0.10 mm), silt, and some clay) that was being dredged from the Queen's Gate channel (at the entrance to Los Angeles/Long Beach Harbor) during the final phase of an ongoing navigational dredging contract, to deepen the channel, and (2) coarse material (almost 100% sand approximately 0.3 – 0.4 mm) that was dredged from the A-III Borrow Site located offshore and southwest of the Queen's Gate channel. North American Trailing Company (NATCO) was the contractor for all dredging and placement operations of the capping program. Note that the finer sediments from the Queen's Gate channel will often be referred to as fine material in the remainder of the cruise report, while the coarser sand from the Borrow Area will often be referred to as coarse material in the remainder of the cruise report.

The pilot study consisted of controlled operations for placement of cap material within selected areas (cells) on the PV Shelf, and associated monitoring prior to, during, and following the placements. The placement cells were designated according to their relative geographic location, Cell LU (Landward Upstream), Cell LD (Landward Downstream), Cell SU (Seaward Upstream), and Cell LC (Landward Center), where "downstream" referred to the northwest direction, in the direction of the prevailing current in this region. Note, that Baseline monitoring activities were conducted in Cells LU, LD, SU and SD (Seaward Downstream), but cap placement and monitoring operations in this latter cell were not conducted during the summer program on account of funding limitations.

Therefore, the engineering objective of the pilot study was to test the operational feasibility and effectiveness of capping operations conducted with two types of capping material (coarse and fine) placed within cells having two different water depths (landward and seaward cells). Capping operations within Cells LU, SU and LC utilized the relatively fine material dredged from Queen's Gate channel, whereas Cell LD was capped with sand dredged from the Borrow Site.

As another operational variable being evaluated during the Pilot Capping Program, cap placement by the hopper dredge was conducted using three discharge techniques: (1) conventional (bottom dump) release from a stationary dredge, (2) "spreading" conducted by "cracking" the hull to gradually release material as the dredge moved slowly along a predetermined trackline, and (3) "pump out" of material through a single (starboard) drag arm that released material at a water depth of approximately 23 meters as the dredge moved slowly along a predetermined trackline.

In summary, the cap placement operations were conducted as follows:

Cell	Water Depth (m)	Material Type	Source Location	Placement Technique
LU	45	Relatively fine	Queen's Gate	Conventional
SU	60	Relatively fine	Queen's Gate	Conventional
LD	45	Coarse	Borrow Site	Spreading
LC	45	Relatively fine	Queen's Gate	Pump Out

In February and March 2001 SAIC was contracted to perform a supplemental SPC/PVC and coring survey as part of the cap placement monitoring.

The objectives of the SPC/PVC survey were to:

- Provide additional measurements of cap thickness and distribution in and around the pilot capping cells; and
- Assess the status of the benthic habitat in comparison to the 2000 Pilot Cap Monitoring Program.

The objectives for the supplemental coring survey were to:

- Evaluate and document the ability of the vibracore to take relatively undisturbed samples and make adjustments in sample procedure to try to improve performance;
- Measure and map cap thickness in cells LU, SU and LD using the most effective means available;

- Evaluate the chemical and physical characteristics of the cap material to assist in assessing cap success and the baseline post-cap condition; and
- Compare the effectiveness with which samples are taken with both vibracore and box core to assess potential coring artifacts.

Contents of Cruise Report

This Cruise Report represents the first written deliverable of SAIC's contract for the Pilot Cap Monitoring Program. This report addresses the following topics associated with the monitoring activities conducted by SAIC during July through September 2000 and February and March 2001: Field Logistics and Vessel Support (Section 2); Responsibilities of Project Staff (Section 3); Technical Monitoring Activities (Section 4); and the Schedule of Field Operations (Section 5). Cruise Reports for Monitoring Operations are addressed in Section 6 and presented individually in Appendices A through D.

Data processing, quality assurance/data validation, data analysis, and interpretation of the monitoring data acquired on the PV Shelf are ongoing. A Draft Data Report (SAIC 2001) with graphical and tabular data products, and basic interpretations of monitoring results was in preparation at the time this Cruise Report was submitted.

2.0 FIELD LOGISTICS AND VESSEL SUPPORT

For the baseline monitoring activities of the Pilot Capping Program, SAIC established a subcontract agreement with the Southern California Marine Institute (SCMI) for use of survey vessels, shore-based facilities, oceanographic equipment (CTD profiling system and gravity corer), and support services. A 600-sq ft garage area within SCMI's research facility on Terminal Island (San Pedro), CA, was leased for use during the baseline field program. This space and an adjacent 250-sq ft area (used as a project office and central data processing/archive area) were leased for the summer monitoring program (mid-July through September 2000). This space proved to be ideal for project coordination, data control, and mobilization of equipment throughout the program. This close proximity of

the project office(s) to the SCMI piers and research vessels allowed efficient mobilization of vessels and survey personnel. Dock-side crane services and occasional welding and machine shop services also were provided by SCMI.

Under subcontract to SAIC, SCMI provided two research vessels, the R/V *YELLOWFIN* and the R/V *SEA WATCH*, on an as-needed basis when they were not being used by other research programs. Additionally, SAIC chartered three other survey vessels during the monitoring program: the R/V *TUNA*, the R/V *SEAWORLD*, and the M/V *BOTTOM SCRATCHER*. These vessels were used at various times during the monitoring program depending on availability and monitoring capabilities.

SAIC conducted all mobilization, operation, and demobilization of navigation equipment aboard the survey vessels, as well as operated and maintained all necessary survey equipment for each cruise (with exception of the CTD profiling system which was operated by SCMI personnel). A brief description of each survey vessel utilized during the monitoring program is given below:

R/V *Sea Watch*

Operator:	Southern California Marine Institute
Home Port:	Terminal Island, CA
Dimensions:	65-ft LOA, 24-ft beam, 5-ft draft

R/V *Yellowfin*

Operator:	Southern California Marine Institute
Home Port:	Terminal Island, California
Dimensions:	76-ft LOA, 24-ft beam, 8.6-ft draft

R/V *Tuna*

Operator:	Pacific Tugboat Service
Home Port:	San Diego, California
Dimensions:	40-ft LOA, 16-ft beam, 3.5-ft draft

R/V *Sea World*

Operator:	UCLA Marine Science Center
Home Port:	Marina Del Rey, California
Dimensions:	64-ft LOA, 18-ft beam, 8-ft draft

R/V *Bottom Scratcher*

Operator:	Greg Elliot
Home Port:	Long Beach, California
Dimensions:	63-ft LOA, 18-ft beam, 4-ft draft

3.0 RESPONSIBILITIES OF PROJECT STAFF

The field monitoring activities were conducted by a large team of SAIC scientists, engineers, technicians, and data specialists, the majority of whom temporarily relocated from their home offices in Newport, RI, San Diego, CA, Bothell, WA, and Raleigh, NC, to the project site for the duration of the field activities. Table 3-1 indicates the personnel responsible for each technical element of the monitoring project. With the exception of Mr. Michael Tubman of the USACE Engineer Research and Development Center who was responsible for the underway ADCP measurements, the CTD technicians from SCMI, and the survey vessel operators, all other project staff were SAIC employees.

Early in the field program when numerous monitoring elements were being conducted simultaneously during the initial placement operations, 17 SAIC project staff were on site at the SAIC project office within the SCMI laboratory; later in the program, the field contingent consisted of roughly 10 SAIC staff.

Table 3-1

Survey Responsibilities for Pilot Cap Monitoring

MONITORING ELEMENT	RESPONSIBILITY	LOCATION	LEAD ROLE	SUPPORT ROLE
Project Management	Overall Leader	Lab*	McDowell	
	Fiscal support	Raleigh	Goodhart	
Vessel Scheduling	Schedule and coordinate vessel usage	Lab	Evans/McDowell	
Navigation Services	Hypack operation	Field**	McAuliffe/Quintal	
	Hypack operation	Field	De Keyzer/Tobey	
	Hypack operation	Training***	Infantino	
Sediment Profiling Surveys	Sediment profile camera equipment	Field	Swanson/Infantino	
	SPI processing & quick analysis	Lab	Swanson/Tufts	
	Detailed analysis of images	Newport	Valente	
	Plan view camera equipment	Field	Tufts	
	Plan view processing	Lab	Tufts	
Current Meter Moorings	ARESS equipment and moorings	Field	Pace	Wakeman
	ARESS data download & processing	Lab	Wakeman	Hamilton
	Aquadopp equipment & moorings	Field	Singer	
	Aquadopp data download & processing	Lab	Singer	Hamilton
	ADCP equipment and data	Field	Singer	
	Physical Oceanographic interpretation	Lab	McDowell	
ADCP Surveys	Survey Leader	Field	Tubman (WES)	
	ADCP operation	Field	Tubman	
	ADCP data processing	Lab	Tubman	Tobey
CTD Surveys	Survey Leader	Field	McDowell	
	CTD operation	Field	SCMI technicians	
	CTD data processing	Lab	SCMI technicians	Tobey
	Water sampling	Field	Walter	
	Shipment of water samples	Lab	Walter	
	Water sample data analyses	Newport	Walter	McDowell
	Oceanographic data analysis	Newport	McDowell	
	Current drogues	Field	McDowell	
Kelp CTD Surveys	Survey Leader	Field	McDowell	
	Same as CTD Survey Team	Field	Team	
	Current drogues	Field	McDowell	
Video Survey	Video Operation	Field	Quintal	Tufts
	Image processing	Lab	Quintal	

Table 3-1 (continued)

Survey Responsibilities for Pilot Cap Monitoring

Sediment Coring Surveys	Sediment coring	Field	Evans	Frank/Fischman
	Core splitting and logging	Lab	Walter	Montgomery
	Vane shear analysis	Lab	Walter	Montgomery
	Sample handling and shipment	Lab	Walter	Frank/Montgomery
Geophysical Surveys	Survey Leader	Field	Infantino	
	Sidescan operation	Field	Infantino	
	Sidescan data processing	Lab	Infantino	
	Subbottom operation	Field	Quintal	
	Subbottom data processing	Lab	Quintal	
ADCP/TRBM Mooring Deployment	Survey Leader	Field	Singer	
	Equipment preparation/deployment	Field	Singer	Evans
	Data transfer/processing	Lab	Singer	Hamilton
Hopper Sediment Samples	Sample collection	Field	Fischman	
	Sample processing & shipment	Lab	Walter	
Dredge Position Monitoring	Survey Leader	Field	Pace	
	Equipment installation/testing	Field	Pace	Mueller/Wakeman
	Data acquisition	Field	Fischman	
	Data processing	Lab	Fischman	
Data Management	Overall Coordination	Lab	Seidel	
	Data archival/management	Lab	Seidel	
PV Website	Enhancements and data display	Newport	Thomas	

*Lab refers to the Project Office within SCMI Laboratory in San Pedro, CA.

**Field indicates activities that were conducted aboard survey vessels on the Palos Verdes Shelf.

***Training indicates System Testing and Project-Specific Training that were conducted at the San Pedro Project Site.

4.0 TECHNICAL MONITORING ACTIVITIES

The pilot cap monitoring program was designed by the EPA and USACE "with assurance" that it could be successfully implemented using a variety of state-of-the-art monitoring systems and procedures that have been used on other USACE dredged material monitoring and capping projects. The major technical elements of the pilot cap monitoring are given below:

- Survey planning and vessel navigation
- Hopper dredge monitoring with ADISS technology

- Sediment sampling from hopper dredge
- Moored arrays for current and turbidity monitoring
- Sediment profile and plan view photography
- Underwater video photography
- Water column profile measurements with CTD profiling system
- Water sample collection with Niskin bottles and rosette sampler
- Underway measurements of currents and acoustic backscatter with ADCP
- Sediment coring
- Side scan sonar surveying
- Subbottom profile surveying

Details on the equipment and procedures used during the field project are provided in the Project Work Plan for the Pilot Cap Monitoring Program (SAIC 2000b).

Additional near-real time activities that were conducted during the monitoring project include:

- Data management and temporary archiving at the SCMI field office
- Electronic transfer of data to the Palos Verdes website, which was served from SAIC's office in Newport, RI.

5.0 SCHEDULE OF FIELD OPERATIONS

The pilot cap monitoring program was implemented as a near-continuous, 8-week field project that began in late-July 2000 and continued through mid-September; field operations were suspended only during a 3-day period over the Labor Day weekend in September.

The primary factors that dictated the schedule of capping operations and field monitoring activities were:

1. The requirement to place a specific number of loads of Queen's Gate material in the pilot cell area before NATCO completed dredging of this "fine" material, as part of their new work dredging project, and
2. Optimal usage of chartered survey vessels, when they were available to the project.

As indicated in Section 3, a full complement of experienced SAIC field personnel were on site and available 7 days per week to ensure that the field measurements could be conducted as efficiently as possible. Nevertheless, day-to-day scheduling of field personnel, survey vessels, and equipment required significant effort and frequent prioritization of planned monitoring objectives. Figure 5-1 presents the daily schedule of field operations that were conducted, from initial mobilization of the project office at the SCMI facility on July 22, to the final recovery of current meter equipment on September 24. Beneath the dates on this figure, survey vessel usage is indicated, as well as placement operations conducted by NATCO. Daily monitoring activities are presented chronologically for each monitoring cell (LU, SU, LD and LC).

Figure 5-2 presents a chronological summary of monitoring surveys, organized to indicate surveys conducted within each cell and phased according to the placement operations (e.g., baseline, interim-placement, post placement, etc.). All survey entries are given according to their designation in Fredette (2000); additionally, "flex" surveys were conducted with the following measurement objectives:

- Additional monitoring in cells LU and SU associated with the primary placement operations
- Additional monitoring in cell LU associated with placements 46-71 (supplemental)
- Farfield monitoring of the material footprint surrounding cells LU and SU, following completion of placements in those cells
- Monitoring associated with the pump-out event conducted in cells LC and LD

Field operations for the Supplemental Survey were conducted from February 24 through March 04, 2001.

Figure 5-1. Schedule of Palos Verdes Pilot Cap Monitoring Activities

On site days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Date:	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	8-Aug	9-Aug
VESSELS:																				
Sea World UCLA																				
Yellowfin	Red = Vessel Used																			
Sea Watch	Blue = Vessel Not Used				Sea Watch	Sea Watch	Sea Watch	Sea Watch					Sea Watch	Sea Watch		Sea Watch			Sea Watch	Sea Watch
Tuna						Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna
Bottom Scratcher													Bottom Scratcher						Bottom Scratcher	
Total Vessel Usage Days: 58					**1**	**1**	**1**	**2**	**0**	**0**	**1**	**1**	**3**	**2**	**0**	**1**	**0**	**1**	**3**	**2**
NATCO OPERATIONS	Capping cell:												LU						SU	
	Disposal technique:												Conventional (1 load)						Conventional (1 load)	
																			load 1	

CELL LU																							
Conventional placement of fine material	Task Number of Fredette (2000)	Number of Surveys Planned														**Cell LU Event 1 Initial Placement Fine Material**							
Video imagery of bottom surge	2	2		Travel	Mobilize lab	Mobilize lab		Assemble	Assemble	Sea test						2i							
Hopper dredge operations monitoring	3	N							Travel	Assemble	Install	Training	Test	Test	Test	Record							
Hopper dredge sediment sampling	4	12		Travel	Mobilize lab	Mobilize lab									Training	LU-1							
Flex samples and surveys	5	N		Travel	Mobilize lab	Mobilize lab																	
Sediment profile & plan view photography	6	5		Travel	Mobilize lab	Assemble	Test		Sea test	6A							6Biii						
Moored current and OBS arrays	6	2										Assemble	Assemble	Test	Deploy	6Bi	Recover						
Plume surveying with ADCP	6	2							Travel	Assemble	Seatest				Mobilize	6Bii							
Plume surveying with CTD & water sampling	6	2		Travel	Mobilize lab	Mobilize lab	Test	Sea test							Mobilize	6Bii							
Sediment coring	6	4		Travel	Mobilize lab	Mobilize lab												Mobilize	6Biv				
Side-scan sonar surveying	6	2		Travel	Mobilize lab	Mobilize lab			Assemble														Mobilize
Subbottom profile surveying	6	1		Travel	Mobilize lab	Mobilize lab																	
Near-surface plume transport survey	11	3		Travel	Mobilize lab	Mobilize lab																	
ADCP mooring (30 days)	14	1									Travel	Assemble	Test	Test			Deploy	Record	Record	Record	Record	Record	Record

CELL SU																							
Conventional placement of fine material	Task Number of Fredette (2000)	Number of Surveys Planned																				**Cell SU Event 4 Initial Placement Fine Material**	
Video imagery of bottom surge	2	1																				2ii	
Hopper dredge operations monitoring	3	N																				Record	
Hopper dredge sediment sampling	4	7																				SU-1	
Flex samples and surveys	5	N																					
Sediment profile & plan view photography	8	4							Mobilize		8A												8Biii
Moored current and OBS arrays	8	1																	Test	Assemble	Deploy	8Bi	Recover
Plume surveying with ADCP	8	1																			Mobilize	8Bii	
Plume surveying with CTD & water sampling	8	1																			Mobilize	8Bii	
Sediment coring	8	3																					Mobilize
Side-scan sonar surveying	8	2																					Mobilize
Subbottom profile surveying	8	1																					
Near-surface plume transport survey	11	0																					

CELL LD																							
Spreading of coarse material	Task Number of Fredette (2000)	Number of Surveys Planned																					
Video imagery of bottom surge	2	1																					
Hopper dredge operations monitoring	3	N																					
Hopper dredge sediment sampling	4	5																					
Flex samples and surveys	5	N																					
Sediment profile & plan view photography	7	3																					
Moored current and OBS arrays	7	1																					
Plume surveying with ADCP	7	1																					
Plume surveying with CTD & water sampling	7	1																					
Sediment coring	7	1																					
Side-scan sonar surveying	7	2																					
Subbottom profile surveying	7	0																					
Near-surface plume transport survey	11	0																					

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug
					UCLA Vessel				UCLA Vessel			UCLA Vessel						
Sea Watch		Sea Watch	Sea Watch	Sea Watch	Sea Watch		Sea Watch					Sea Watch						Sea Watch
Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna	Tuna (transit)	
2	**1**	**0**	**2**	**2**	**3**	**1**	**2**	**1**	**1**	**0**	**0**	**3**	**0**	**1**	**1**	**1**	**0**	**1**
		Dredge	LU		LD			SU				LU	LU	LU	LU and SU	SU	SU	LD
		Inoperable	Conventional (4 loads)		Spreading (1 load)			Convent. (4 loads)				Continuous	Continuous	Continuous	Continuous/Continuous	Continuous	Continuous	Spreading
			loads 2-5		load 1			loads 2-5				loads 6-12	loads 13-18	loads 19-23	loads 24-25/ loads 6-10	loads 11-17	loads 18-21	loads 2-6

Cell LU
Event 3A
Interim Placement
Fine Material

			2iii									Flex video						Demobilize
			Record								Record	Record	Record	Record	Record			
			LU-2,3									LU-4,5	LU-6, 7	LU-8				
							6Ciiia	Complete 6Ciiia							6Ciiib			
Test	Deploy		6Ci	Recover									Demobilize					
	Mobilize		6Cii															
	Mobilize		6Cii															
							6Civa											
6Bv									Flex sidescan survey							Flex side-scan		
Record	Record		Record	Record	Record	Recover	Deploy	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record

								Record							Record	Record	Record	
								SU-2,3							SU-4	SU-5, 6	SU-7	
							8Biii (make-ups)					8Ciiia		Complete 8Ciiia	Complete 8Ciiia			
8Biv												8Civ						
8Bv									Flex sidescan survey									

Cell LD
Event 2
Initial Placement
Coarse Material

					2iv							Flex video						
Record Event 0					Record													Record
LD-0					LD-1													LD-2,3
				7A				7Biii						Complete 7Biii				
				Deploy	7Bi	Recover												
					7Bii													
					7Bii													
							7Biv											
									7Bv									
																		11i

40	41	42	43	44 Holiday	45 Holiday	46 Holiday	47	48	49	50	51	52	53	54	55	56	57	
29-Aug	30-Aug	31-Aug	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	24-Spet.
	Yellowfin		Yellowfin					Yellowfin	Yellowfin							Yellowfin		
Sea Watch	Sea Watch	Sea Watch					Sea Watch		Sea Watch	Sea Watch	Sea Watch	Sea Watch		Sea Watch	Sea Watch		Sea Watch	Sea Watch
1	**2**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**2**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**
LD	LU	LU	LU	LU						LC		LU	LU	LU	LU	LU		
Spreading	Continuous	Continuous	Continuous	Continuous						1 Pump-out load		Continuous	Continuous	Continuous	Continuous	Continuous		
loads 7-9	loads 26-29	loads 30-34	loads 35-40	loads 41-45								loads 46-49	loads 50-55	loads 57-61	loads 64-66	loads 67-71		

	Record	Record	Record	Record								Record	Record	Record	Record	Record		
	LU-9, 10	LU-11, 12	LU-13, 14									LU-15	LU-16	LU-17	LU-18	LU-19		
							6Di		6Di completion						Flex SPI farfield			
6Civb									6Diii								Flex coring	
								6Div								Flex sidescan		
								6Dii								Flex subbottom		
												11ii		11iii				
Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Record	Recover

		8Di	Complete 8Di												Flex SPI farfield
6 Flex cores									8Diii						
								8Div							
								8Dii							

Record															
	7Di														
	7Dii														

CELL LC
Pump-out of fine material

	Record							
	LC-1							
Flex SPI		Flex SPI pumpout						
	Flex plumesurvey							
								Flex coring

Figure 5-2 Summary of Survey Activities for Tasks 2, 6, 7, 8 11 & 14 of Fredette Monitoring Plan V 4.1.

9/17/2000 *Note that table entries represent monitoring event numbers given in Fredette (2000).*

Also note that monitoring tasks 3, 4 & 5 will be conducted but are not shown on this table.

Cell LU	Field Activity	Baseline placement	Initial placement	Post-initial placement	Monitoring after 5 placements	A Flex monitoring after 5 placements	Monitoring after 25 placements	A Flex monitoring after 25 placements	Monitoring after 45 placements	B Flex for farfield investigation	B Flex after 68 placements	Surveys	A Flex Surveys	B Flex Surveys
			Event 1	Event 1	Event 3A		Event 3A		Event 3AX					
	Underwater video survey		2i		2iii	Flex (during 8 & 9)						2.0	1.0	
	Sediment profile/photography survey	6A		6Biii	6Ciiia		6Ciiib		6Di (9/5 & 9/7)	Flex farfield (9/13)		5.0		0.5
Disposal	Bottom current/OBS measurements		6Bi		6Ci							2.0		
to achieve	Plume measurements (ADCP/OBS/CTD)		6Bii		6Cii							2.0		
30-45 cm cap	Sediment coring survey			6Biv	6Civa		6Civb (8/29)		6Diii (9/7)		Flex coring (9/15)	4.0		1.0
over entire	Side-scan sonar survey			6Bv		(Flex with 7Bv)		Flex survey	6Div (9/6)		Flex sidescan (9/14)	2.0	1.5	0.5
cell	Subbottom profiling survey								6Dii (9/6)		Flex subbottom (9/14)	1.0		0.5
	Surface plume transport survey								11ii & 11iii (9/10 & 12)			2.0		
	ADCP current mooring (30 days)		14									1.0		

Cell SU		Baseline placement	Initial placement	Post-initial placement	Monitoring after 5 placements	A Flex monitoring after 5 placements	Monitoring after 21 placements	A Flex monitoring after 21 placements		B Flex for farfield investigation		Surveys	A Flex Surveys	B Flex Surveys
			Event 4	Event 4			Event 6AX							
	Underwater video survey		2ii									1.0		
	Sediment profile/photography survey	8A		8Biii	8Ciiia		8Di (8/31 & 9/1)			Flex farfield (9/13)		4.0		0.5
Disposal	Bottom current/OBS measurements		8Bi									1.0		
to achieve	Plume measurements (ADCP/OBS/CTD)		8Bii									1.0		
15-cm cap	Sediment coring survey			8Biv	8Civ		8Diii (9/7)	6 Flex cores (8/29)				3.0	1.0	
over half	Side-scan sonar survey			8Bv		(Flex with 7Bv)	8Div (9/6)					2.0	0.5	
of cell	Subbottom profiling survey						8Dii (9/6)					1.0		
	Surface plume transport survey											0.0		

Cell LD		Baseline placement	Initial placement	Post-initial placement	Monitoring during placement 5		Monitorign after 9 placements
			Event 2	Event 2			Event 3BX
	Underwater video survey		2iv				
	Sediment profile/photography survey	7A		7Biii			7Di (8/30)
Spreading	Bottom current/OBS measurements		7Bi				
along one	Plume measurements (ADCP/OBS/CTD)		7Bii				
line	Sediment coring survey			7Biv			
	Side-scan sonar survey			7Bv			7Dii (8/30)
	Subbottom profiling survey						
	Surface plume transport survey				11i		

Cell LC	B Monitoring for pump-out event		Surveys	A Flex Surveys	B Flex Surveys
			1.0		
	Flex baseline SPI	Flex-post SPI LC & LD	3.0		1.5
Pump out along			1.0		
one line through	Flex CTD (9/8)		1.0		1.0
Cells LC and LD	1 Flex core (9/15)		1.0		
			2.0		
			0.0		
			1.0		

Summary of Survey Activities	Principal Surveys in Budget	Budgeted Flex Surveys	Actual 'A' Flex Surveys	Actual 'B' Flex Surveys
Underwater video survey	4	0	1	
Sediment profile/photography survey	12	1		2.5
Bottom current/OBS measurements	4			
Plume measurements (ADCP/OBS/CTD)	4	0		1
Sediment coring survey	8	1	1	1
Side-scan sonar survey	6	0	2	0.5
Subbottom profiling survey	2	0		0.5
Surface plume transport survey	3			
ADCP current mooring (30 days)	1			
	44	2	4	5.5

6.0 CRUISE REPORTS FOR MONITORING OPERATIONS

The objective of this deliverable is to provide a report on all monitoring activities conducted during the pilot cap project. To simplify the presentation of this extensive information, we have constructed a separate report for each day of survey operations, and for each vessel involved in monitoring. These reports were originally written on the day of the cruise. They were later supplemented with additional information taken from Navigation Logs, which were written during the cruise, and Metadata files, written soon after each cruise. Thus, a complete report was prepared for each time a survey vessel went to sea (61 reports total), exclusive of hopper dredge monitoring operations. Cruise reports are presented in the following appendices:

Appendix A	Cruises in Cell LU
Appendix B	Cruises in Cell SU
Appendix C	Cruises in Cell LD
Appendix D	Cruises in Cell LC

Each report presents a summary of survey operations (schedule, equipment, and any problems encountered) as recorded in the NavLog and other pertinent information such as data custody and navigation data filenames. Accompanying each report is a map of the pilot cap area illustrating the location where measurements were conducted during that specific cruise, such as target stations sampled (SPC/PVC and coring surveys) or survey tracklines (sidescan sonar and subbottom profiling). If a cruise entailed monitoring in multiple cells, the cruise report will appear in corresponding appendices. Furthermore, maps of sampling locations are presented only in the appropriate appendix.

Cross-reference tables for determining the survey type, the phase of the associated placement operation, and the page number are located within the respective appendices. Note that all times are given in UTC (GMT), which was seven hours ahead of local time (pacific daylight time).

7.0 REFERENCES

Fredette, T. J. 2000. Palos Verdes Pilot Project Monitoring Scope of Work. Working Draft version 4.2 dated July 2000.

SAIC. 2000a. Project Work Plan for the Palos Verdes Pilot Capping Project: Baseline Monitoring Activities. SAIC Report No. 486. Submitted to U. S. Army Corps of Engineers, Los Angeles District.

SAIC. 2000b. Project Work Plan for the Palos Verdes Pilot Capping Project: Interim and Postcap Monitoring, Volume I. SAIC Report No. 505. Submitted to U.S. Army Corps of Engineers, Los Angeles District.

SAIC. 2001. Monitoring Results from the Field Pilot Study of In Situ Capping of Palos Verdes Shelf Contaminated Sediments. SAIC Report No. 514. Submitted to U.S. Army Corps of Engineers, Los Angeles District.

APPENDIX A
CELL LU

Palos Verdes Cruise Report Reference Table
Appendix A – Cell LU

Cell	Data Type	Survey Sequence	Fredette Task No.	Survey Type	Survey Date	Cruise Report Page No.	Graphic Page No.
LU	SPC/PVC	Baseline	6A	Primary[1]	07/27/00	A2	A3
LU	SPC/PVC	Post Initial	6Biii	Primary	08/03/00	A4	A5
LU	SPC/PVC	Post Initial	6Biii	Primary	08/09/00	A6	A7
LU	SPC/PVC	First Interim	6Ciiia	Primary	08/17/00	A8	A9
LU	SPC/PVC	First Interim	6Ciiia	Primary	08/18/00	A10	A11
LU	SPC/PVC	Second Interim	6Ciiib	Primary	08/25/00	A12	A13
LU	SPC/PVC	Post Cap	6Di	Primary	09/05/00	A14	A15
LU	SPC/PVC	Post Cap	6Di	Primary	09/07/00	A16	A17
LU	SPC/PVC	Post Post Cap	Flex 2C[3]	Mod #1	09/13/00	A18	A19
LU	SPC/PVC	Post Cap		Supp.	02/24/01	A20	A22
LU	Cores	Post Initial	6Biv	Primary	08/05/00	A24	A25
LU	Cores	Post Initial	6Biv	Primary	08/10/00	A26	A27
LU	Cores	First Interim	6Civa	Primary	08/17/00	A28	A29
LU	Cores	Second Interim	6Civb	Primary	08/29/00	A30	A31
LU	Cores	Post Cap	6Diii	Primary	09/07/00	A32	A33
LU	Cores	Post Post Cap	Flex 2B	Mod #1	09/15/00	A34	A35
LU	Cores	Post Cap		Supp.	02/27/01	A36	A37
LU	Cores	Post Cap		Supp.	02/28/01	A38	A37
LU	Cores	Post Cap		Supp.	03/01/01	A39	A37
LU	Side scan	Post Initial	6Bv	Primary	08/10/00	A41	A42
LU	Side scan	First Interim	Flex 1[2]	Primary	08/19/00	A43	A44
LU	Side scan	Second Interim	Flex 1	Primary	08/26/00	A45	A46
LU	Side scan & Subbottom	Post Cap	6Div, 6Dii	Primary	09/06/00	A47	A48, A49
LU	Side scan & Subbottom	Post Post Cap	Flex 2B[3]	Mod #1	09/14/00	A50	A51, A52
LU	CTD & Water Quality, Drogues	Initial Placement	6Bii	Primary	08/02/00	A54	A56
LU	CTD & Water Quality	Placements 4 & 5	6Cii	Primary	08/12/00	A57	No Graphic
LU	CTD & Water Quality, Drogues	Placements 4 & 5	6Cii	Primary	08/13/00	A58	A60, A61
LU	Surface Plume Transport	Kelp Study #2	11ii	Primary	09/10/00	A62	A64

Palos Verdes Cruise Report Reference Table
Appendix A – Cell LU (continued)

LU	Surface Plume Transport	Kelp Study #3	11iii	Primary	09/12/00	A65	A67
LU	Current Arrays	Initial Placement	6Bi	Primary	08/01/00	A69	A70
LU	Current Arrays, TRBM	Initial Placement Recovery, TRBM Placement	6Bi	Primary	08/03/00	A71	A72
LU	Current Arrays	Placements 2-5 Deployment	6Ci	Primary	08/11/00	A73	A75
LU	Current Arrays	Placements 2-5 Recovery	6Ci	Primary	08/14/00	A76	No Graphic
LU	TRBM	TRBM Recovery	14	Primary	08/16/00	A78	No Graphic
LU	TRBM	30-Day Deployment	14	Primary	08/17/00	A79	A80
LU	TRBM	30-Day Recovery	14	Primary	09/24/00	A81	No Graphic
LU	Towed ADCP	Initial Placement	6Bii	Primary	08/02/00	A83	A84
LU	Towed ADCP	Placements 4 & 5	6Cii	Primary	08/13/00	A85	A86, A87
LU	Video	Initial Placement	2i	Primary	08/02/00	A89	A90
LU	Video	Placements 8 & 9	2iii	Primary	08/22/00	A91	A92
LU	ADISS	Pilot Monitoring Program	3	Primary	08/08/00 - 09/15/00	A94	A95-A99

1. Primary surveys were contracted in SoW v. 4.1, Tasks 2, 3, 6-8, and 11.
2. Flex 1 surveys were contracted in SoW v. 4.1, Task 5.
3. Flex 2 surveys were contracted in Contract Modification 1, Tasks A, B, and C.

CELL LU
SPC/PVC CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **July 27, 2000**
Survey: **SPC/PVC Baseline (6A)**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Melissa Swanson (SPC), Greg Tufts (PVC), John Nakayama (Deck Ops), Rebecca DeKeyzer (Navigation), Jason Infantino
SCMI: Ken Kivett (Captain), Dave Reynoso (Mate), Kathleen Snow (Deckhand)

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 14:15 to conduct SPC/PVC operations for surveys LU Baseline and LU Extra. Survey operations were conducted between 15:22 and 21:55. A total of 25 sites for survey LU Baseline (I01 – I15 and O01 – O10) and 20 additional baseline sites (O23 – O42) in Cell LU were sampled. A minimum of three replicates were collected at each site. Following the completion of survey operations, the vessel returned to SCMI at 22:42.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

No problems were encountered.

Custody of Samples:

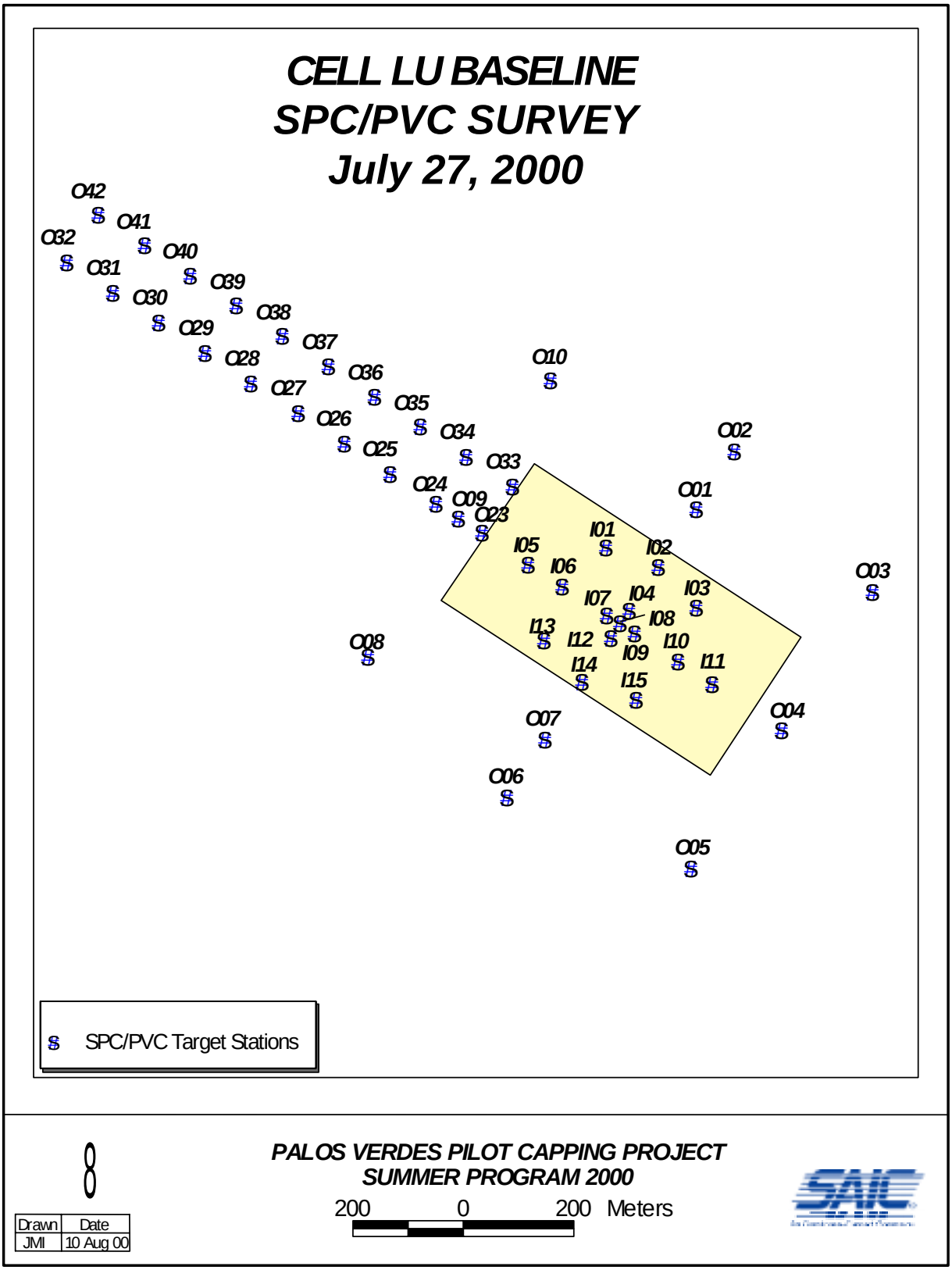
Melissa Swanson had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0727.tgt
Points_07272000_SW.csv


CELL LU BASELINE
SPC/PVC SURVEY
July 27, 2000
O42
O41
O32
O40
O31
O39
O30
O38
O29
O37
O28
O36
O27
O35
O26
O34
O25
O33
O24
O09
O23
O10
O02
O01
O03
I01
I05
I02
I06
I03
I07
I04
I08
I13
I12
I09
I10
I14
I11
I15
O08
O07
O04
O06
O05
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
10 Aug 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 3, 2000**
Survey: **SPC/PVC, LU Post Initial Placement (6Biii), SU Baseline Makeups (8A)**
Cell: **LU, SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Melissa Swanson (SPC), Greg Tufts (PVC), Vicki Frank (Deck Ops), Rebecca DeKeyzer (Navigation)
SCMI: Ken Kevitt (Captain), Unknown (Mate)

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 13:37 to conduct SPC/PVC operations for surveys LU Post Initial Placement. Two targets for the SU Baseline survey were also resurveyed. Survey operations were conducted between 14:36 and 21:43. Thirty-seven sites for the LU Post Initial Placement survey (I01-I15; O01-O22) and 15 additional sites (O23-33, O35, O37, O39 & O41) were sampled. All stations were sampled with a minimum of three replicates conducted at each site. A total of 57 sites had been planned in LU. Thirty-seven of these stations were required to be surveyed under this task. The additional 20 stations were "extra" stations to be surveyed if time and conditions permitted and were not mandatory. Only fifteen of these stations were sampled. The remaining five "extra" stations were not sampled due to time constraints. Two sites for SU Baseline, I09 & O07 were also re-sampled to acquire plan-view images that were not obtained during the July 28th baseline survey. Upon completion of the survey activities, the vessel returned to SCMI at 22:34.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

No problems were encountered.

Custody of Samples:

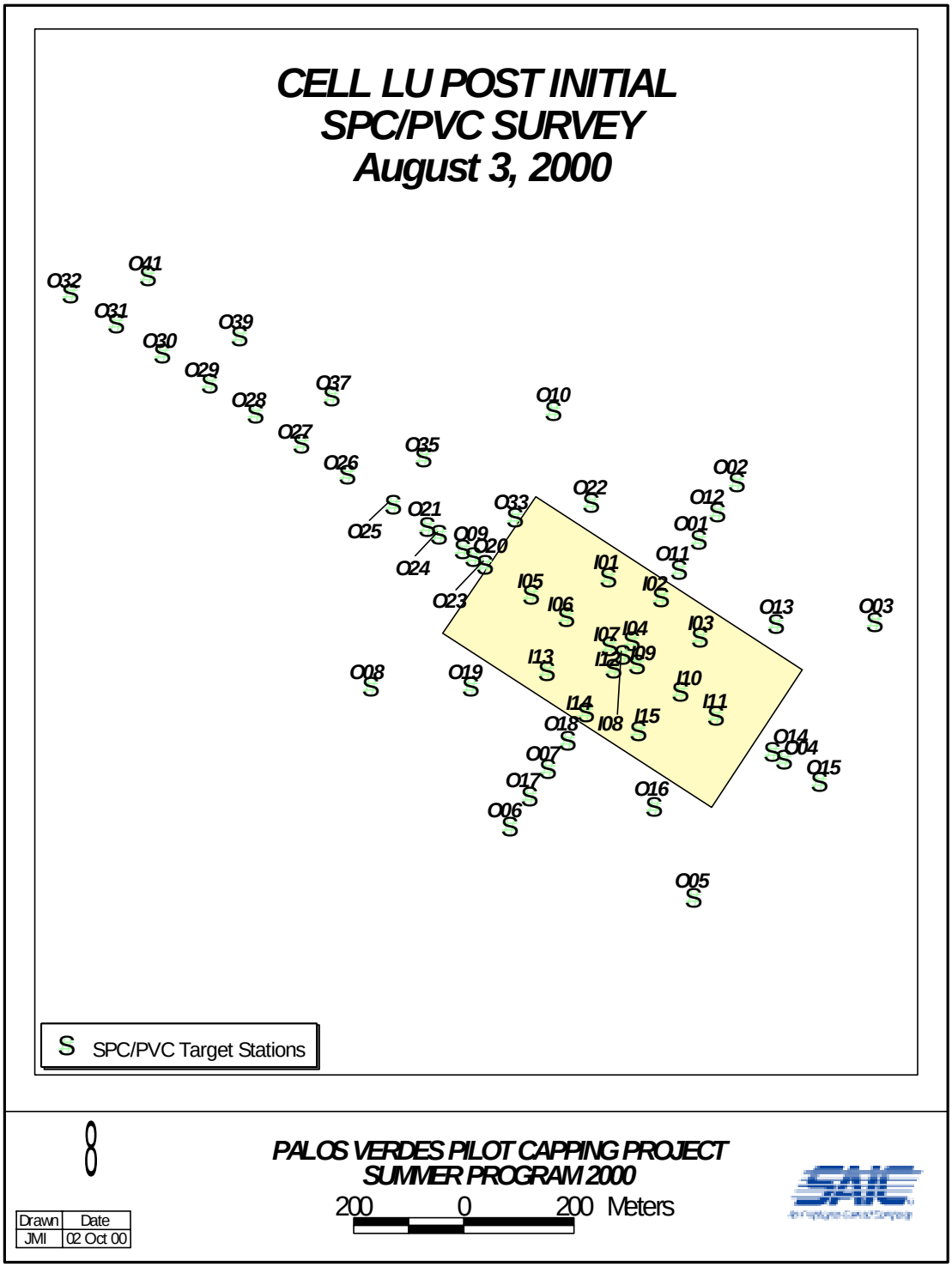
Melissa Swanson had custody of film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0803.tgt
Points_0803_SW.csv


CELL LU POST INITIAL
SPC/PVC SURVEY
August 3, 2000
O41
O32
O31
O39
O30
O29
O37
O28
O10
O27
O35
O26
O02
O22
O12
O33
O21
O01
O25
O09
O20
O11
O24
I01
I05
I02
O23
I06
O13
O03
I07
I04
I03
I09
I13
I12
O08
O19
I10
I14
I11
O18
I08
I15
O14
O04
O07
O15
O17
O16
O06
O05
S SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
02 Oct 00
SAIC

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 9, 2000**
Survey: **SPC and PVC, SU Post Initial Placement (8Biii)**
LU Post Initial Placement (6Biii)
Cell: **SU, LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Melissa Swanson (SPC), Greg Tufts (PVC), Vicki Frank (Deck), Lisa McAuliffe (Navigation)
SCMI: Ken Kivett (Captain), Dave Reynoso (Mate), Justin Myer (Deck hand)

Survey Operations:
Survey Schedule
The SPC/PVC crew arrived at SCMI at 13:00, and departed dock at 13:18. Cell SU Post-Initial Placement survey was conducted until the R/V *Tuna* arrived at the cell to recover several current meters. The R/V *Sea Watch* then moved operations to Cell LU. Ten additional post-placement stations (I22-I29) were added to the LU Post Initial Placement survey that was conducted on August 3, 2000 and surveyed today. These stations were added to better delineate the cap material footprint of the single hopper placement and were based on the sediment profile image results of the August 3rd survey. Two other stations from the August 3rd survey (I20&I21) were also re-sampled today as they were originally collected in the wrong location. Following the completion of Cell LU additions, the R/V *Sea Watch* returned to Cell SU and completed the post-initial placement survey (O1-O13; O15-O19; O21-22), (I1-I15 and I20-I29) at 22:38. A minimum of three replicates were taken at each site in both cells. The vessel returned to dock at approximately 23:20 and was demobilized.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
The navigation computer locked up twice. There was no immediately obvious answer for this. Differential settings had to be corrected following the second crash. Also, Hypack did not write the navigation string data to the navigation file it created. However, the positions had been recorded in the electronic log, so the nav target file was recreated with little trouble.

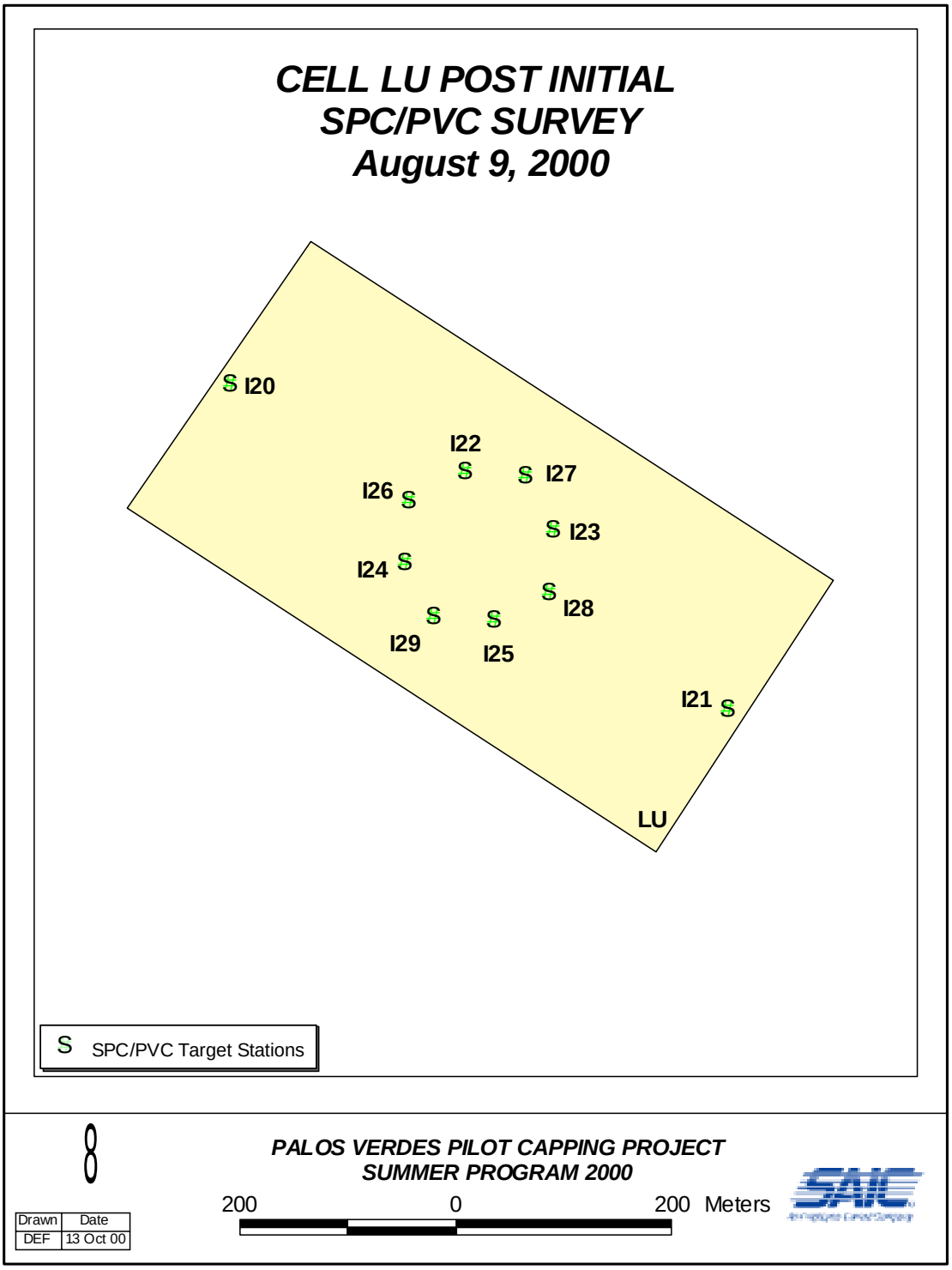
Custody of Samples:

Melissa Swanson and Greg Tufts had custody of the samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files: RAW0809.tgt, Points_08092000_SW.csv


CELL LU POST INITIAL
SPC/PVC SURVEY
August 9, 2000
I20
I22
I27
I26
I23
I24
I28
I29
I25
I21
LU
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200 Meters
Drawn
Date
DEF
13 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 17, 2000**
Survey: **SPC and PVC, SU Post Initial (8Biii), LU First Interim (6Ciiia)**
Cell: **SU, LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation), Allan Quintal (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 14:10 to spool a new 350-ft cable onto the vessel winch and perform routine maintenance on the cameras. The crew was scheduled to complete a re-survey of selected sites in Cell SU for the Post-Initial Placement survey. If there was still time, they were then to begin the Cell LU Interim Survey. The vessel departed the dock at 15:53 and arrived at Cell SU at 17:05. At the second repetition of the second site, the pinger did not go off. The camera was raised on deck and reset. The site was sampled successfully and the vessel moved to the deepest sites of the survey. However, there was not enough wire on the winch to reach the bottom. The vessel has a second winch, spooled with longer, thinner wire. The crew attached this wire to the camera frame, but neither the captain nor the survey leader were comfortable with the condition of the second wire. The decision was made to abort the two deepest sites until a reliable wire could be acquired. Cell SU Initial Placement survey make-ups were completed at approximately 21:10 (I02, I03, O06, I09, I12, I14, O17, O18, I25, I28, and I29). The vessel moved on to Cell LU and completed 13 of the 19 sites planned by 23:55 (I04, I06 – I15, I18, and I19). A minimum of three replicates were taken at each site in both cells. The rest of the LU sites will be completed tomorrow, 08/18/2000. Following the cessation of survey activity, the R/V *Tuna* returned to SCMI, arriving at dock at 00:45.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
There was not enough cable onboard to reach the two deepest sites in Cell SU. They will have to be surveyed tomorrow.

Custody of Samples:

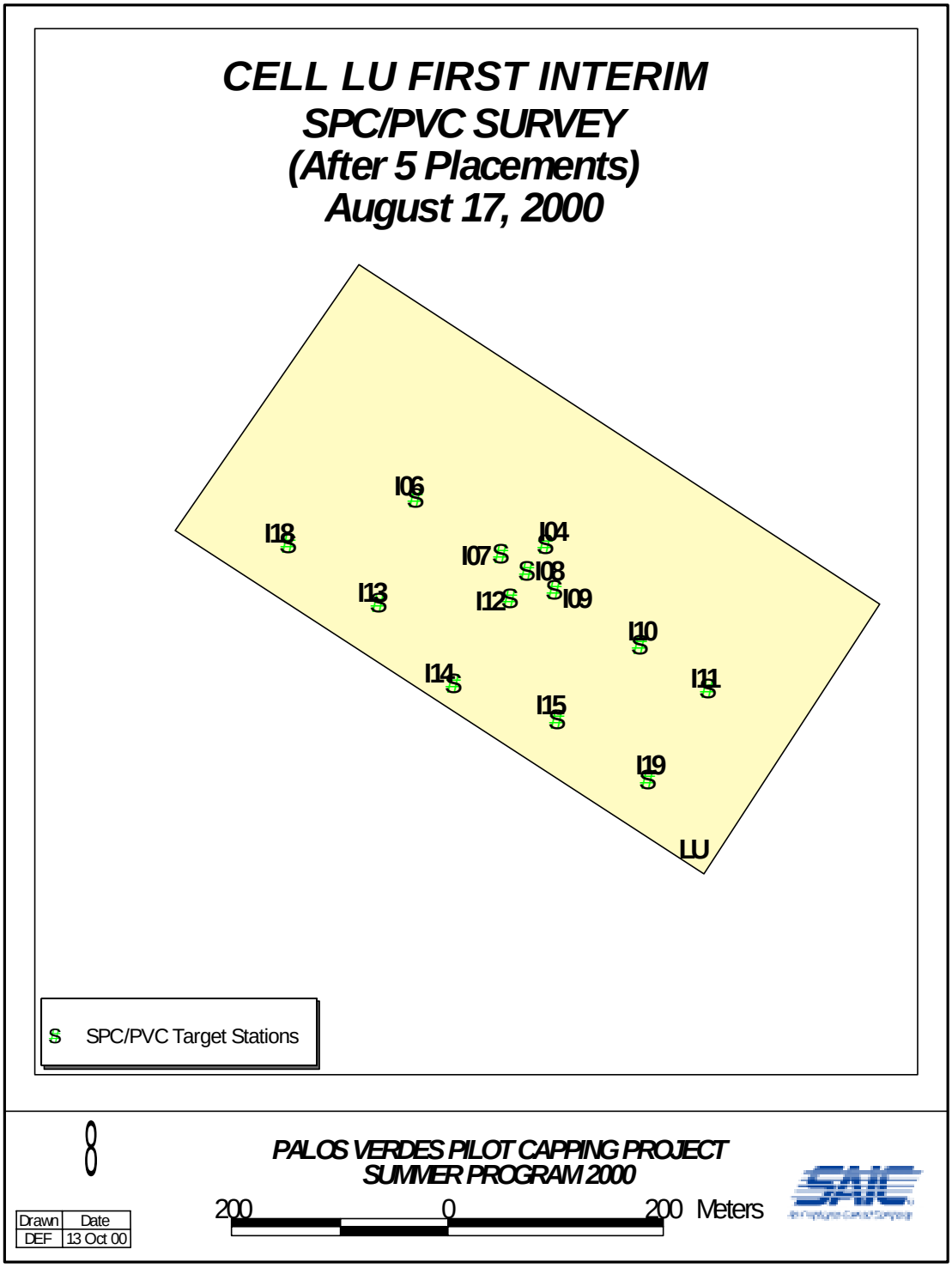
Greg Tufts and Jason Infantino had custody of samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08172000_TN


CELL LU FIRST INTERIM
SPC/PVC SURVEY
(After 5 Placements)
August 17, 2000
I06
I18
I04
I07
I08
I13
I12
I09
I10
I14
I11
I15
I19
LU
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
DEF
13 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 18, 2000**
Survey: **SPC and PVC, LU First Interim (6Ciiia), LD Post Initial (7Biii)**
Cell: **LU, LD**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation), Allan Quintal (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 13:15 and departed from SCMI at approximately 13:30. The crew was scheduled to complete the Cell LU Interim Survey (6 sites, 1 re-survey site) and the Cell LD Post-Initial Placement survey (35 sites).

The vessel arrived at the Cell LU at 14:07. After the second repetition on the first site, I08, the pinger did not go off. The camera was pulled to the deck and reset. The site was sampled successfully and the rest of the LU survey (I01 – I03, I05, I16, I17) was completed with no further difficulties. The vessel moved to Cell LD at approximately 15:35. At the 21st site, the pinger did not go off. The camera was pulled to the surface, reset, and completed the rest of the survey with no trouble. The vessel completed the 35 LD sites (I01 – I15, I20, I21, O01- O13, O15 – O19, O21, and O22) by 22:10. A minimum of three replicates were completed at each site in both cells, with two sites requiring additional repetitions. Upon completion of survey activities, the vessel returned to the dock at SCMI, arriving at 23:00.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
The camera pinger did not go off twice, once in each cell. It had to be pulled to the surface and reset each time.

Custody of Samples:

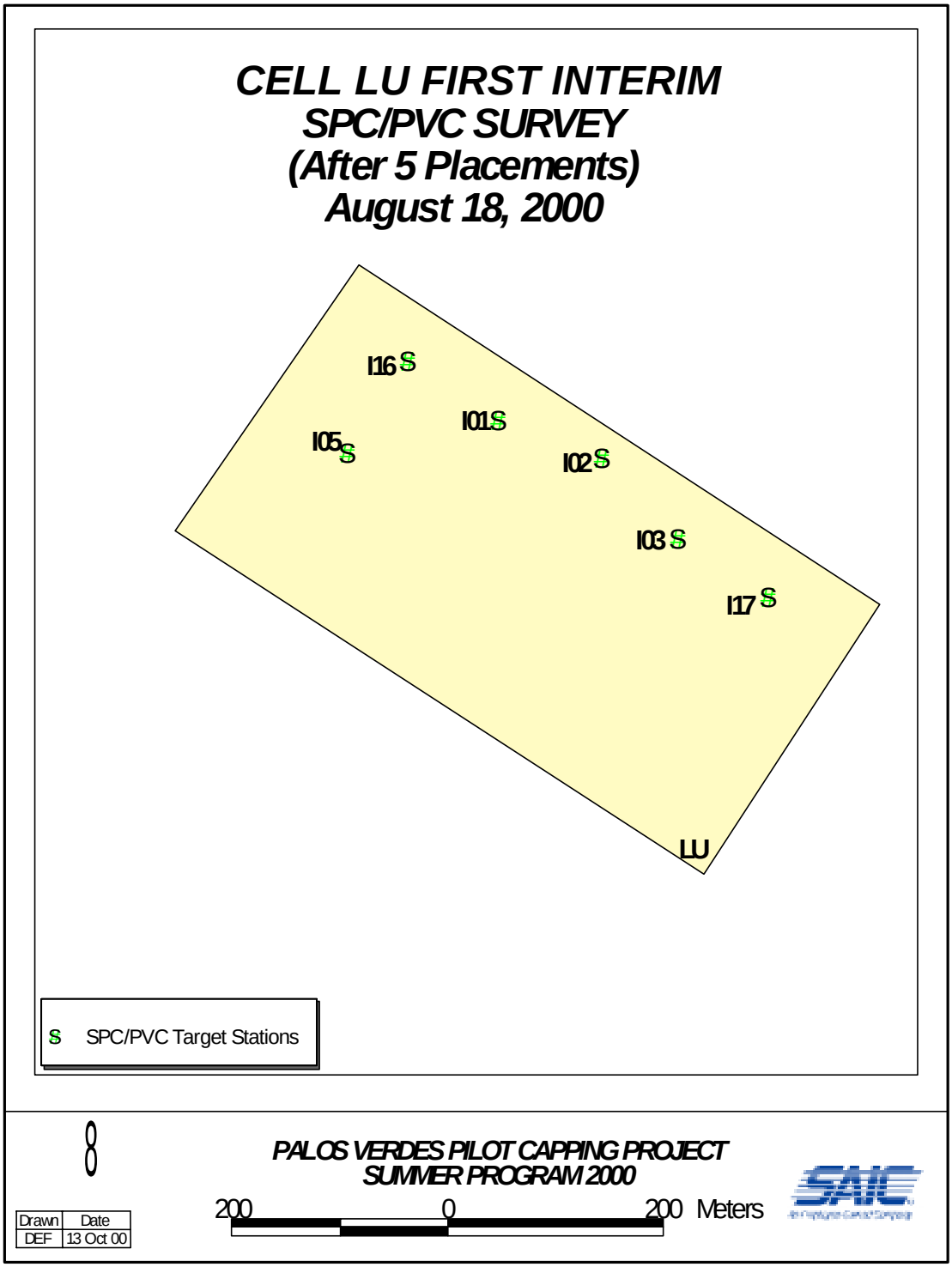
Greg Tufts and Jason Infantino had custody of samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08182000_TN_LUI_LDH


CELL LU FIRST INTERIM
SPC/PVC SURVEY
(After 5 Placements)
August 18, 2000
I16
I01
I05
I02
I03
I17
LU
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
DEF
13 Oct 00
200
0
200
Meters
SAIC

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 25, 2000**
Survey: **SPC and PVC, LU Second Interim (6Ciiib), SU Interim Makeups (8Ciiia)**
Cell: **LU, SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Deck Ops), and Rebecca DeKeyzer (Navigation).
Vessel: Bob Greeno (Captain), Mate

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 13:51 to conduct the Second Interim SPC/PVC Survey in Cell LU and to re-survey two sites for the SU Interim Survey. Survey operations were conducted between 14:40 and 20:42. A total of 31 sites (I01 – I19, I30 – I41) were surveyed in Cell LU, while two sites (I13, I19) were surveyed in Cell SU. A minimum of three replicates were taken at each site in both cells. Following the completion of survey activities, the vessel returned to SCMI at 21:33.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

None

Custody of Samples:

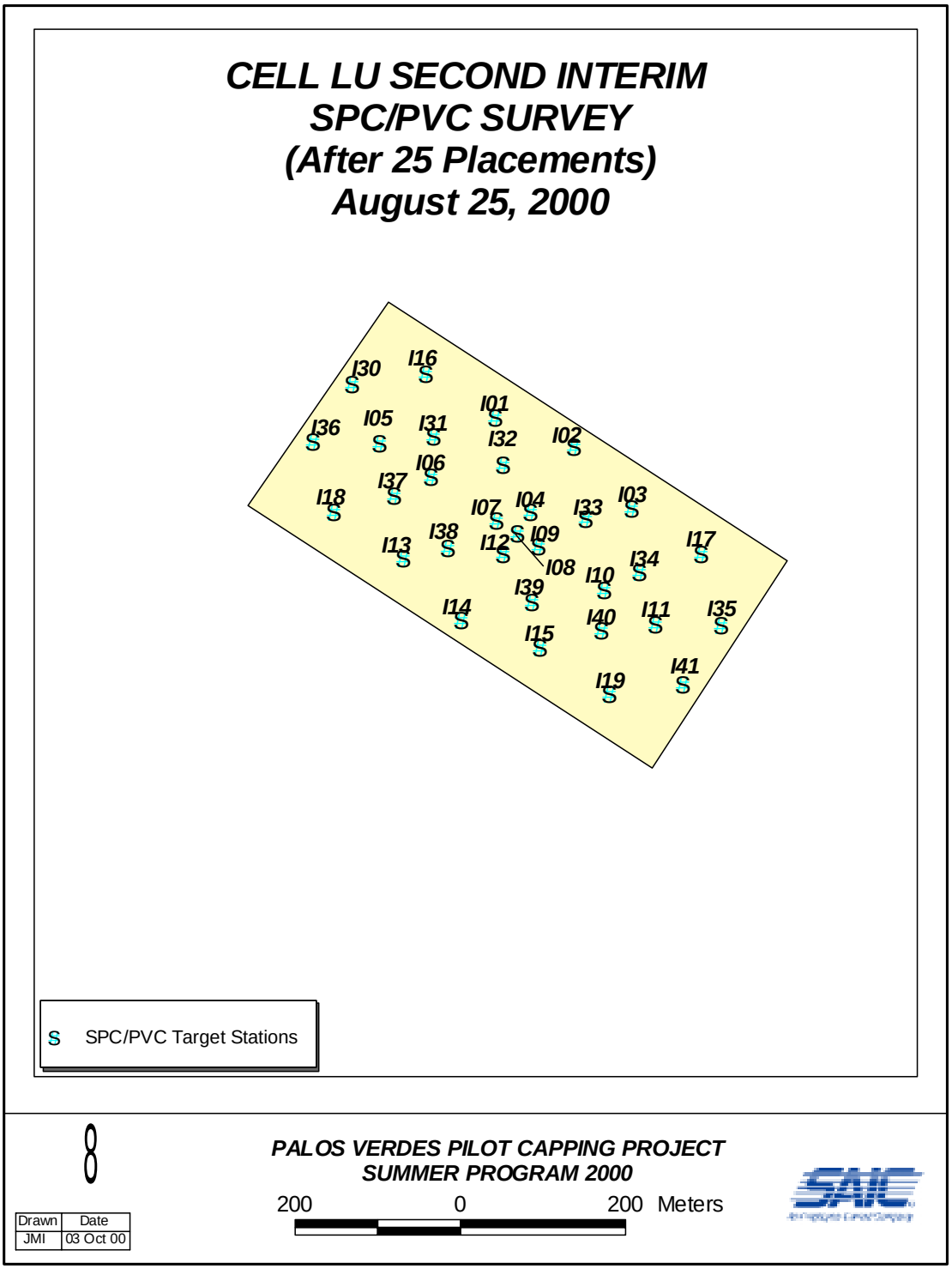
Jason Infantino had custody of the film upon survey completion.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Point_0825_LU.csv
Point_0825_LU.csv


CELL LU SECOND INTERIM
SPC/PVC SURVEY
(After 25 Placements)
August 25, 2000
I30
I16
I01
I05
I31
I36
I32
I02
I06
I37
I18
I07
I04
I33
I03
I38
I09
I12
I13
I17
I08
I34
I10
I39
I14
I40
I11
I35
I15
I41
I19
S SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
03 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 5, 2000**
Survey: **SPC & PVC, Post Cap (6Di)**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation)
SCMI: Ken Kivett (Captain), David Renoso (Mate), Shoshanna Grevenwald (Deckhand)

Survey Operations:
Survey Schedule
The R/V *Sea Watch* departed SCMI at 14:05 for the Cell LU Post Cap SPC/PVC survey. When the vessel arrived on site, the Photosea (PVC) strobe was not working consistently. The cable connecting the Photosea strobe to the pinger was replaced with the spare cable and the first site surveyed. After the second repetition, the pinger did not go off, indicating that no image was collected. Following the third repetition, the pinger was not heard and the camera was pulled onboard. Nothing was obviously wrong, so the camera was put back in the water and the first roll of film was completed without additional trouble. Following the second film change, however, the camera occasionally took a picture during the descent to the bottom. J. Infantino and G. Tufts determined that the camera was being lowered too quickly through the water column and that the pressure of the water was triggering the camera. The camera was lowered more slowly and the problem thus resolved. At Site LUCO05, the pinger again stopped working. The camera was pulled on deck and the SPC head examined. J. Infantino determined that the motor winder was not adjusted properly and switched Head 2 for Head 5. The Photosea cameras were not working consistently through the entire survey. After repeated attempts to fix it, the Plan View cameras stopped working entirely and the remainder of the survey was cancelled. Twenty-nine sites (I02, I04 – I12, I14, I20, I21, O01, O02, O04 – O07, O09, O11, O12, O15 – O18, O21, O52 and O53) out of 49 were surveyed. Three replicates were taken at each site. Following the completion of survey activities, the R/V *Sea Watch* returned to SCMI, arriving at SCMI at 20:48.

Survey Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

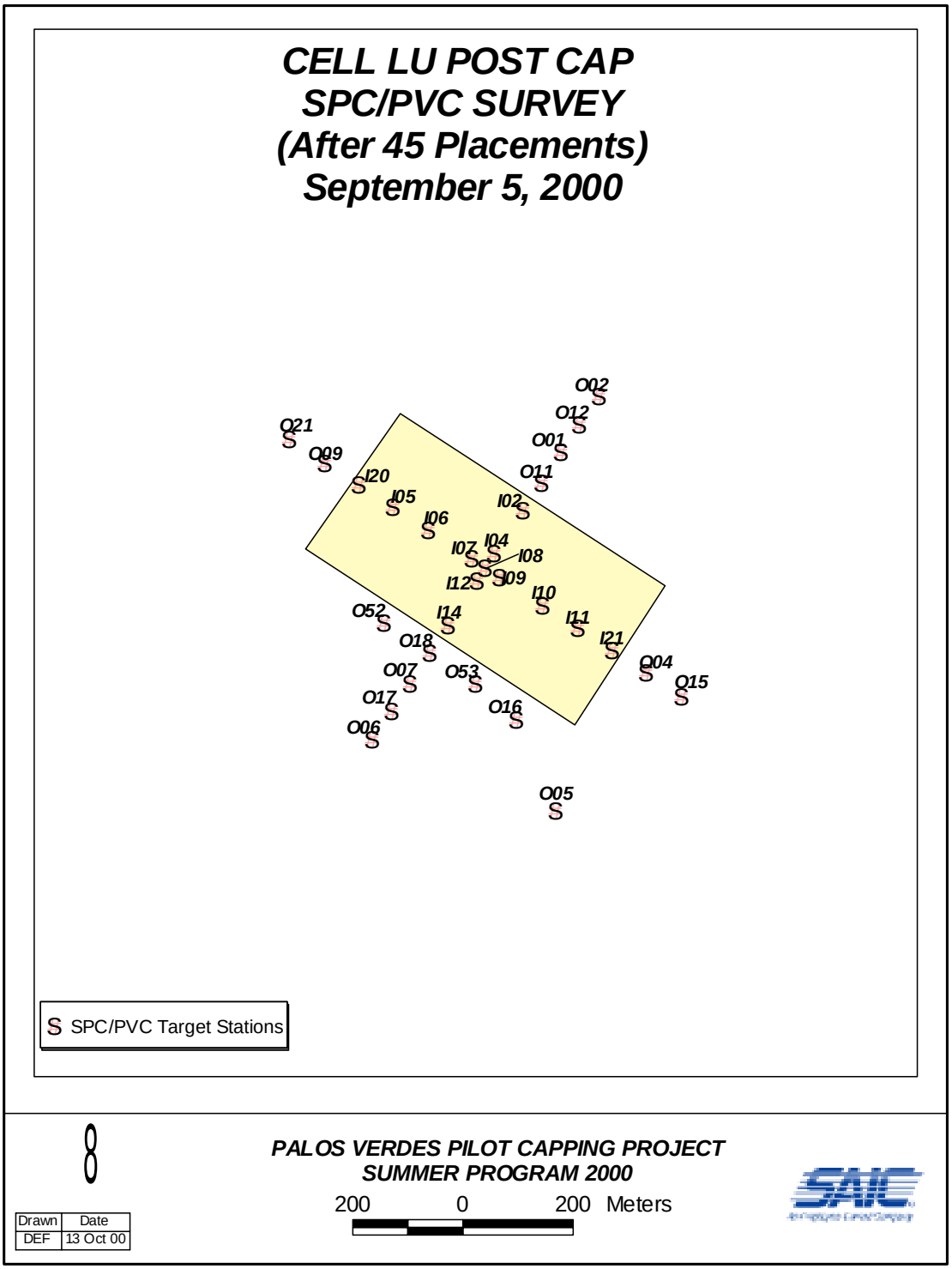
- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
Photosea strobe/pinger cable connectors were malfunctioning.
Motor winder on the primary SPC head was malfunctioning.

Custody of Samples:
Greg Tufts had custody of the film upon completion of the survey.

Custody of Survey Data:
All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:
Points_09052000_SW.csv


CELL LU POST CAP
SPC/PVC SURVEY
(After 45 Placements)
September 5, 2000
O02
O12
O01
O11
O21
O09
I20
I05
I02
I06
I04
I07
I08
I09
I12
I10
I11
I21
O52
I14
O18
O07
O53
O04
O15
O17
O16
O06
O05
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
DEF
13 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 7, 2000**
Survey: **SPC and PVC, LU Post Cap (6Di), LC Baseline (Flex)**
Cell: **LU, LC**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation)
SCMI: Jim Critanovich (Captain), Dennis Dunn (Mate) and Katherine (last name unknown; Deckhand)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 13:35 and departed from SCMI at approximately 14:18. The crew was scheduled to complete the Cell LU Post Cap Survey (22 sites) and the Cell LC Baseline Survey (18 sites). The vessel arrived at the Cell LU at 15:05. The twenty-two sites in LU (I01, I03, I06, I13, I15 – I19, I43 – I45, O03, O08, O10, O13, O19, O22, and O42, O50 – O52) were completed by 19:40 with only minor difficulties. Occasionally, the pinger did not trigger. After the first roll of film was taken out, the camera would not advance. The camera head was determined to be the problem and Head 5 was put onto the frame. Following the head change, there were no further problems. Station I06 was resampled unintentionally during the course of the day and did not need to be resampled during this survey. Following the completion of the LU Post Cap survey, the *Yellowfin* moved to Cell LC to run the baseline survey. The LC Baseline survey (Sites I46 – I63) was complete at 22:02 with no difficulties. Three replicates were taken at each site in both cells. The vessel departed the survey area upon completion of survey activities, and the R/V *Yellowfin* returned to dock at 22:54.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
Had to switch Head 5 for Head 2 – camera motor winder was malfunctioning.

Custody of Samples:

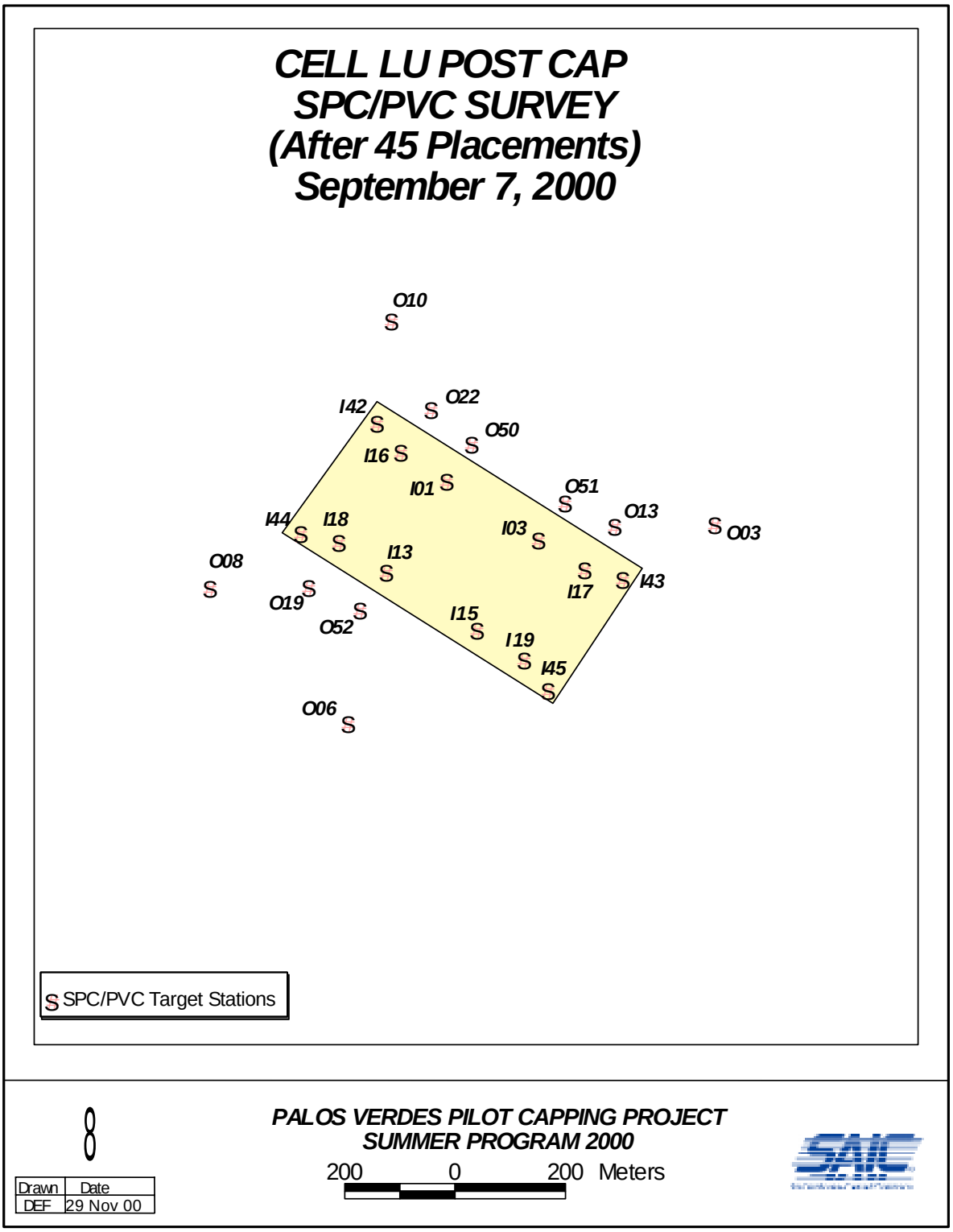
Jason Infantino and Greg Tufts had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0907.tgt
Points_09072000_YF.csv


CELL LU POST CAP
SPC/PVC SURVEY
(After 45 Placements)
September 7, 2000
O10
I42
O22
O50
I16
I01
O51
O13
O03
I44
I18
I03
O08
I13
I17
I43
O19
O52
I15
I19
I45
O06
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn Date
DEF 29 Nov 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 13, 2000**
Survey: **SPC and PVC, SU Post Post Cap/Farfield (Flex), LU Post Post Cap/Farfield (Flex)**
Cell: **SU, LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation)
SCMI: Captain, Mate and Deckhand (names unknown)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 14:15 and departed from SCMI at approximately 14:55. The crew was scheduled to complete the Cell LU Post Post Cap Survey (15 sites) and the Cell SU Post Post Cap Survey (20 sites). The vessel arrived at the Cell SU at 15:41. The twenty sites in SU were completed by 17:53 with no difficulties (O62-O73, O54-O61). One site had six replicates taken, as there was a temporary breakdown of communication between deck crew and navigation. Scott McDowell called shortly before the SU survey was completed. The crew had been scheduled to complete six sites immediately east and west of the outfall pipe. Dr. McDowell cancelled those sites and gave us positions for 10 additional sites to be surveyed inside the SU border. Immediately following the completion of the SU 'A' survey, the *Sea Watch* moved to complete the ten additional SU sites (I02C, I02N, I02E, I02S, I02W, I19N, I19C, I19S, I19W, and I19E). The additional SU sites were completed between 18:15 and 19:14, and the *Sea Watch* moved to Cell LU. The first 7 LU sites were completed with no difficulty (O62-O68). There was a brief delay while the Sugar Island dredge completed a placement inside the cell. Following that, the remaining eight LU sites (O54-O61) were completed. Each site in both cells had at least three replicates taken. The vessel departed the survey area and returned to SCMI at 21:36.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
None

Custody of Samples:

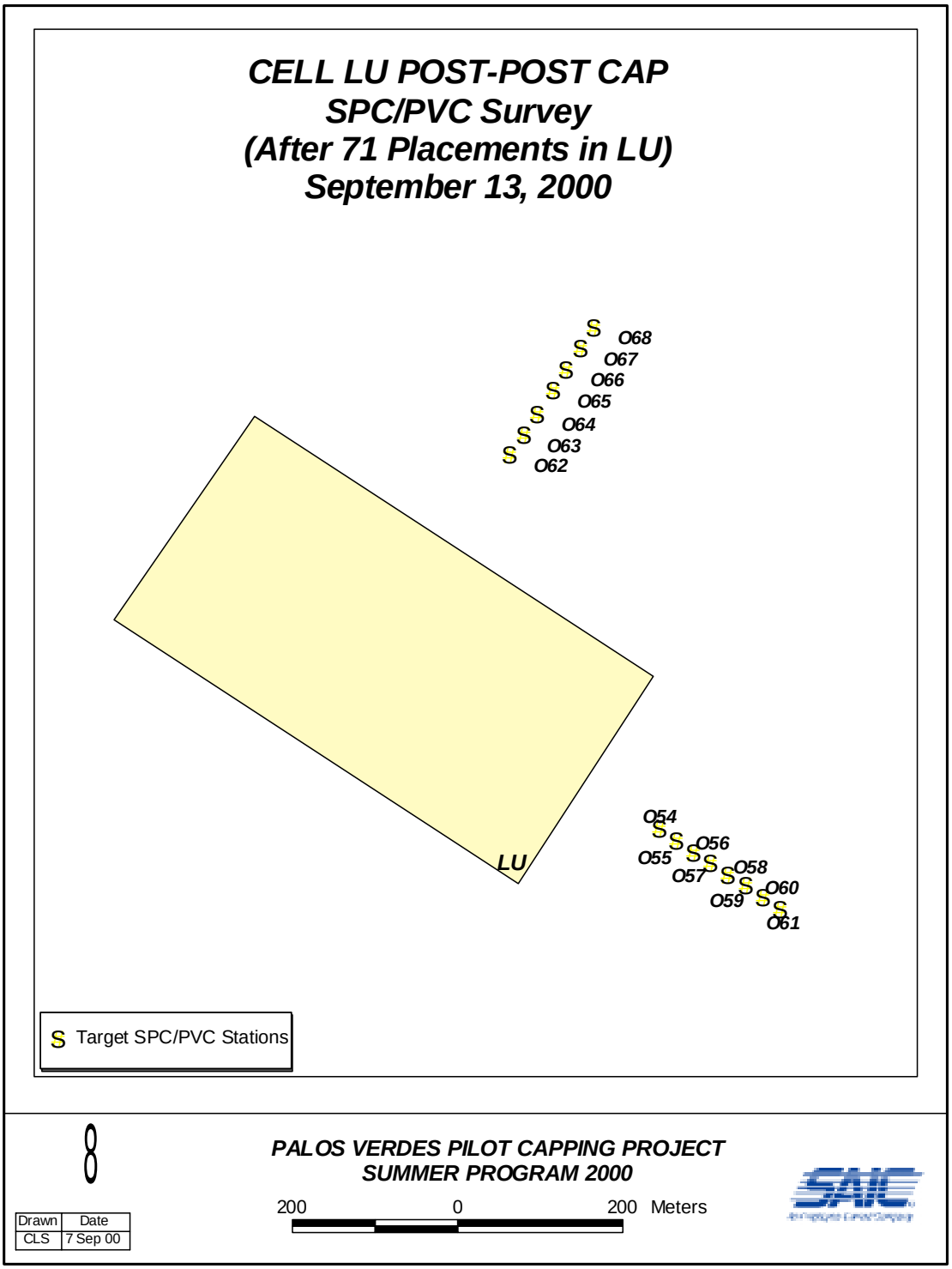
Jason Infantino and Greg Tufts were given custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0913.tgt
Points_09132000_SW_remots.csv


CELL LU POST-POST CAP
SPC/PVC Survey
(After 71 Placements in LU)
September 13, 2000
O68
O67
O66
O65
O64
O63
O62
LU
O54
O55
O56
O57
O58
O59
O60
O61
Target SPC/PVC Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
CLS
7 Sep 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 24, 2001
Survey: Supplemental SPC and PVC
Survey Vessel: R/V Sea Watch
(All Times UTC)

Survey Team:
SAIC: Greg Tufts (PVC), Jason Infantino (SPC/Navigation)
SCMI: Mike Quinn (Captain), Shoshana Grunwald (Mate), David Renoso (Mate)
Army Corp of Engineers: Joe Ryan (Deck)

Survey Operations:

Survey Schedule

The R/V Sea Watch departed SCMI at approximately 1433 UTC for the Supplemental Sediment Profile Camera (SPC) and Plan View Camera (PVC) survey. The purpose of the survey was to collect SPC and PVC images at primary, secondary and tertiary stations, respectively, within Cells LD, LU and SU. The vessel arrived at Cell LD at 1515 and maneuvered to begin sampling at Station LDSIO5. A total of 22 stations were occupied for this survey.

A total of 5 primary stations were sampled in and near Cells LD, LU and SU, respectively. Four replicates were taken at each of the 5 stations to ensure that at least 3 analyzable images were acquired at each station. Upon completion of the 5 primary stations, the survey team occupied 17 of the planned 19 secondary stations. Stations LUSO 06 and 07 were not sampled due to adverse weather conditions (see Problems Encountered below). Three replicates were taken at 13 of the 17 stations. Four replicates were taken at station SUSO 13 due to a potential "pullouts" of the SPC/PVC equipment due to boat heave during deployment. Two replicates were taken at Stations LUSO 05, 08 and 74. The secondary stations required only one analyzable image to be collected. The tertiary stations were not sampled due to the adverse weather conditions that are described below.

At 1705 the SPC/PVC system was secured on deck and the film with images from the 5 primary stations and 5 of the secondary stations was developed at sea by SAIC personnel. Following development, the film was examined to confirm that each of the five primary stations had a minimum of three analyzable replicate images. It was determined that all of the primary stations met this requirement. The developing process was completed at approximately 1815 and the field survey resumed to acquire images at the remaining secondary stations.

At 1827 survey operations resumed at secondary station LUSO19. The remaining secondary stations were surveyed until 1938 when the SPC camera required a film change. The camera was secured on deck and the decision to head back to SCMI was made due to the persistent, unfavorable, sea conditions. Upon return to SCMI the second roll of film was developed and analyzed by SAIC personnel. The SPC/PVC equipment was demobilized, packed and processed for shipment back to SAIC immediately following the film development.

On February 23, 2000 the DGPS navigation system used during the SPC/PVC survey (see Survey Equipment below) was calibrated from a known, geo-referenced, point at the Great Lakes Dredge and Dock facility located near SCMI. This was the same facility and point used to calibrate the navigation equipment that was used throughout the Summer 2000 surveys. Navigational test data was collected for approximately 30 minutes to assess the system's navigational accuracy. This calibration showed that the system was accurate to within 1 to 3 meters of the calibration point.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- SPC/PVC

Problems Encountered

Sea conditions were unfavorable for SPC/PVC sampling but a concerted effort was made by the entire survey team to conduct survey operations. There was a constant bi-directional 6-8 foot ground swell accompanied by a 25+ knot wind-chop coming from the Northeast. This mixture of wind derived waves and opposing swell made for an unstable sea state and survey vessel platform. Maneuvering to stations and maintaining vessel position was very difficult. These conditions also made the deployment and retrieval of the SPC/PVC equipment challenging. Weather was the only unfavorable variable that was encountered during the survey operation.

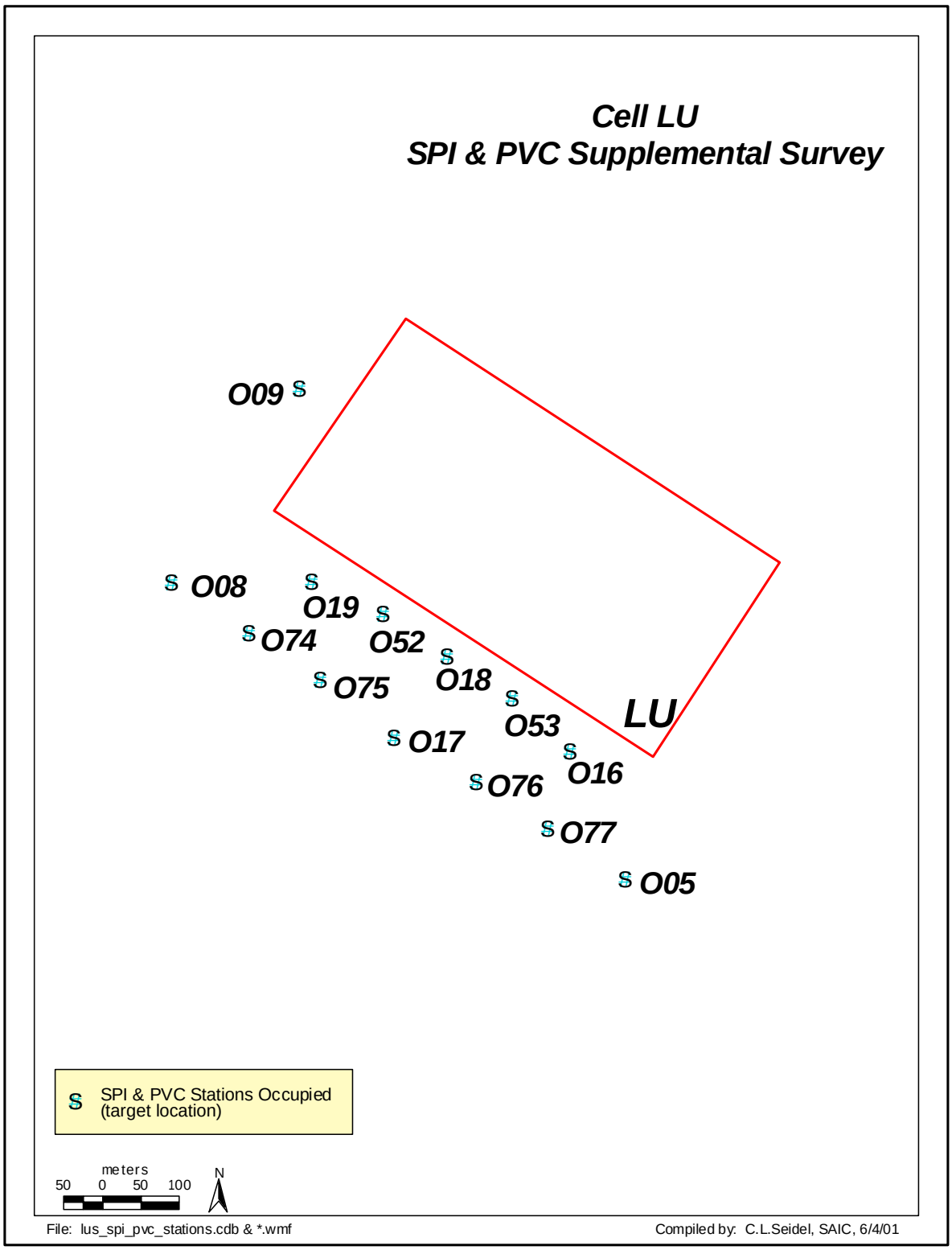
Custody of Samples:

Greg Tufts has custody of the developed film.

Custody of Survey Data:

N/A

Navigation Data Files:
Navlog_022401_SW.xls


Cell LU
SPI & PVC Supplemental Survey
O09
O08
O19
O74
O52
O75
O18
O53
LU
O17
O16
O76
O77
O05
SPI & PVC Stations Occupied (target location)
meters
50 0 50 100
N
File: lus_spi_pvc_stations.cdb & *.wmf
Compiled by: C.L.Seidel, SAIC, 6/4/01

CELL LU
SEDIMENT CORING CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 5, 2000**
Survey: **Post Initial Cores (6Biv)**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), Vicki Frank (Deck Ops), Rebecca DeKeyzer (Navigation)
SCMI: Ken Kevitt (Captain), unknown (Mate)

Survey Operations:
Survey Schedule
The survey crew departed the Southern California Marine Institute (SCMI) at 13:46 to conduct the LU Post Initial Coring Survey (Sites 01 – 05). Survey operations were conducted between 15:17 and 17:37. Sediment samples were collected from a total of 5 sites. Four of the five sites collected only one replicate, while three replicates were collected at the LUH01 site due to unacceptably low recovery. Upon survey completion the vessel returned to SCMI at 18:32.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Corer

Problems Encountered

None

Custody of Samples:

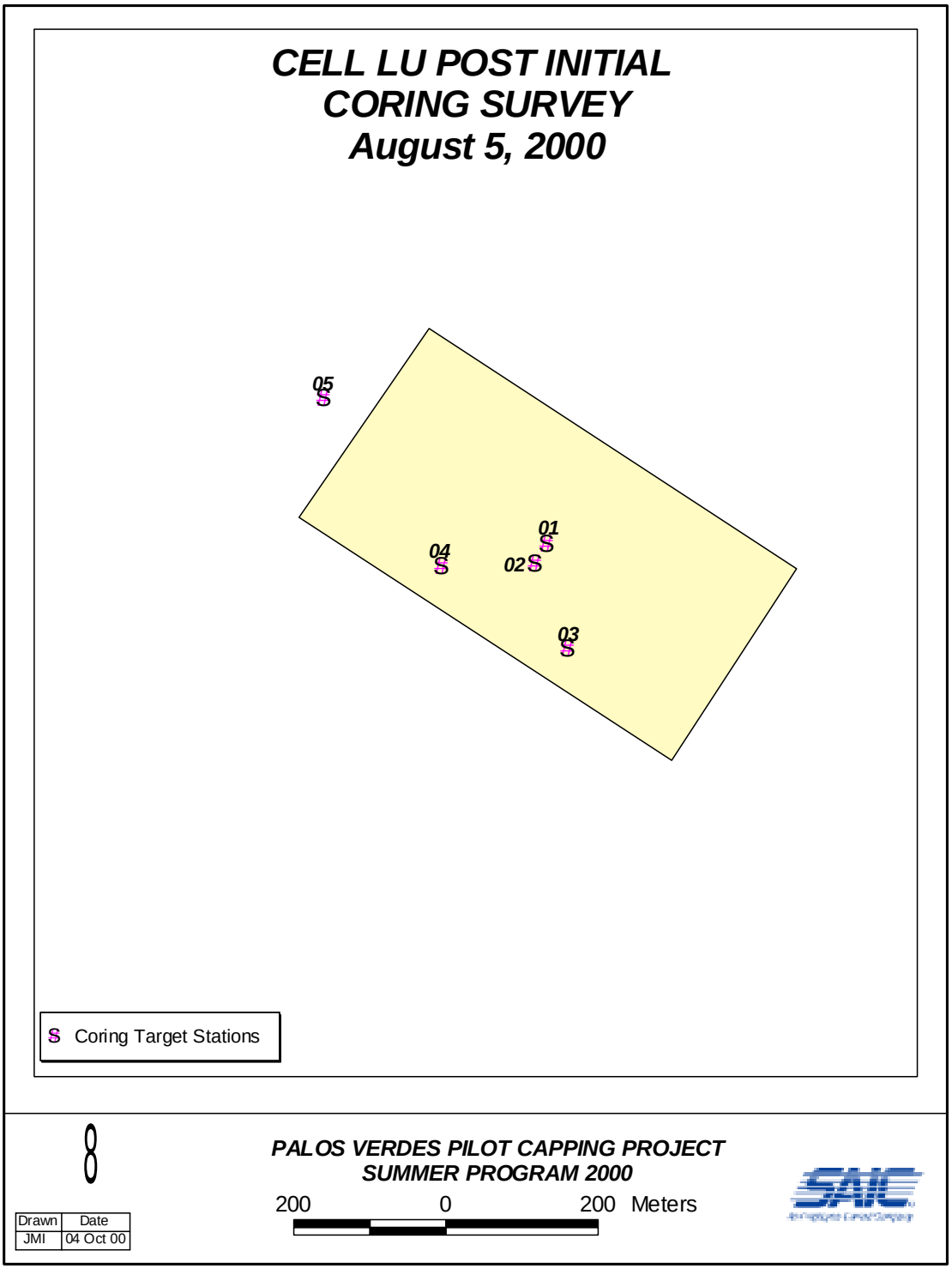
Upon arrival at dock, Pam Walter was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0805.tgt


CELL LU POST INITIAL
CORING SURVEY
August 5, 2000
05
01
04
02
03
Coring Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 10, 2000**
Survey: **Coring, SU Post Initial (8Biv), LU Post Initial (6Biv)**
Cell: **SU, LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Coring), Vicki Frank (Coring), Rebecca DeKeyzer (Navigation)
USACOE: Mamie Brouwer(Observer)
SCMI: Captain, Mate, and Deckhand

Survey Operations:
Survey Schedule
The R/V *Sea Watch* departed the Southern California Marine Institute (SCMI) at 14:08 to conduct gravity coring operations for the Post Initial Placement survey in Cell SU and to take replicate cores at two sites of the Cell LU Post Initial Placement survey. Two sites were sampled in Cell LU, with three cores collected at LUH01 and one core collected at LUH02 for a total of four LU cores. Five sites were sampled in Cell SU, four of which had one core collected (SUH06-SUH09). One site in Cell SU required three cores (SUH10). A total of seven cores were collected in Cell SU. Coring operations were conducted between 15:08 and 19:26. Following the completion of survey operations, the R/V *Sea Watch* returned to SCMI, arriving at 20:25.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Corer

Problems Encountered

None

Custody of Samples:

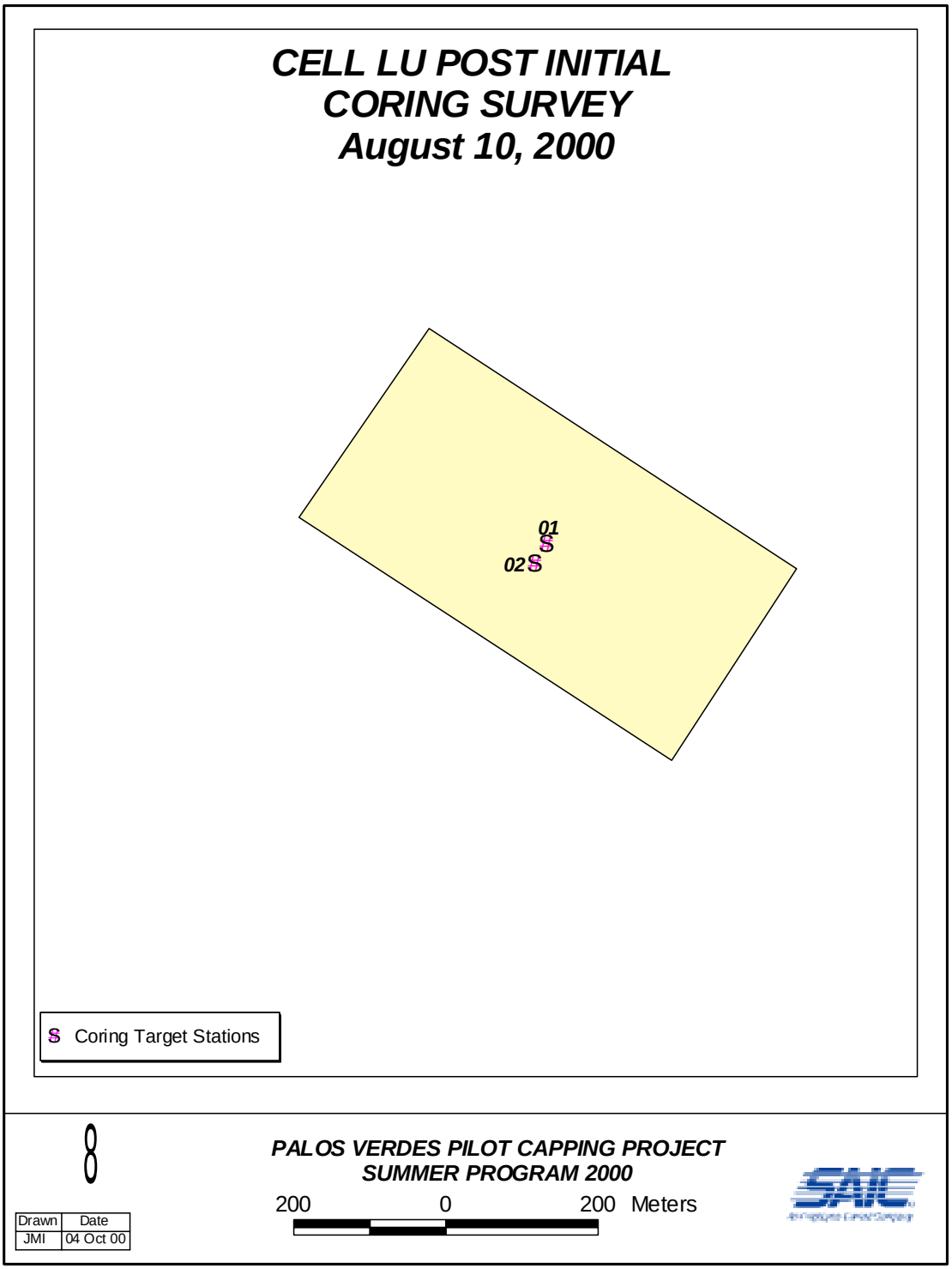
Upon arrival at dock, Pam Walter was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0810.tgt
Points_08102000_SW.csv


CELL LU POST INITIAL
CORING SURVEY
August 10, 2000
01
02
Coring Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 17, 2000**
Survey: **Coring, LU First Interim (6Civa); LD Post Initial (7Biv)**
Cell: **LU, LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), Vicki Frank (Coring), David Fischman (Coring), and Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate, and Deckhand

Survey Operations:
Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 17:00 to conduct coring operations in Cell LU for the First Interim survey (Sites 11 – 15), and in Cell LD (16-20) for the Post Initial Spreading Placement survey. Coring operations were conducted between 18:00 and 21:07. Five sites were surveyed for each cell. Eight cores were recovered at Cell LU, as Sites 11, 12 and 15 required a second core to obtain acceptable levels of penetration. A total of 5 cores were collected at Cell LD, one at each site. Following the completion of coring operations, the vessel returned to SCMI, arriving at the dock at 22:04.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Gravity Core

Problems Encountered

None

Custody of Samples:

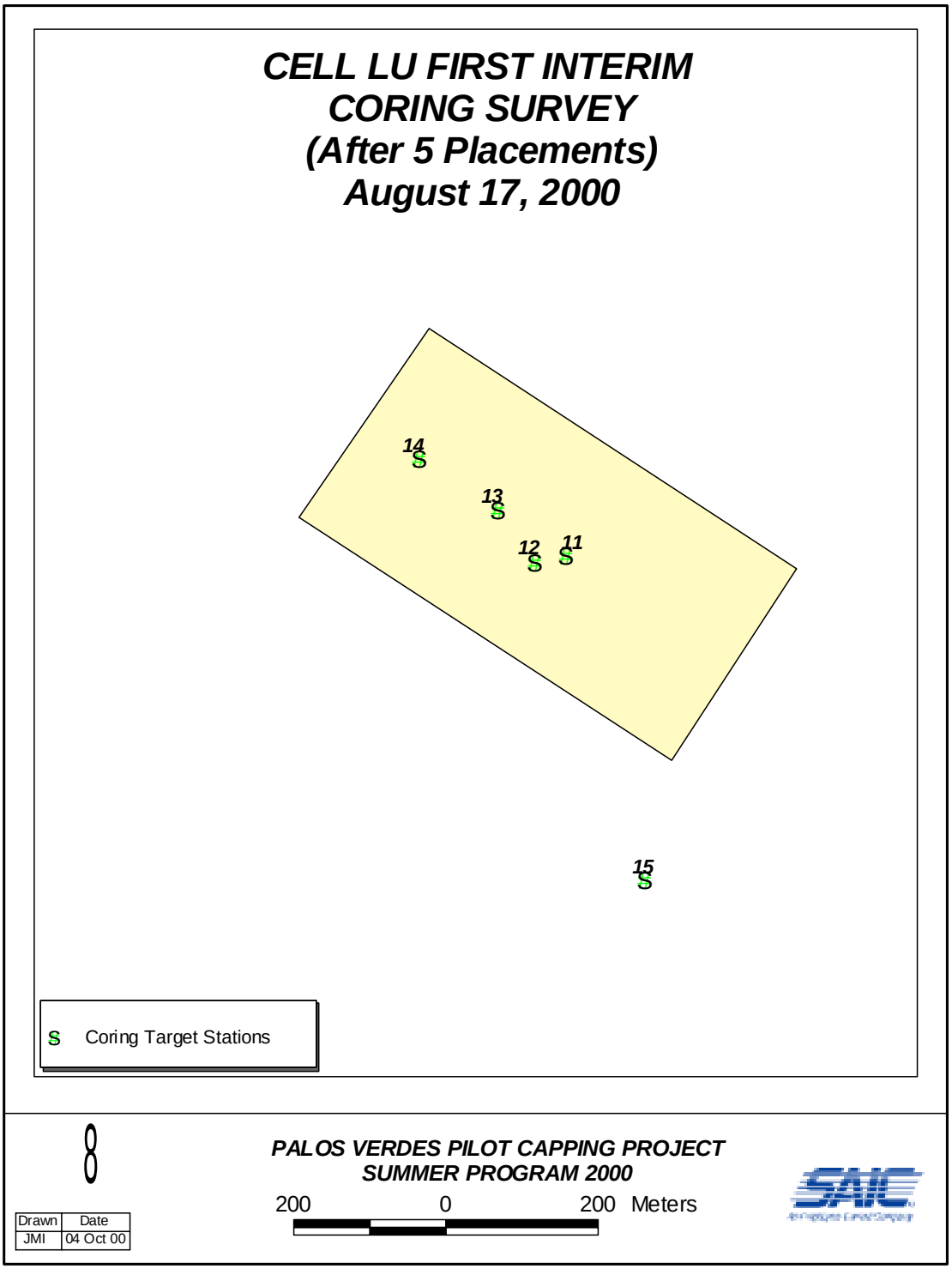
Upon arrival at dock, Pam Walter was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

CORING_0817.tgt
Point_08172000_sw.csv


CELL LU FIRST INTERIM
CORING SURVEY
(After 5 Placements)
August 17, 2000
14
13
12
11
15
Coring Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 29, 2000**
Survey: **Cell LU 2nd Interim Coring (6Civb), Cell SU Post Cap Coring (Flex)**
Cell: **LU, SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), David Fischman, (Coring), Vicki Frank (Coring), Lisa McAuliffe (Navigation)
SCMI: Mike Quinn (Captain), Dennis Mahaffy (Mate), and Justin Myers (Deck Hand)

Survey Operations:
Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 14:25 to conduct coring operations in Cell LU for the 2nd Interim survey (Sites 26 – 35), and in Cell SU for the Post Cap survey (Sites 36 – 41). Coring operations were conducted between 15:20 and 20:10. Ten sites were surveyed in Cell LU between 15:20 and 17:50 and eleven LU cores were collected. The first site, 26, required two cores due to an unacceptably short first core. The first core taken at Site 28 was only 20 cm long. Due to the limited number of coreliners onboard, the crew decided to return to the site after the SU survey was complete. All of the LU cores, with the exception of Site 28, were between 30 and 50 cm long. The Cell SU Post Cap survey was completed between 18:00 and 20:10. Six sites were visited and seven cores collected. Site 36 was repeated because the first sample was collected outside the 5 m target circle. All of the SU cores were over 50 cm in length. Following the completion of the SU survey, the vessel returned to Cell LU and re-sampled Site 28, which yielded a core 34 cm in length. Upon completion of survey activities, the R/V *Sea Watch* returned to SCMI and docked at 21:04.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Core

Problems Encountered
None

Custody of Samples:

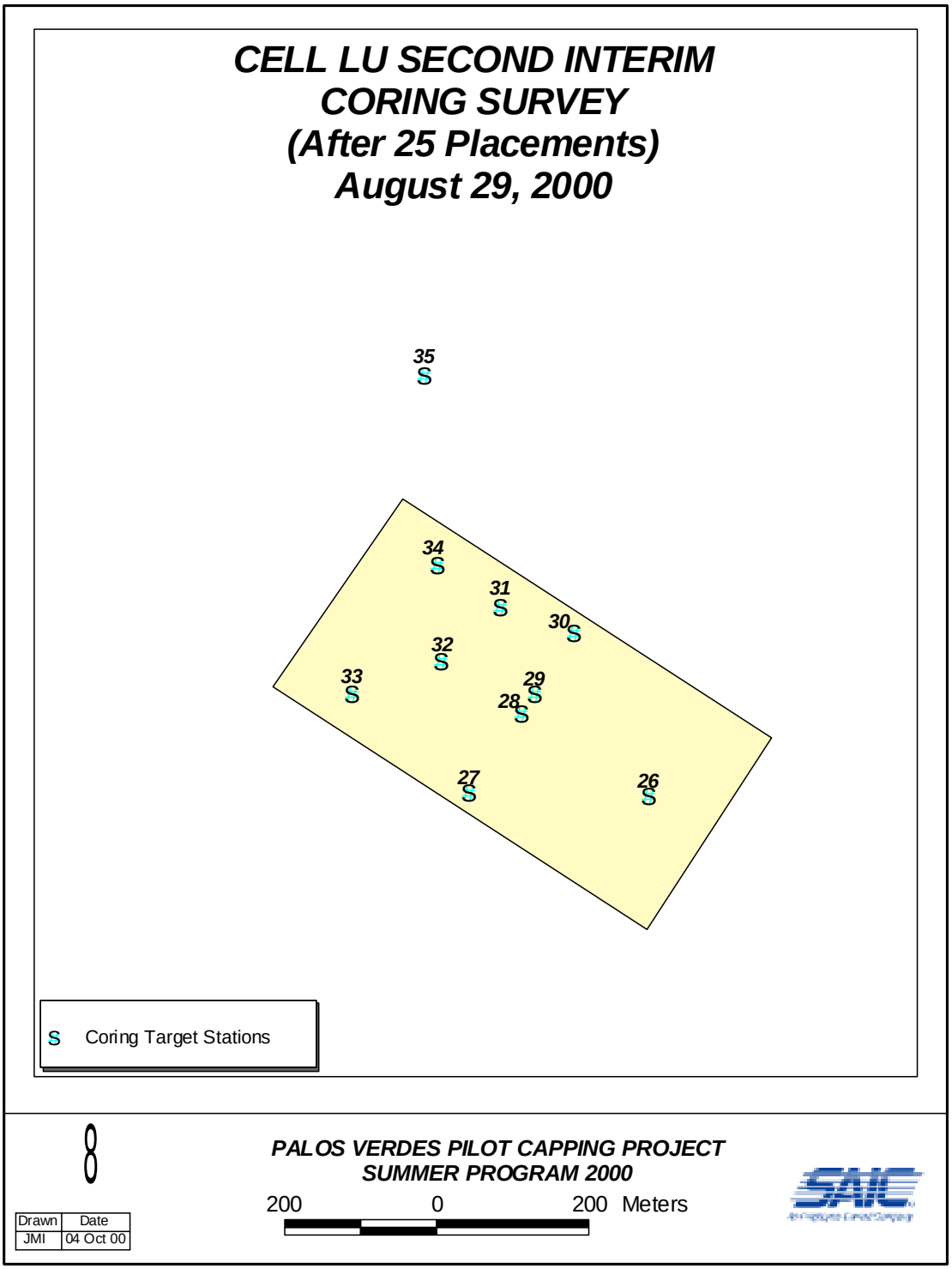
Upon arrival at dock, Vicki Frank was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0829.tgt
Points_08292000_sw.csv


CELL LU SECOND INTERIM
CORING SURVEY
(After 25 Placements)
August 29, 2000
35
34
31
30
32
33
29
28
27
26
S Coring Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 7, 2000**
Survey: **Coring, LU Post Cap (6Diii), SU Post Cap (8Diii)**
Cells: **LU, SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), David Fischman, (Coring), Vicki Frank (Coring), Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate, Deckhand (names unknown)

Survey Operations:
Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 14:11 to conduct coring operations for the Cell LU Post Cap (6Diii) coring survey and in Cell SU for the Post Cap (8Diii) coring survey. Coring operations were conducted between 15:07 and 18:49. Nine sites (51 – 59) were surveyed in Cell LU with a total of nine cores collected. Nine sites were also surveyed in Cell SU (42 – 50) with a total of twelve cores collected. Two sites, 43 and 44, required a replicate core to be taken due to over penetration. Approximately 330 pounds of weights were removed from the corer to prevent over penetration into the sediments. At Site 48, only 32 cm of sediment was recovered and therefore a replicate core was taken. The replicate core had 63 cm of recovery. Upon successful completion of the survey, the vessel returned to the dock at approximately 19:40.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Core

Problems Encountered
None

Custody of Samples:

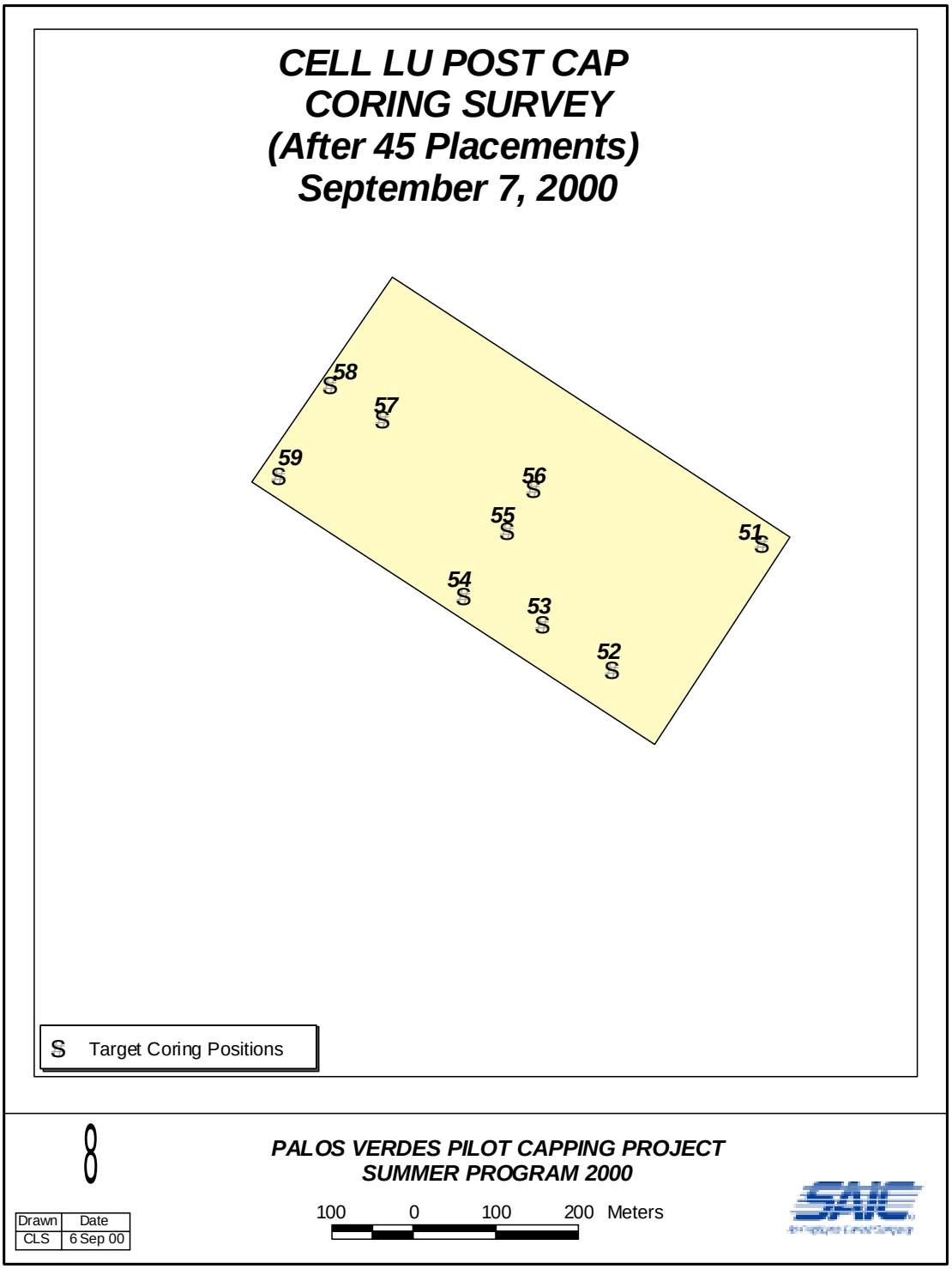
Pam Walter had custody of the cores upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0907.tgt and RAW0907_B.tgt
Points_09072000_sw.csv


CELL LU POST CAP
CORING SURVEY
(After 45 Placements)
September 7, 2000
58
57
59
56
55
51
54
53
52
Target Coring Positions
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
6 Sep 00
100
0
100
200
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 15, 2000**
Survey: **Coring, LU Post Post Cap (Flex), LC and LD Post Pump Out (Flex)**
Cell: **LU, LC, LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Coring), Dave Fischman (Coring), Edward Basmadjian (Coring), Lisa McAuliffe (Navigation)
SCMI: Ken Kevitt (Captain), Kerin Wiesenbaker (Deckhand), David Renoso (Mate)

Survey Operations:
Survey Schedule
The coring crew arrived at the R/V *Sea Watch* at 13:35 and departed dock at 14:00. They were scheduled to complete the LU Post Post Cap survey, comprised of five sites, 60 - 64. Two Post Pump Out sites were also scheduled, one each in LC and LD. The *Sea Watch* went to Cell LU first, where they completed the first site (62) with no difficulty. Site 63, located in the center of the cell, had less than 20 cm of penetration for the first two repetitions. Due to the limited number of core liners onboard, the crew moved on to the remaining three sites (60, 61, &64). Following the completion of Site 64, the vessel moved to Cell LC to take one core in the center of the cell (65), and then to Cell LD to take one core, also in the center of the cell (66). Following those two sites, the *Sea Watch* returned to the center of LU (Site 63) and took two additional cores. The fourth core, 63D, was over 47cm in length. A total of ten cores were collected, eight in Cell LU, one each in LC and LD. The R/V *Sea Watch* returned to SCMI upon completion of survey activity, arriving at dock at 18:10.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity corer

Problems Encountered
None

Custody of Samples:

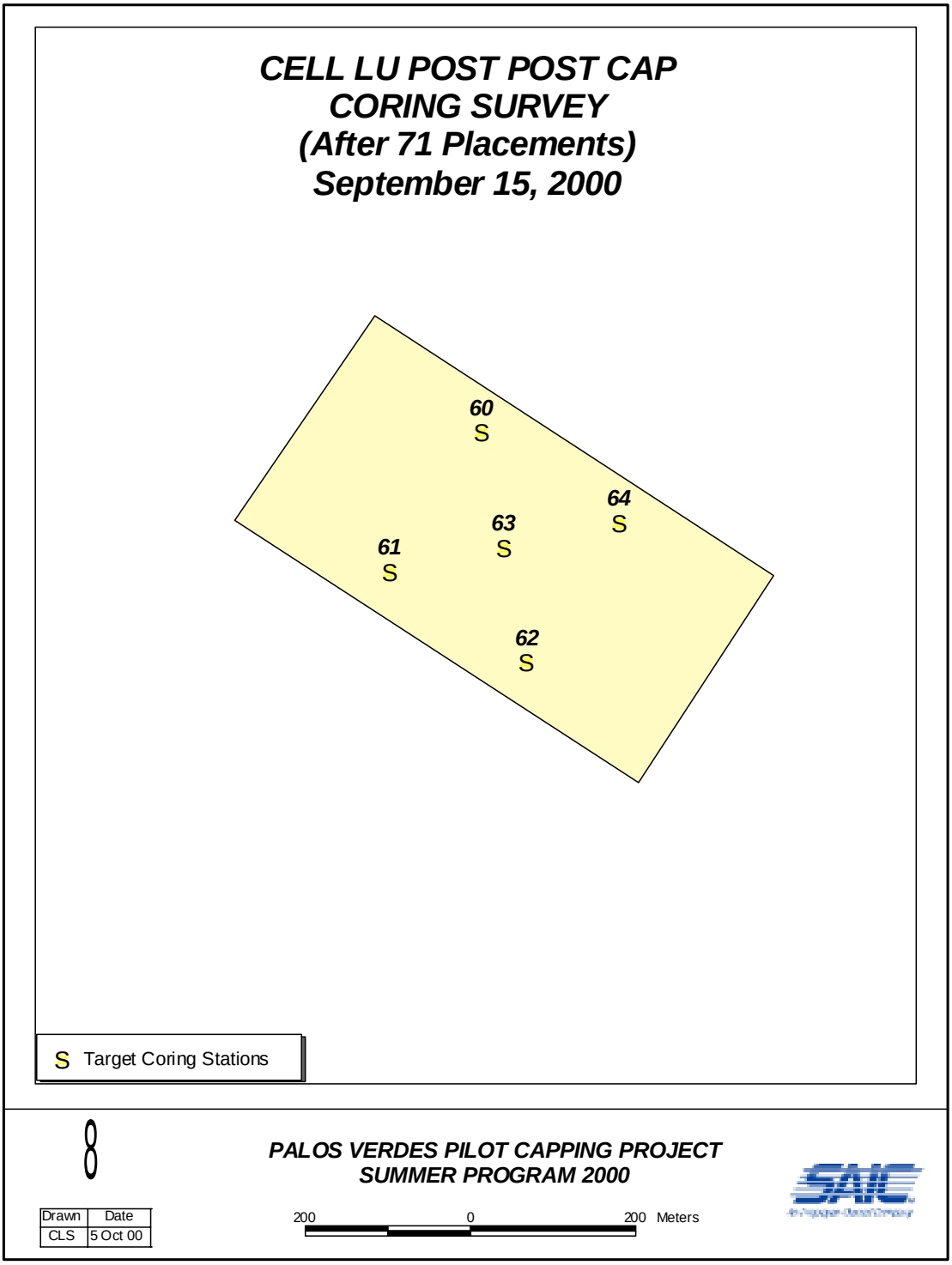
Pam Walter was given custody of the core samples upon the vessel's arrival at dock.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Raw0915.tgt
Points_09152000_SW_cores.csv


CELL LU POST POST CAP
CORING SURVEY
(After 71 Placements)
September 15, 2000
60
S
64
S
63
S
61
S
62
S
S Target Coring Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
5 Oct 00
200
0
200
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 27, 2001
Survey: Supplemental Vibra Coring and Box Coring
Cells: LU, LD, SU
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation), Pam Walter (Observer), Kate Montgomery (Observer)
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams(Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)
ACOE:	Larry Smith (Observer), Beatrice Bofill (Observer)

Survey Operations:

Survey Schedule

The coring crew departed the Southern California Marine Institute (SCMI) at 14:44 UTC aboard the R/V Wm. A. McGaw to conduct supplemental coring operations in Cells LD, LU, and SU. Vibracoring operations were conducted between 15:20 and 00:59 UTC. A total of eight (8) vibracores were collected during this survey. The first station (LDSI05) was the first vibracore sample of the day and was used as a test, which lead to a second core sample (described below). The third vibracore was taken as a test to compare the result of using a core catcher versus not using a core catcher. Sea conditions were moderate with a 2-4 foot swell coming from the South. Winds were variable throughout the day and did not exceed 20 knots. Scattered rain showers were also experienced throughout the survey day.

Cell LU

Two (2) stations were sampled in Cell LU. The first station sampled in Cell LU was station LUSI06 and yielded a core length of 111 cm in length (core LUSVI06-A). The second station (LUSI10) yielded a core length of 119.5 cm (core LUSV1I10-A). It was decided to transit back to cell LD for a third core sample from station LDSI05 (core LDSV1I05-C). This vibracore measured 121 cm in length and was taken without a core catcher in place.

Surveying Equipment:

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:

None.

Custody of Samples:

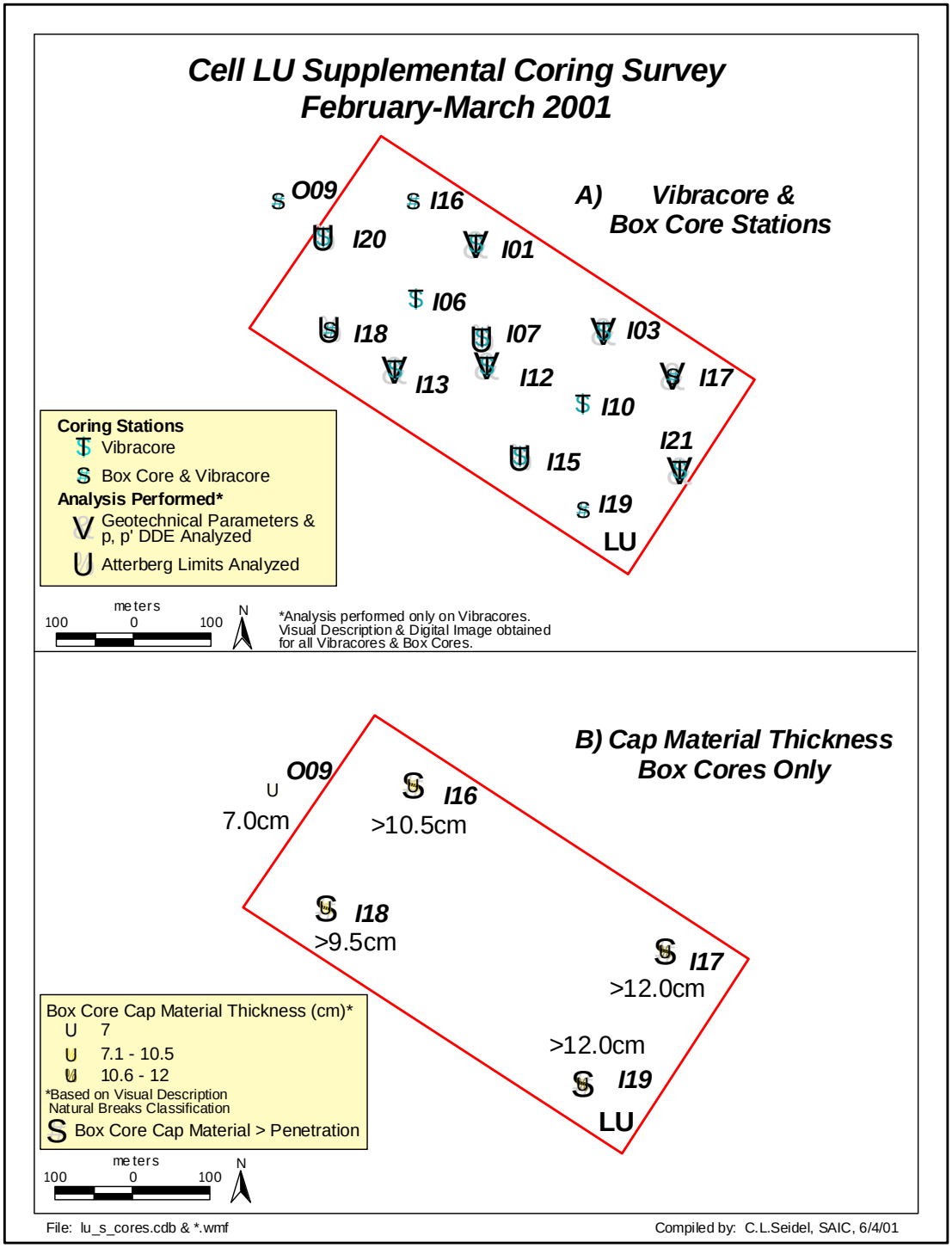
Pam Walter has custody of the cores.

Custody of Survey Data:

Jason Infantino has custody of navigation data.

Navigation Data Files:

Navlog_022701_MCG_Cores.xls


Cell LU Supplemental Coring Survey
February-March 2001
A) Vibracore & Box Core Stations
O09
I16
I20
I01
I06
I18
I07
I03
I13
I12
I17
I10
I21
I15
I19
LU
Coring Stations
Vibracore
Box Core & Vibracore
Analysis Performed*
Geotechnical Parameters & p, p' DDE Analyzed
Atterberg Limits Analyzed
meters
100
0
100
N
*Analysis performed only on Vibracores.
Visual Description & Digital Image obtained
for all Vibracores & Box Cores.
B) Cap Material Thickness
Box Cores Only
O09
U
7.0cm
I16
>10.5cm
I18
>9.5cm
I17
>12.0cm
>12.0cm
I19
LU
Box Core Cap Material Thickness (cm)*
U 7
U 7.1 - 10.5
U 10.6 - 12
*Based on Visual Description
Natural Breaks Classification
S Box Core Cap Material > Penetration
meters
100
0
100
N
File: lu_s_cores.cdb & *.wmf
Compiled by: C.L.Seidel, SAIC, 6/4/01

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 28, 2001
Survey: Supplemental Vibra Coring and Box Coring
Cells: LU, LD
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation),
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams (Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)
ACOE:	Larry Smith (Observer)

Survey Operations:
Survey Schedule

The coring crew departed the Southern California Marine Institute (SCMI) aboard the R/V Wm. A. McGaw at 14:30 UTC to conduct supplemental coring operations in Cells LD and LU. Coring operations were conducted between 14:30 and 01:59. Two (2) box core stations were surveyed in Cell LD. A total of six box-coring deployments were made to accomplish this task. The coring team was onsite and in operation between 15:15 and 01:07. In summary a total of ten vibra cores were collected and one box core for later analysis. Sea conditions were fair with a gentle 1-2' swell out of the southerly direction. Wind was light through out the day not exceeding 10 knts with scattered rain showers.

Cell LU
A total of ten (10) vibracores were collected at ten (10) Cell LU stations throughout the course of the survey day (Cell LU Stations I01, I03, I07 (replicates A and B), I12, I13, I16, I17, I19, I21). Vibracore penetration ranged from 4.5 ft to 5.5 ft (1.37- 1.67 m). Core lengths ranged from 43 cm to 83 cm. Two (2) vibracore attempts were made at station LUSI07; the first replicate was taken without a core liner to determine if there was a benefit to sampling without a liner. This sample was viewed onboard and discarded after the examination was made. The second core (LUSV2I07-B) was collected with a liner and stored for subsequent visual and chemical analysis at the processing lab located at SCMI.

Surveying Equipment:

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:
None.

Custody of Samples:
Pam Walter has custody of the cores.

Custody of Survey Data:
Jason Infantino has custody of navigation data.

Navigation Data Files:
Navlog_022801_MCG_Cores.xls

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: March 01, 2001
Survey: Supplemental Vibra Coring
Cells: LU, LD, SU
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation),
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams (Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)

Survey Operations:

Survey Schedule

The Coring crew departed the Southern California Marine Institute (SCMI) at 14:12 UTC to conduct supplemental coring operations in Cells LD, LU and SU. Coring began at 15:42 and concluded at 00:25. A total of 13 vibracores were collected throughout the survey day. Sea conditions were fair with a gentle 1-2' swell out of the south direction. Wind was light early in the day and increased to15 knots coming from the north late afternoon. This was the first coring survey day that held clear skies.

Cell LU

Four (4) stations were sampled in and around Cell LU between 15:42 and 17:38 UTC. These stations included inside stations I15, I18 and I20 and outside station O09. Coring at station I15 resulted in a core with a length of 70 cm. The core acquired at Station I18 measured 75 cm in length. Sampling at Station I20 produced a core of 78 cm in length. The core obtained at Station O09 measured 74.5 cm. The vessel then moved to cell SU to continue coring operations.

Surveying Equipment:

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:
None.

Custody of Samples:
Pam Walter has custody of the cores.

Custody of Survey Data:
Jason Infantino has custody of navigation data.

Navigation Data Files:
Navlog_030101_MCG_Cores.xls

CELL LU
SIDESCAN
AND
SUBBOTTOM CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 10, 2000**
Survey: **Sidescan, LU Post Initial (6Bv), SU Post Initial (8Bv)**
Cell: **LU, SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan leader), Allan Quintal (Deck), Lisa McAuliffe (Navigation)
Vessel: Josh (Captain), Bob Greeno (Mate)

Survey Operations:
Survey Schedule
The sidescan crew departed the Southern California Marine Institute (SCMI) at 14:20 to conduct Post Initial sidescan operations in Cell LU and SU. Survey operations were conducted between 15:35 and 22:34. Eleven survey lines, both along-shore and offshore, were run. After the LU and SU Post Initial lines were complete, the vessel surveyed in the general vicinity of the missing ARESS array. Two possible targets were found. Immediately following the completion of all survey activity, the towfish cable impacted something in the water column, which partially severed the data cable. Following the towfish recovery, the vessel returned to SCMI, arriving at 23:15.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Sidescan Edgetech DF1000 Sidescan Towfish
  ISIS Sidescan Sonar Acquisition Software

Problems Encountered

At the end of the survey, while cabling in, the sidescan towfish hit something in the water column and the cable termination was severed. The termination will have to be sent out for repairs.

Custody of Samples:

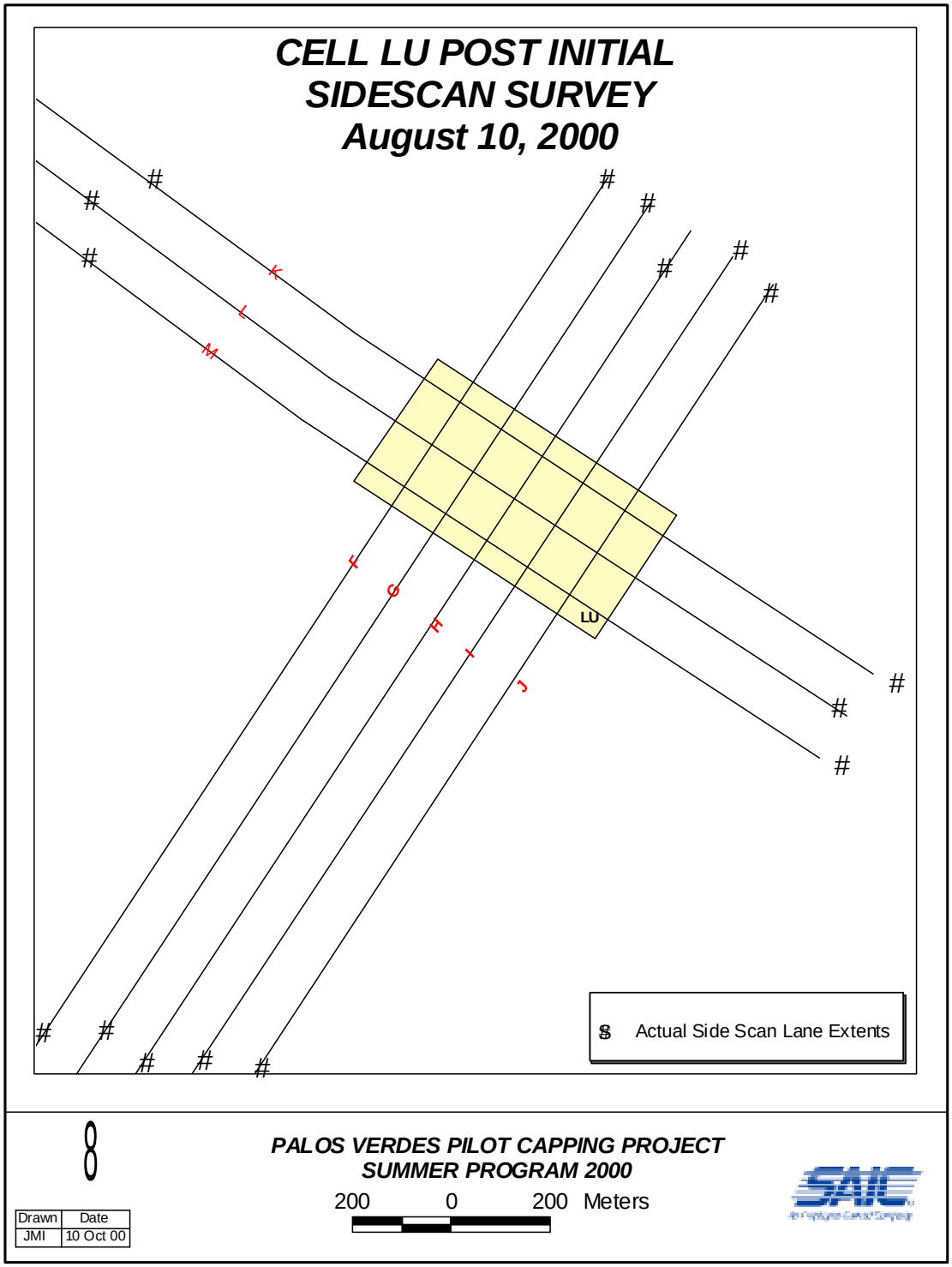
Jason Infantino had custody of the sidescan data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0810.log
Lines_08102000_TN.csv


CELL LU POST INITIAL
SIDESCAN SURVEY
August 10, 2000
K
L
M
F
G
H
I
J
LU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
10 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 19, 2000**
Survey: **LD Post Initial Sidescan (7Bv)**
LU Interim Sidescan (Flex)
SU Interim Sidescan (Flex)
Cell: **LD, LU, SU**
Survey Vessel: **R/V *Sea World***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Sidescan), and Rebecca DeKeyzer (Navigation)
Vessel: Willie McCarthy (Captain), Dennis (Mate)

Survey Operations:
The sidescan crew departed the Southern California Marine Institute (SCMI) at 14:07 to conduct sidescan survey operations for the Cell LD Post Initial Survey, Cell SU Interim survey, and Cell LU Interim survey. The LD survey was completed with three along-shore survey lines and five offshore survey lines. Two of the along-shore lines had to be repeated due to excessive crosstrack error. Three along-shore lines (with two lines repeated) were then run for the Cell LU Interim Flex survey. Three along-shore lines were also run for the Cell SU Interim Flex survey. It was determined that the two flex surveys did not require the full 8-line survey, as the three along-shore lines provided 100% sonar coverage of each cell within the time paid for on the vessel. At the end of these surveys, two additional lines were run to search for the missing ARESS array. No significant target was found during this search survey. Survey operations were conducted between 14:50 and 23:36. Following the cessation of survey operations, the vessel returned to SCMI at 00:17.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Edgetech DF1000 Sidescan Towfish
  ISIS Sidescan Sonar Acquisition Software

Problems Encountered
Excessive cross track error (XTE) was a significant problem for most of the lines run during the survey. Several lines were repeated in an effort to stay within the 15 m XTE guidelines, however due to time constraints, all along-shore lines were run regardless of XTE. Continuing on to the next line instead of repeating lines with excessive XTE provided coverage over all three cells.

Custody of Samples:

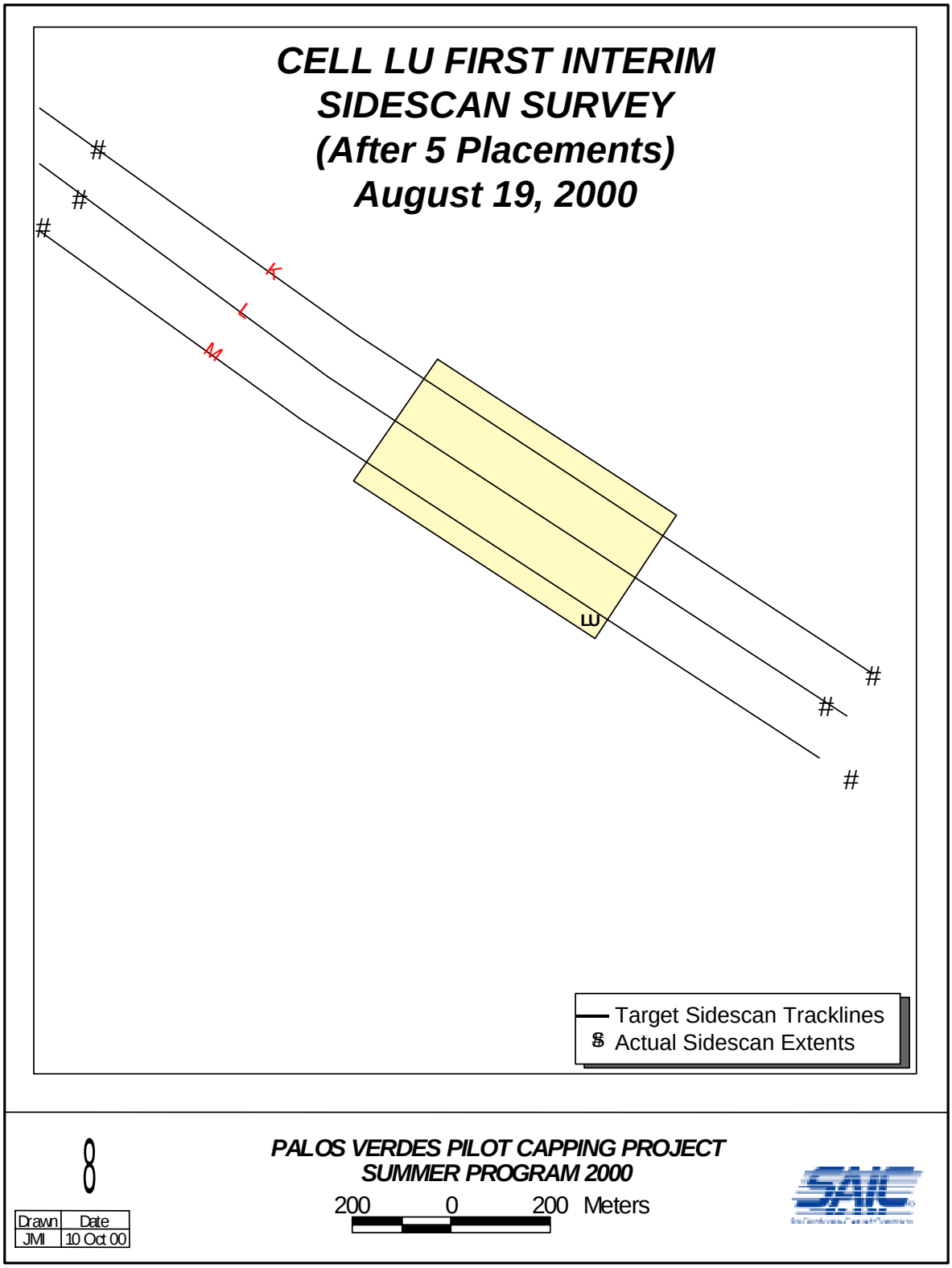
Jason Infantino had custody of the sidescan data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Raw0819.log
Lines_08192000_tn.csv


CELL LU FIRST INTERIM
SIDESCAN SURVEY
(After 5 Placements)
August 19, 2000
K
L
M
LU
Target Sidescan Tracklines
Actual Sidescan Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
10 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 26, 2000**
Survey: **Sidescan, 2nd Interim (Flex)**
Cells: **LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Deck), Lisa McAuliffe (Navigation)
Vessel: Bob Greeno (Captain), Steve Warth (Mate)

Survey Operations:
Survey Schedule
The sidescan crew departed SCMI at 14:48 to conduct the Second Interim sidescan survey in Cell LU. A total of eight lines were run, three in the along-shore direction and five in the offshore direction. All eight lines were completed with minimal crosstrack error and no interruptions. The survey was begun at 15:40 and completed approximately two hours later at 17:50. The data will be processed on shore. The vessel departed the survey area at 17:55 and arrived at dock at 18:42.

Survey Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Edgetech DF1000 Towfish and deck unit

Problems Encountered

None

Custody of Samples:

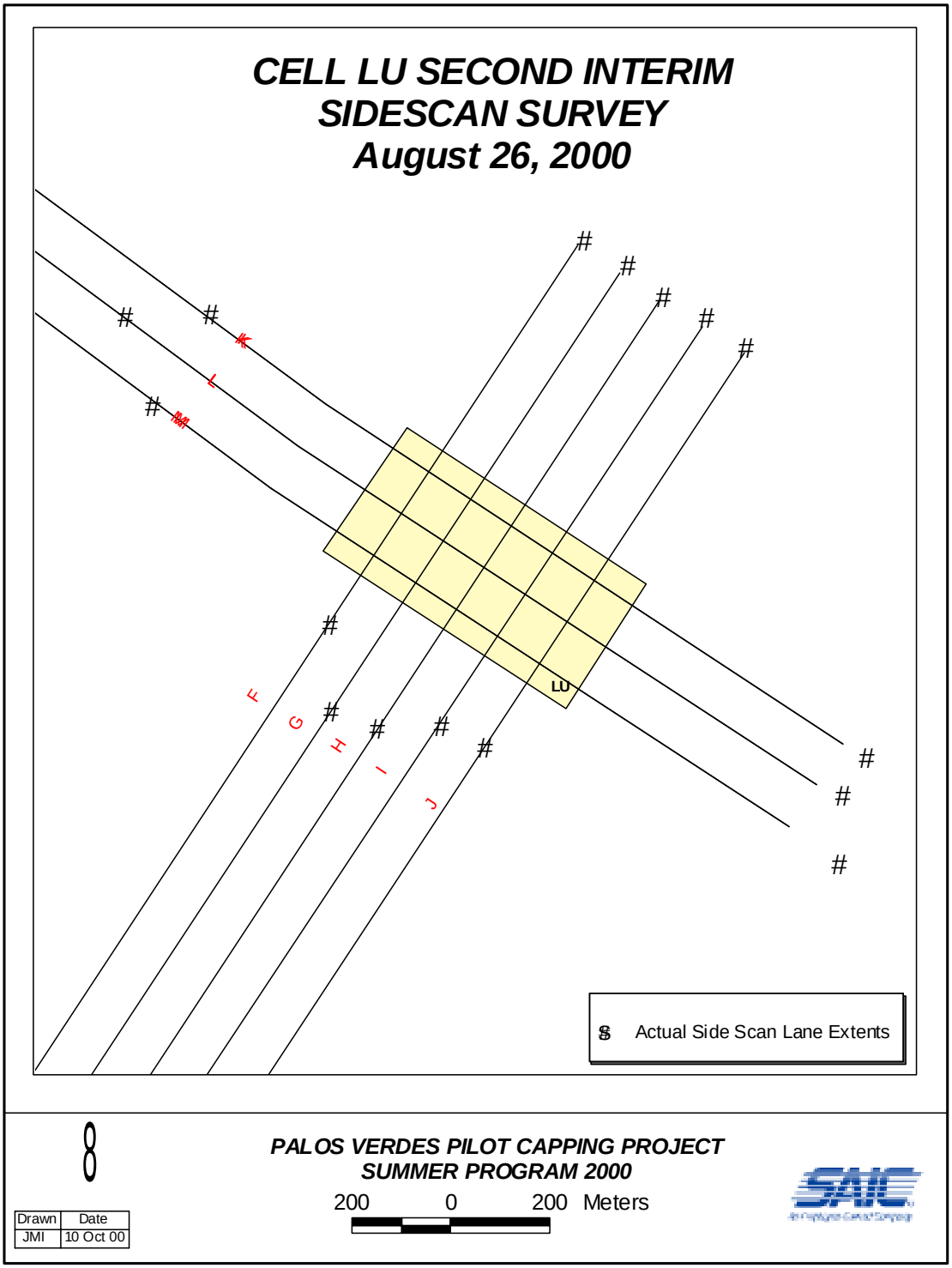
Jason Infantino had custody of the sidescan data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Lines_0826_TN.csv


CELL LU SECOND INTERIM
SIDESCAN SURVEY
August 26, 2000
K
L
M
F
G
H
I
J
LU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
10 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 6, 2000**
Survey: **LU Post Cap Sidescan (6Div) and Subbottom (6Dii)**
SU Post Cap Sidescan (8Div) and Subbottom (8Dii)
Cell: **LU & SU**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Subbottom), Rebecca DeKeyzer (Navigation)
Vessel: Jim Critanovich (Captain), Dennis Dunn (Mate), Katherine (last name unknown; Deckhand)

Survey Operations:
Survey Schedule
The sidescan and subbottom crew departed SCMI at 14:19 to conduct the post cap sidescan and subbottom surveys in Cells LU and SU. A total of three along-shore lines were run in each cell for the sidescan surveys. Sidescan operations were conducted between 15:30 and 20:50. A total of three along-shore lines and four offshore lines were run in each cell for the subbottom surveys. A fifth planned subbottom line was begun, but not completed because the vessel had been operating for close to twelve hours and had to return to the dock to comply with Coast Guard regulations. Subbottom operations were conducted between 21:16 and 01:23. The data will be processed on shore. The vessel departed the survey area at 01:24 and arrived at dock at 02:11.

Survey Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Edgetech DF1000 Towfish and deck unit
  Datasonics Chirp II subbottom profiler and deck unit

Problems Encountered
There were significant problems with power and DGPS drop outs during the survey. These problems forced the sidescan and subbottom surveys to be completed separately. Survey operations had to be aborted with one planned subbottom line left to survey due to a twelve-hour day maximum requirement.

None of the offshore sidescan survey lines were run during these surveys. The severe slope angle in the survey area leads to such rapid towfish altitude adjustments that the towfish is unable to adequately track bottom. This results in unacceptably poor data quality. As the along-shore lines provide 100% coverage of each cell, the decision was made to cancel the acquisition of the five offshore lines for this survey and for all existing future surveys.

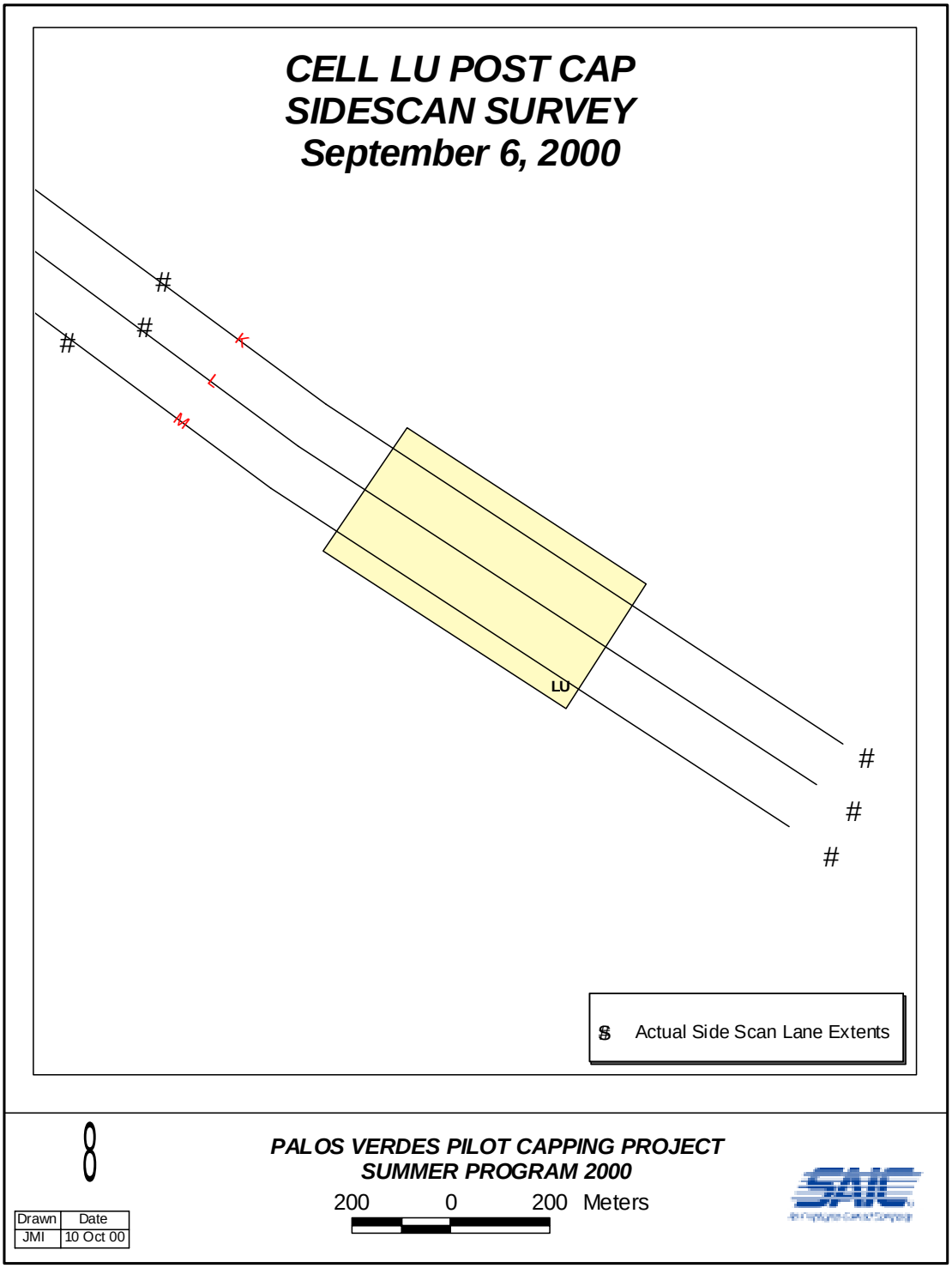
Custody of Samples:

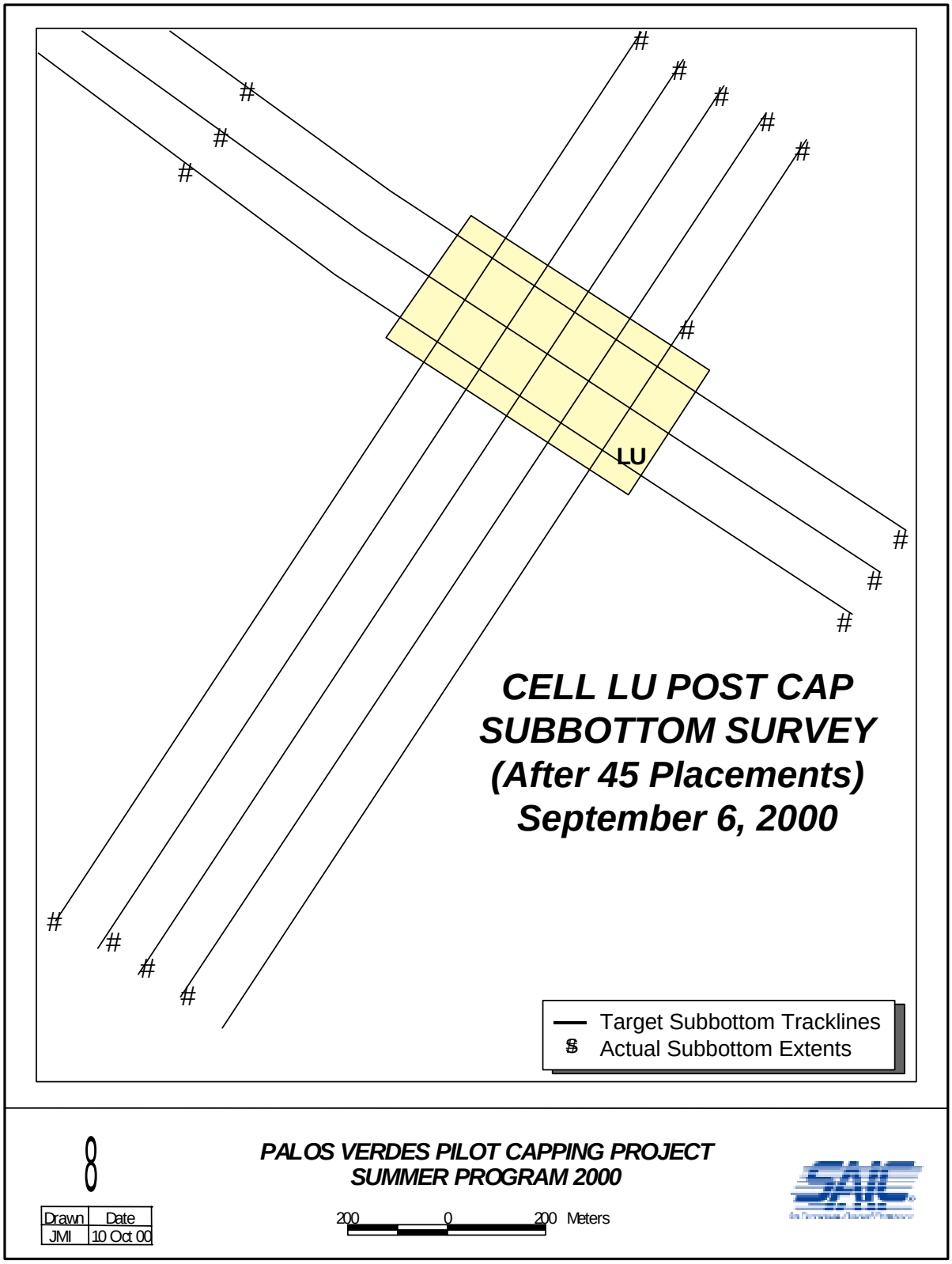
Jason Infantino had custody of the sidescan data and Allan Quintal had custody of the subbottom data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:
LINES_09072000_YF.csv


CELL LU POST CAP
SIDESCAN SURVEY
September 6, 2000
K
L
M
LU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
10 Oct 00


LU
CELL LU POST CAP
SUBBOTTOM SURVEY
(After 45 Placements)
September 6, 2000
Target Subbottom Tracklines
Actual Subbottom Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
10 Oct 00
200
0
200
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 14, 2000**
Survey: **Sidescan and Subbottom, LU Post Post Cap (Flex)**
Cell: **LU**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Subbottom), Lisa McAuliffe (Navigation), Ellen Tobey, Scott McDowell
SCMI: Jim Critanovich (Captain), Dennis Dunn (Mate), Kerin Wiesenbaker (Deckhand)

Survey Operations:
Survey Schedule
The sidescan and subbottom crews arrived at the R/V *Yellowfin* at 13:50. The vessel departed the dock at 14:44 and arrived at Cell LU at approximately 15:45. Three along-shore subbottom lines were run between 15:45 and 16:30. The subbottom fish was then pulled on deck and the sidescan fish put into the water. Three along-shore lines were run with sidescan and the fish was pulled on deck. The sidescan data seemed to have a significant number of fish in the record. The subbottom fish was put into the water and one offshore line was run before the Sugar Island completed one placement in the cell. Following the completion of line LUA_F, the subbottom data cable was unexpectedly disconnected from the towfish. It is believed that this happened because there was insufficient slack in the data cable to allow for vessel motion. The fish was pulled aboard, reconnected with more slack and redeployed. No data were lost and the equipment is fully functional. The remainder of the subbottom offshore lines were completed by 19:32. The subbottom fish was once again brought onboard and the sidescan fish deployed. One line was run through the along-shore centerline of Cell LD and Cell LU as a quality check to see if the fish had moved on. As the data seemed much clearer, the other two along-shore lines were also resurveyed. The sidescan survey was completed at 20:53 and the *Yellowfin* secured for transit back to SCMI. Following the completion of survey operations, the vessel departed the survey area and arrived back at SCMI at 21:44.

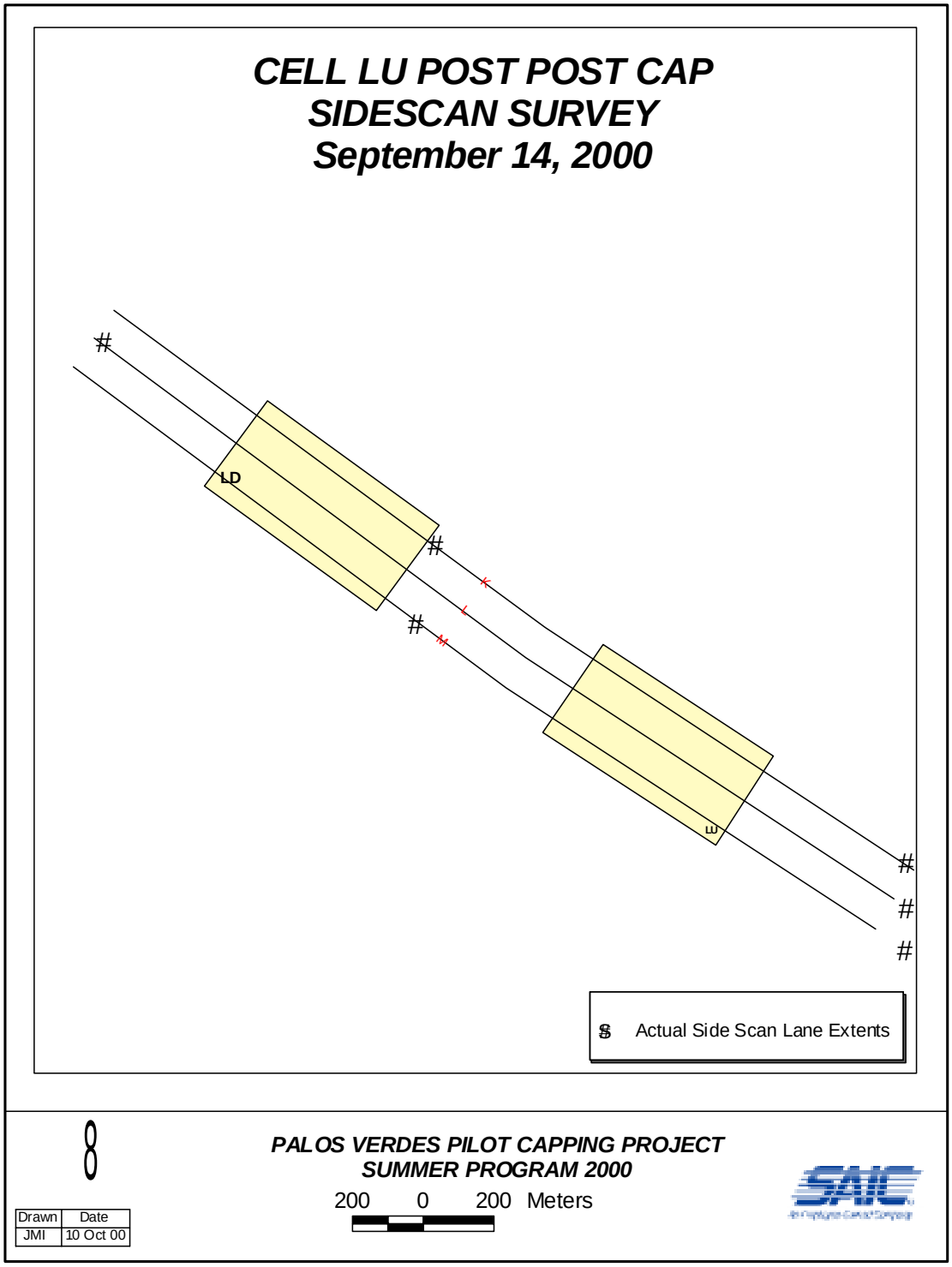
Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Datasonics Chirp II Subbottom Profiling System
  Edgetech DF1000 Sidescan Sonar

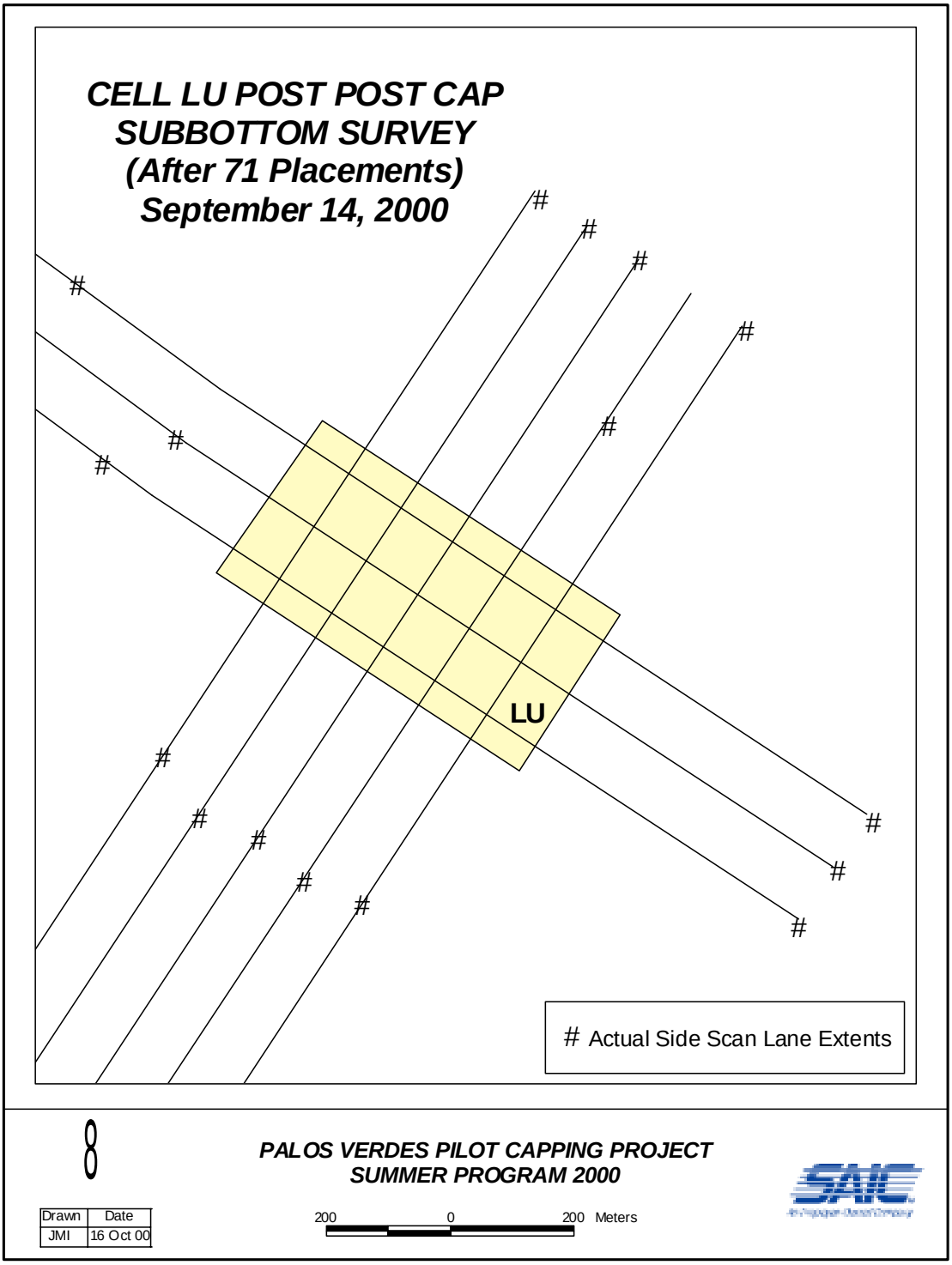
Problems Encountered
The data cable came unplugged from the subbottom towfish. No damage and no loss of data.
None of the offshore sidescan survey lines were run during this survey. The severe slope angle in the survey area leads to such rapid towfish altitude adjustments that the towfish is unable to adequately track bottom. This results in unacceptably poor data quality. As the along-shore lines provide 100% coverage of each cell, the decision was made to cancel the acquisition of the five offshore lines.

Custody of Samples:
Jason Infantino had custody of the sidescan data and Allen Quintal had custody of the subbottom data upon completion of the cruise.

Custody of Survey Data:
All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:
Raw0914.tgt
Lines_09142000_YF.csv


CELL LU POST POST CAP
SIDESCAN SURVEY
September 14, 2000
LD
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
10 Oct 00


CELL LU POST POST CAP
SUBBOTTOM SURVEY
(After 71 Placements)
September 14, 2000
LU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
16 Oct 00
200
0
200
Meters

CELL LU
CTD & WATER QUALITY CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 2, 2000**
Survey: **CTD and Rosette, Initial Placement (6Bii)**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Scott McDowell (Leader), Pam Walter (Water Sampling), Ellen Tobey (Navigation)
SCMI Vessel: Ken Kivett (Captain), Dave Reynose (Mate), Kathleen Snow (Deck hand)
SCMI CTD: Liz Caporelli, Ximena Hernandez, Reni Schimoeller
EPA: Fred Schauffler
USACOE: Larry Smith

Survey Operations:
Survey Schedule
The water quality survey crew departed the Southern California Marine Institute (SCMI) at 13:44 to conduct CTD and Rosette operations for survey LU prior to and after the Initial Placement. Survey operations were conducted between 14:27 and 21:59. The survey started by first conducting a background study between 14:27 and 18:44. The placement began at 19:21 and ended at 19:24. The placement survey started at 19:00 and ended at 21:59. For this survey, 49 water samples were collected. Three near-bottom background water samples were collected at the planned point of disposal prior to the placement event. The purpose of these samples was to determine the natural background levels of TSS and p,p' DDE in the water column prior to the placement of the cap material. Forty-six water samples were collected in the centroid of the plume. All samples were collected near the center of the plume during multiple down casts of the Rosette or following a drogue and within 2 meters of the sea floor. Detailed times of individual water sample collections can be found in the Monitoring Results from the Field Pilot Survey.

Eighteen CTD down casts were performed during the day, ten were taken before the placement. SCMI provided the CTD, Rosette, altimeter, and transmissometer while onboard the R/V *Sea Watch*. They also provided technical support for this equipment. Also, the *Sea Watch* located the two current drogues whenever the CTD unit was on deck, moved to their locations and took fixes. The green drogue was tethered to 15 m and the yellow drogue was fixed at 30 m depth. These fixes will establish tracklines for each of the drogues, which will also be used to indicate current direction at various depths. Following the completion of survey operations, the vessel returned to SCMI, arriving at 22:49.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered
DGPS positioning went out several times during the survey. The problem occurred upon the deployment and down cast of the Rosette unit. All cables and connections were checked and the antenna was moved to a higher location. The reason for loss of position was determined to be the electrical winch onboard - it was draining power and drowning out the DGPS signal. During the survey, several samples were

collected that have only interpolated positions. These positions were determined by examining the sample positions immediately proceeding and following the sample in question. The Navigation position was lost throughout the survey 21 times. These losses are noted in the navigation log along with approximate duration.

Hypack crashed at one point, but data was backed up to the NavLog and therefore recovered. The problem occurred upon the deployment and down cast of the Rosette unit. All cables and connections were checked and the antenna was moved to a higher location. Another mechanical problem was encountered with clogging of the Rosette's firing mechanism. There was too much "plume sediment" build-up in the firing mechanism that prevented consistent Rosette firing.

Custody of Samples:

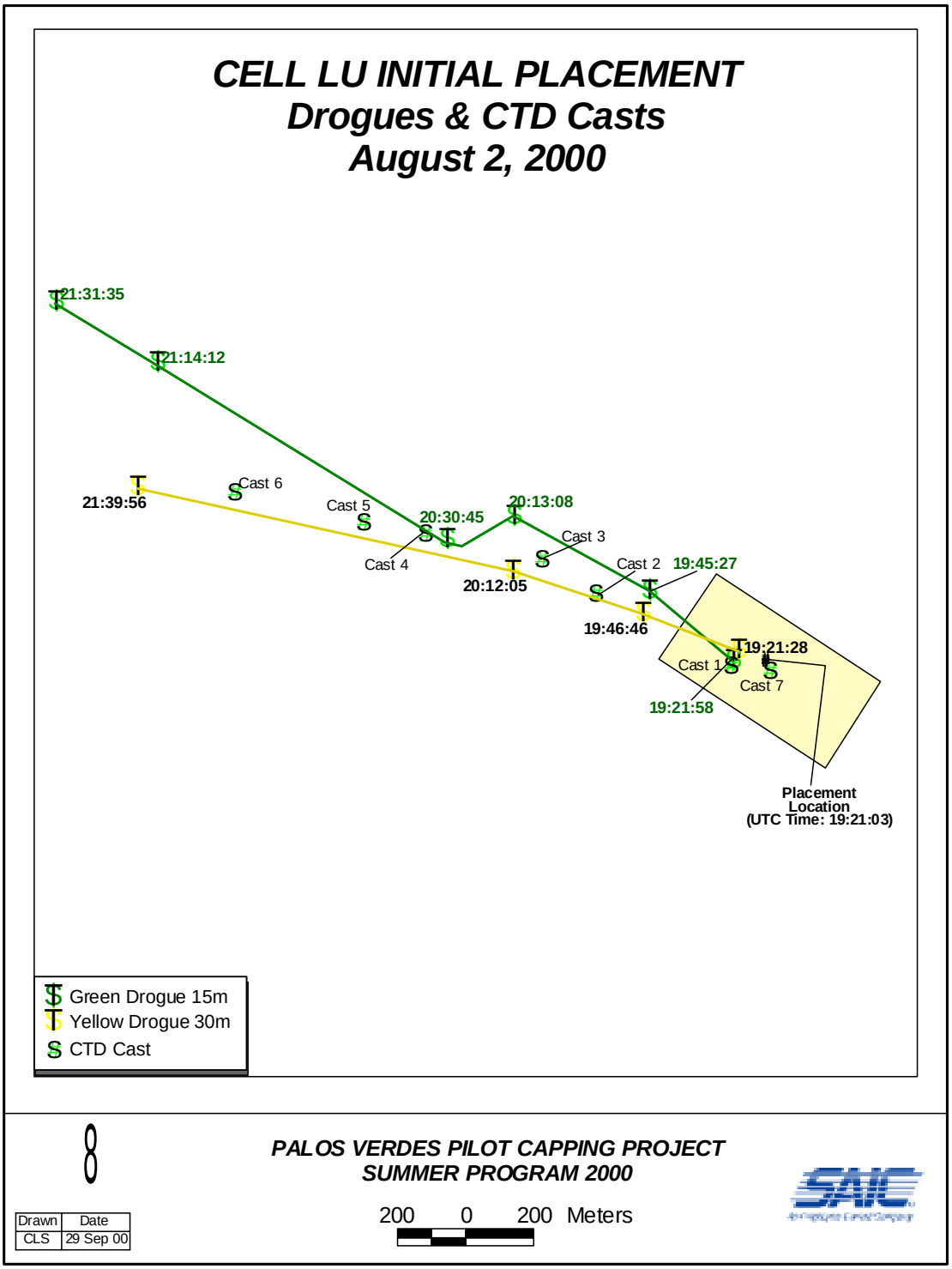
Upon arrival at dock, Pam Walter was given custody of samples.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:

RAW0802.tgt,
luctd_targets.tgt


CELL LU INITIAL PLACEMENT
Drogues & CTD Casts
August 2, 2000
21:31:35
21:14:12
21:39:56
Cast 6
Cast 5
20:30:45
20:13:08
Cast 3
Cast 4
20:12:05
Cast 2
19:45:27
19:46:46
19:21:28
Cast 1
Cast 7
19:21:58
Placement Location (UTC Time: 19:21:03)
Green Drogue 15m
Yellow Drogue 30m
CTD Cast
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
29 Sep 00
200 0 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 12, 2000**
Survey: **CTD and Rosette, Placements 2 & 3**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Scott McDowell (Leader), Pam Walter (Water Sampling), Ellen Tobey (Navigation)
SCMI Vessel: Ken Kivett (Captain), Dave Reynoso (Mate), Kathleen Snow (Deckhand)
SCMI CTD: Ximena Hernandez (CTD), Reni Schimoeller (CTD)
USACOE: Tom Fredette, Mamie Brouwer

Survey Operations:
Survey called off at 13:49 due to a combination of mechanical problems on the hopper (main engine problems). The R/V *Sea Watch* and crew were mobilized but did not leave the dock.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered

No problems onboard the RV *Sea Watch*. The hopper dredge had trouble with the main engine.

Custody of Samples:

None

Custody of Survey Data:

None

Navigation Data Files:

None

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 13, 2000**
Survey: **CTD and Rosette, Placements 4 & 5, (6Cii)**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:

SAIC:	Scott McDowell (Leader), Pam Walter (Water Sampling), Vickey Frank (Deck Ops), Ellen Tobey (Navigation)
SCMI Vessel:	Ken Kivett (Captain), Dennis McHuffy (Mate), Shoshanna Grevenwald (Deckhand)
SCMI CTD:	Ximena Hernandez, Reni Schimoeller
USACOE:	Tom Fredette

Survey Operations:

Survey Schedule

The CTD and Rosette crew departed the Southern California Marine Institute (SCMI) at 13:20 to conduct conductivity, temperature, and depth (CTD) measurements, water sampling with a Rosette and transmissivity measurements in Cell LU prior to and after the 4th and 5th placement events. Survey operations were conducted between 14:16 and 22:47.

Placement Four

This survey started by first conducting a background study, which occurred between 14:06 and 16:42. Three near-bottom background water and two CTD samples were collected at the planned point of disposal prior to the placement event. The purpose of these samples was to determine the natural background levels of TSS and p,p' DDE in the water column prior to the placement of the cap material. The 4th placement began at 16:59 and ended at 17:01. The placement survey started at 16:51 and ended at 19:03.

During the first part of the 4th placement survey, thirty water samples were collected for TSS and ten were collected for p,p' DDE. All samples were collected near the center of the plume during multiple down casts of the Rosette or following a drogue and within 2 meters of the sea floor. Detailed times of individual water sample collections can be found in the Monitoring Results from the Field Pilot Survey.

Prior to Placement 5, the R/V *Sea Watch* ran a line along the existing kelp bed that runs along the shoreline.

Placement Five

During this monitoring event, three background water samples, twenty-seven placement TSS samples and six p,p' DDE samples were collected. The background study occurred between 19:03 and 19:42. The placement began at 20:19 and ended at 20:21. The placement survey started at 19:49 and ended at 22:47. Two background CTD down cast was taken; five down casts were taken during the placement survey.

During both placements, the vessel also moved to the location of the two current drogues whenever the CTD rosette was on deck. Position fixes were taken at these drogue locations to establish a drogue trackline.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered

During the survey, several samples were collected that have only interpolated positions. This is due to and intermittent loss of differential signal. Differential signal was lost when the CTD winch was in operation. Bottles intermittently did not fire. This was determined to be a mechanical failure. Salinity and temperatures were also off due to a mechanical problem that still needs to be resolved.

Custody of Samples:

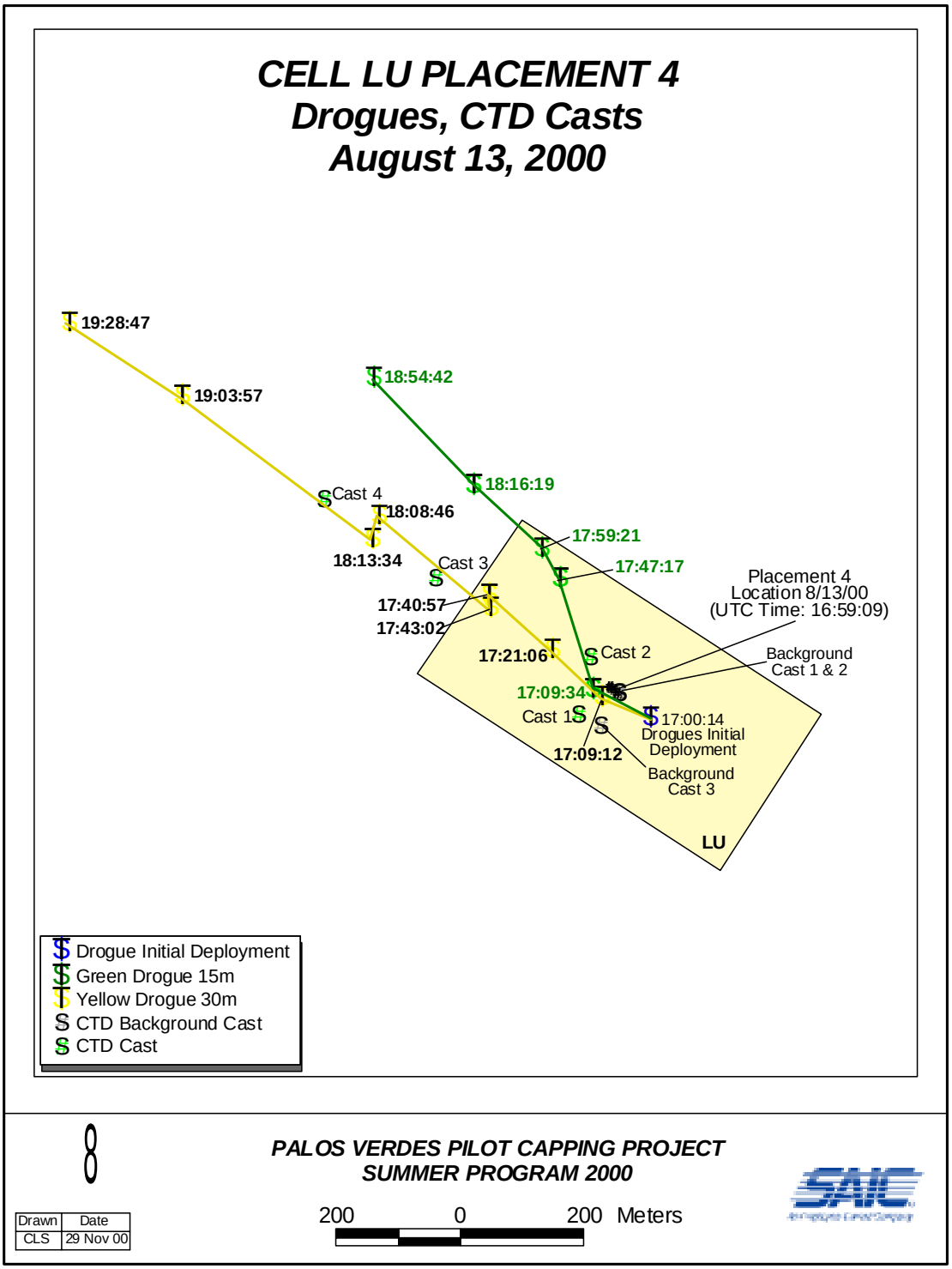
Upon arrival at dock, Pam Walter was given custody of samples.

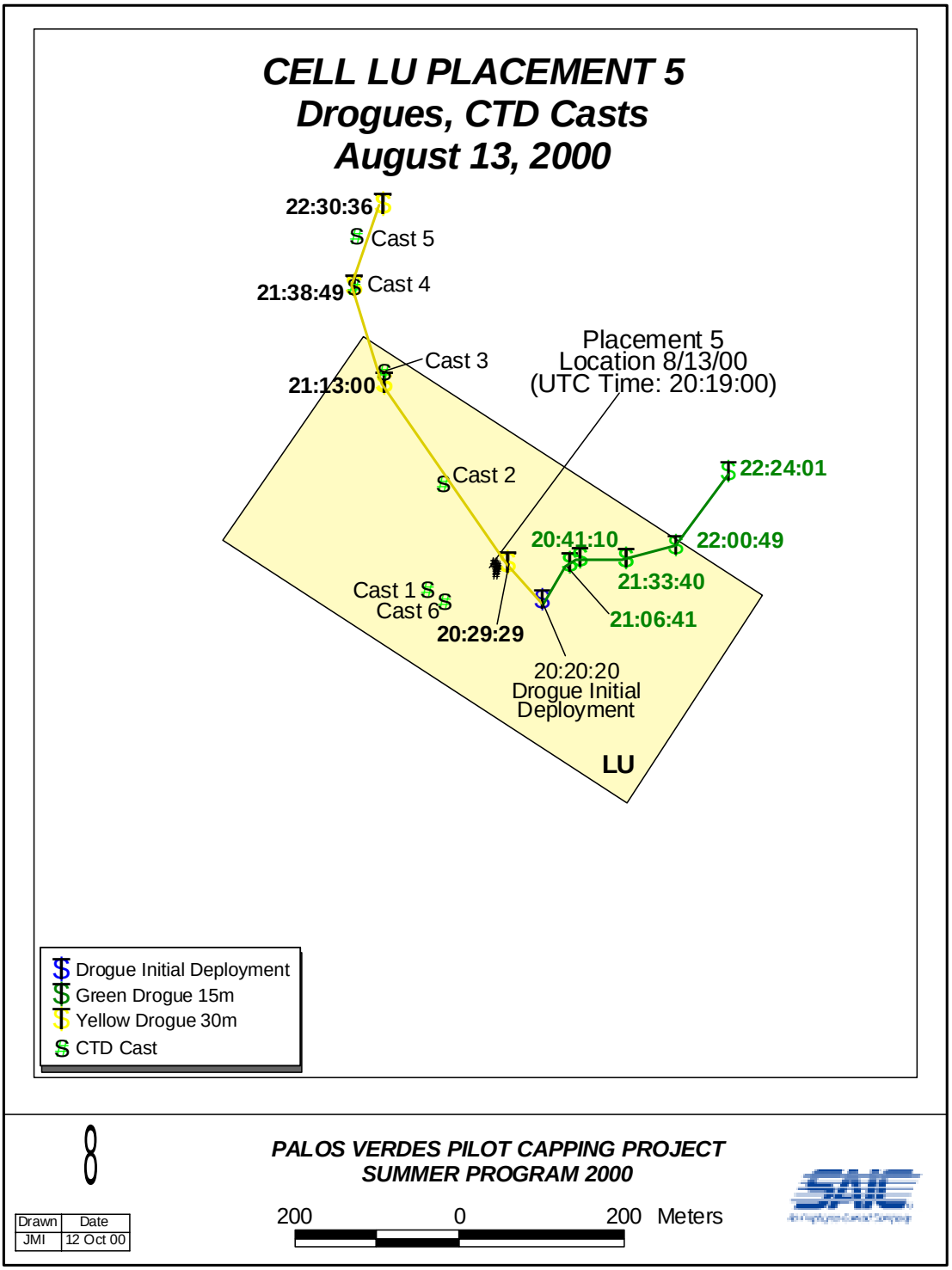
Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:

Raw08132000
Points_08132000_sw.csv


CELL LU PLACEMENT 4
Drogues, CTD Casts
August 13, 2000
19:28:47
19:03:57
18:54:42
18:16:19
Cast 4
18:08:46
18:13:34
Cast 3
17:59:21
17:47:17
17:40:57
17:43:02
17:21:06
Cast 2
17:09:34
Cast 1
17:09:12
17:00:14
Drogues Initial Deployment
Background Cast 3
Background Cast 1 & 2
Placement 4
Location 8/13/00
(UTC Time: 16:59:09)
LU
Drogue Initial Deployment
Green Drogue 15m
Yellow Drogue 30m
CTD Background Cast
CTD Cast
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
CLS
Date
29 Nov 00
200
0
200
Meters



8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
JMI	12 Oct 00

200 0 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 10, 2000**
Survey: **CTD and Rosette, Surface Plume Transport # 2 (11ii)**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:

SAIC:	Scott McDowell (Leader), Pam Walter (Water Sampling), Ellen Tobey (Navigation)
SCMI Vessel:	Ken Kivett (Captain), Kerin Wiesenbaker (Mate), Shoshanna Grevenwald (Deck hand), David Reynose (Mate),
SCMI CTD:	Ximena Hernandez (CTD)
NATCO:	Lynn Nietfeld (Observer)

Survey Operations:

Survey Schedule

The CTD and Rosette crew departed the Southern California Marine Institute (SCMI) at 19:02 to conduct CTD and Rosette operations for the second surface plume and kelp study. Survey operations were conducted between 19:55 and 23:27. The survey started by first conducting a CTD background study, which occurred between 19:55 and 20:24. The placement occurred at 21:11. The placement survey started at 21:14 and ended at 23:27. For this survey, 27 water samples were collected after the placement event. All samples were collected near the center of the plume during multiple down casts of the Rosette or following a drogue and within 2 meters of the sea floor. No background water samples were collected. Detailed times of individual water sample collections can be found in the Monitoring Results from the Field Pilot Survey.

Three CTD down casts were taken prior to the placement and eight CTD down casts during the placement survey. The vessel also moved to the location of the two current drogues whenever the CTD rosette was on deck. Position fixes were taken at these drogue locations to establish a drogue trackline. The blue drogue was used to track surface currents, while the yellow drogue was indicative of currents 10 m below the surface. Following the completion of survey activity, the vessel returned to SCMI at 00:16.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered

None

Custody of Samples:

Upon arrival at dock, Pam Walter has custody of the samples.

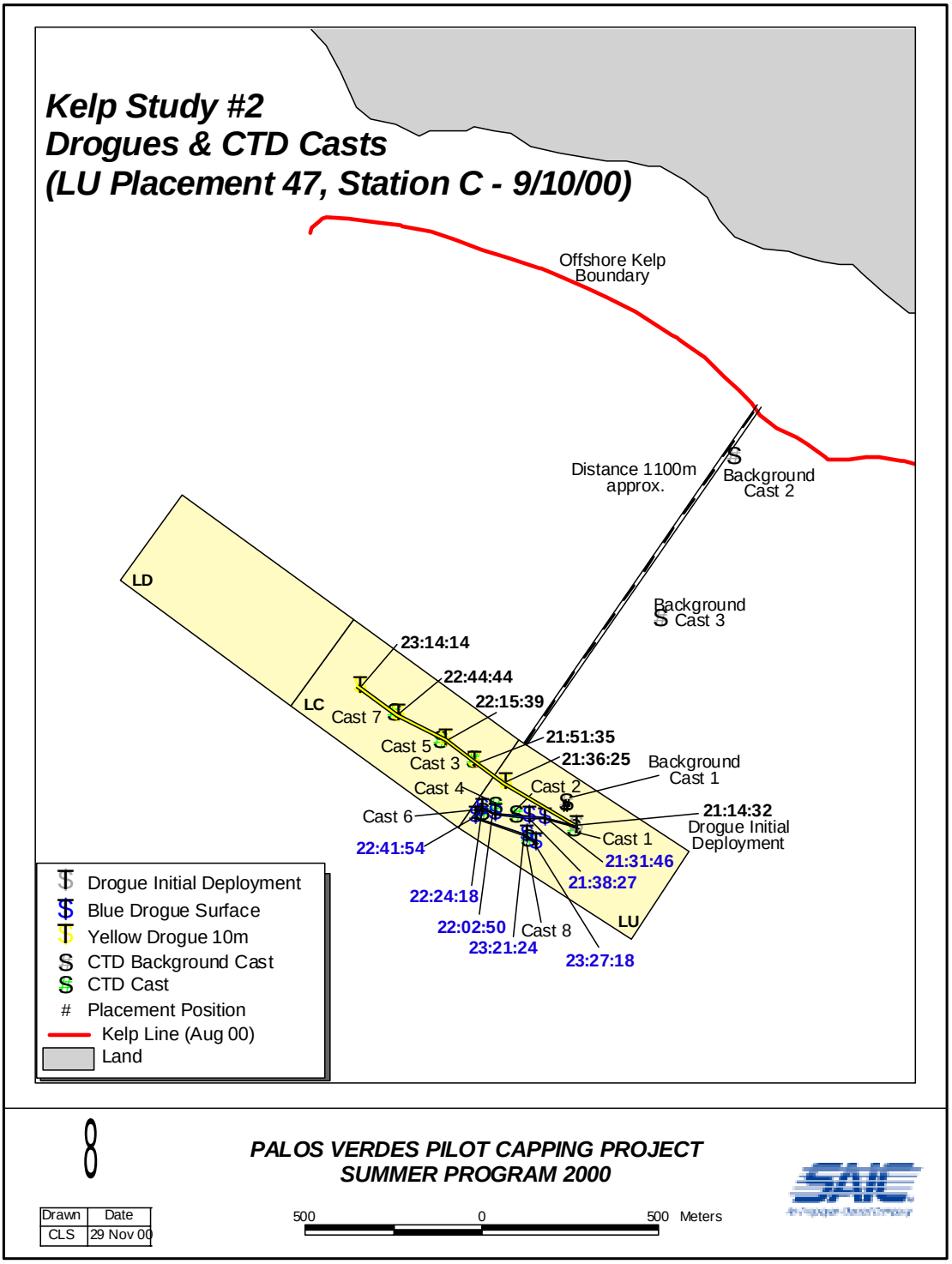
Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then

returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:

Raw0910.tgt


Kelp Study #2
Drogues & CTD Casts
(LU Placement 47, Station C - 9/10/00)
Offshore Kelp Boundary
Distance 1100m approx.
Background Cast 2
Background Cast 3
Background Cast 1
LD
LC
LU
23:14:14
22:44:44
22:15:39
21:51:35
21:36:25
21:14:32
Drogue Initial Deployment
Cast 7
Cast 5
Cast 3
Cast 4
Cast 2
Cast 6
Cast 1
Cast 8
22:41:54
21:31:46
21:38:27
22:24:18
22:02:50
23:21:24
23:27:18
Drogue Initial Deployment
Blue Drogue Surface
Yellow Drogue 10m
CTD Background Cast
CTD Cast
Placement Position
Kelp Line (Aug 00)
Land
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
29 Nov 00
500
0
500
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 12, 2000**
Survey: **CTD and Rosette, Surface Plume Transport Survey # 3 (11iii)**
Cell: **LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Scott McDowell (Leader), Pam Walter (Water Sampling), Ellen Tobey (Navigation)
SCMI Vessel: Ken Kivett (Captain), Shoshanna Grevenwald, (Deckhand), David Reynose (Mate)
SCMI CTD: Liz Caporelli, (CTD), Shoshanna Grevenwald (CTD)

Survey Operations:
Survey Schedule
The CTD and Rosette crew departed the Southern California Marine Institute (SCMI) at 19:57 to conduct CTD and Rosette operations for the Third Surface Plume Transport study prior to and after the placement. Survey operations were conducted between 20:50 and 00:37. The survey started by first conducting a CTD background study, which occurred between 20:50 and 21:29. The placement occurred at 22:23. The placement survey started at 22:26 and ended at 00:37. For this survey, 19 water samples were collected. All of the samples were collected after the placement. All samples were collected near the center of the plume during multiple down casts of the Rosette or following a drogue and within 2 meters of the sea floor. Detailed times of individual water sample collections can be found in the Monitoring Results from the Field Pilot Survey. No background water samples were collected.

Three CTD down casts were taken prior to the placement and six CTD down casts during the placement survey. The vessel also moved to the location of the two current drogues whenever the CTD rosette was on deck. Position fixes were taken at these drogue locations to establish a drogue trackline. The blue drogue was used to track surface currents, while the yellow drogue indicated currents 10 m below the surface. Upon completion of CTD survey operations, the vessel returned to SCMI, arriving at 01:30.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered
At approximately 22:30, the yellow 10 m current drogue was run over by the Sugar Island. At 23:20, the drogue buoy was recovered – the drogue itself was severed and lost during the impact with the dredge. Also, the CTD required a conductor replacement at approximately 00:32. Finally, the water-sampling rosette stopped working entirely at the same time that the CTD conductor ceased functioning. The final water sample was collected at the surface with a Niskin bottle, which was lowered over the side of the vessel on a rope and fired by messenger.

Custody of Samples:

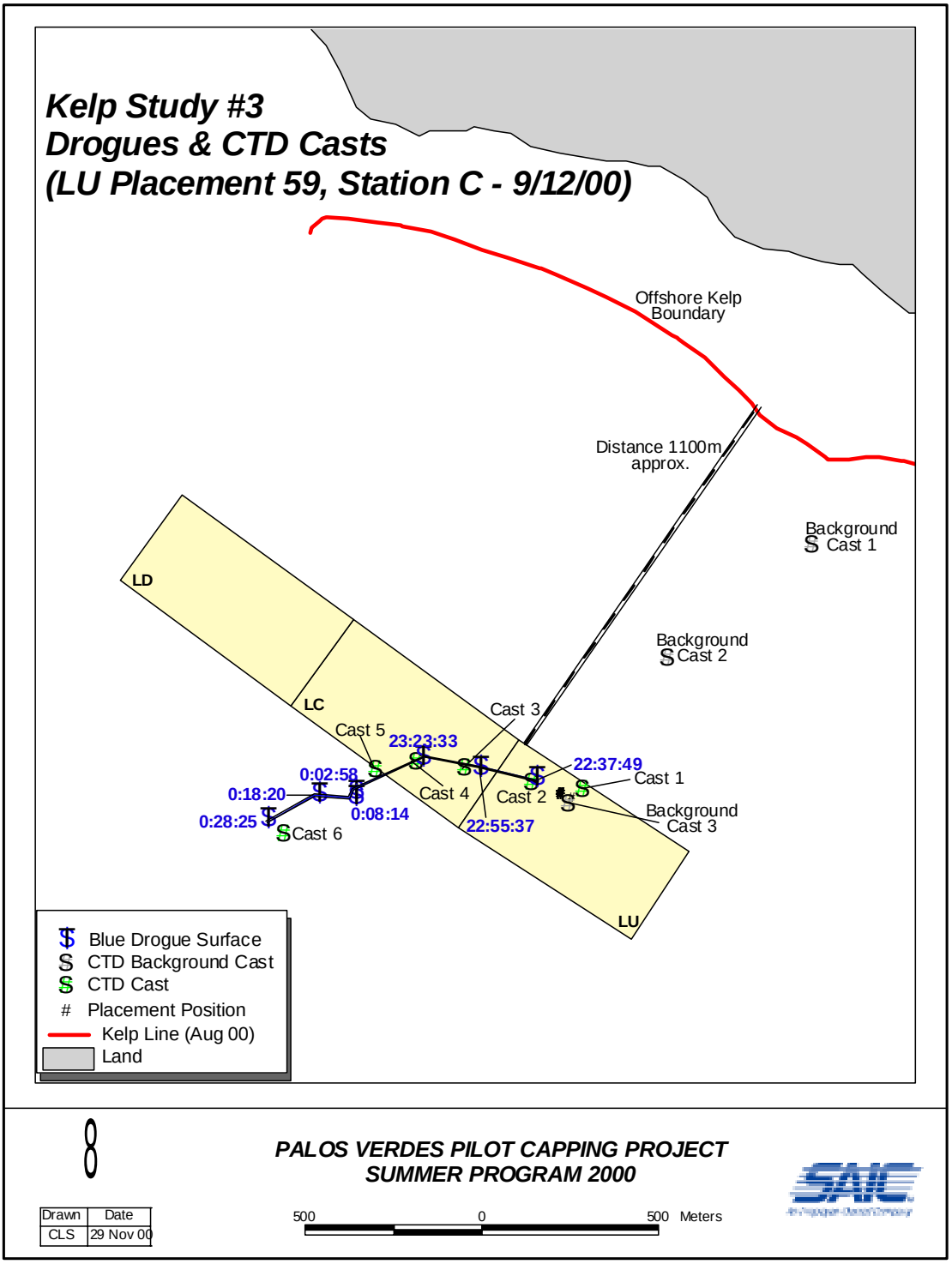
Upon arrival at dock, Pam Walter was given custody of the samples.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:

Raw0912.tgt


Kelp Study #3
Drogues & CTD Casts
(LU Placement 59, Station C - 9/12/00)
Offshore Kelp Boundary
Distance 1100m approx.
Background Cast 1
Background Cast 2
Background Cast 3
LD
LC
LU
Cast 1
Cast 2
Cast 3
Cast 4
Cast 5
Cast 6
22:37:49
23:23:33
22:55:37
0:02:58
0:08:14
0:18:20
0:28:25
Blue Drogue Surface
CTD Background Cast
CTD Cast
Placement Position
Kelp Line (Aug 00)
Land
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
29 Nov 00
500
0
500
Meters

CELL LU
CRUISES ASSOCIATED WITH
MOORED CURRENT AND TURBIDITY ARRAYS

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 1, 2000**
Survey: **ARESS Deployment, Initial Placement (6Bi)**
Cell: **LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Steve Pace (ARESS), Jim Singer (Aquadopp, ADCP), Ellen Tobey (Nav), Allan Quintal (Nav)
Vessel: Josh (Captain), Bob Greeno (Mate)

Survey Operations:
Survey Schedule
The Current Meter Array deployment crew departed the Southern California Marine Institute (SCMI) at 17:52 to place two arrays in Cell LU. The first array, comprised of an Aquadopp current meter, an ARESS unit and an ADCP, was placed 75 meters offshore of the LU center point. The second array contained an Aquadopp current meter and was located approximately 150 meters offshore of the LU center point. Array placements were conducted between 18:45 and 19:10. Upon completion of deployments, the vessel returned to SCMI at 20:13.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: 75M Down
  1 Acoustic Doppler Current Profiler (ADCP)
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Nortek AS Aquadopp current meter with OBS-3 Suspended Solids and Turbidity Monitor
  1 Acoustic Release

  150M Down
  1 Nortek AS Aquadopp current meter with OBS-3 Suspended Solids and Turbidity Monitor
  1 Acoustic Release

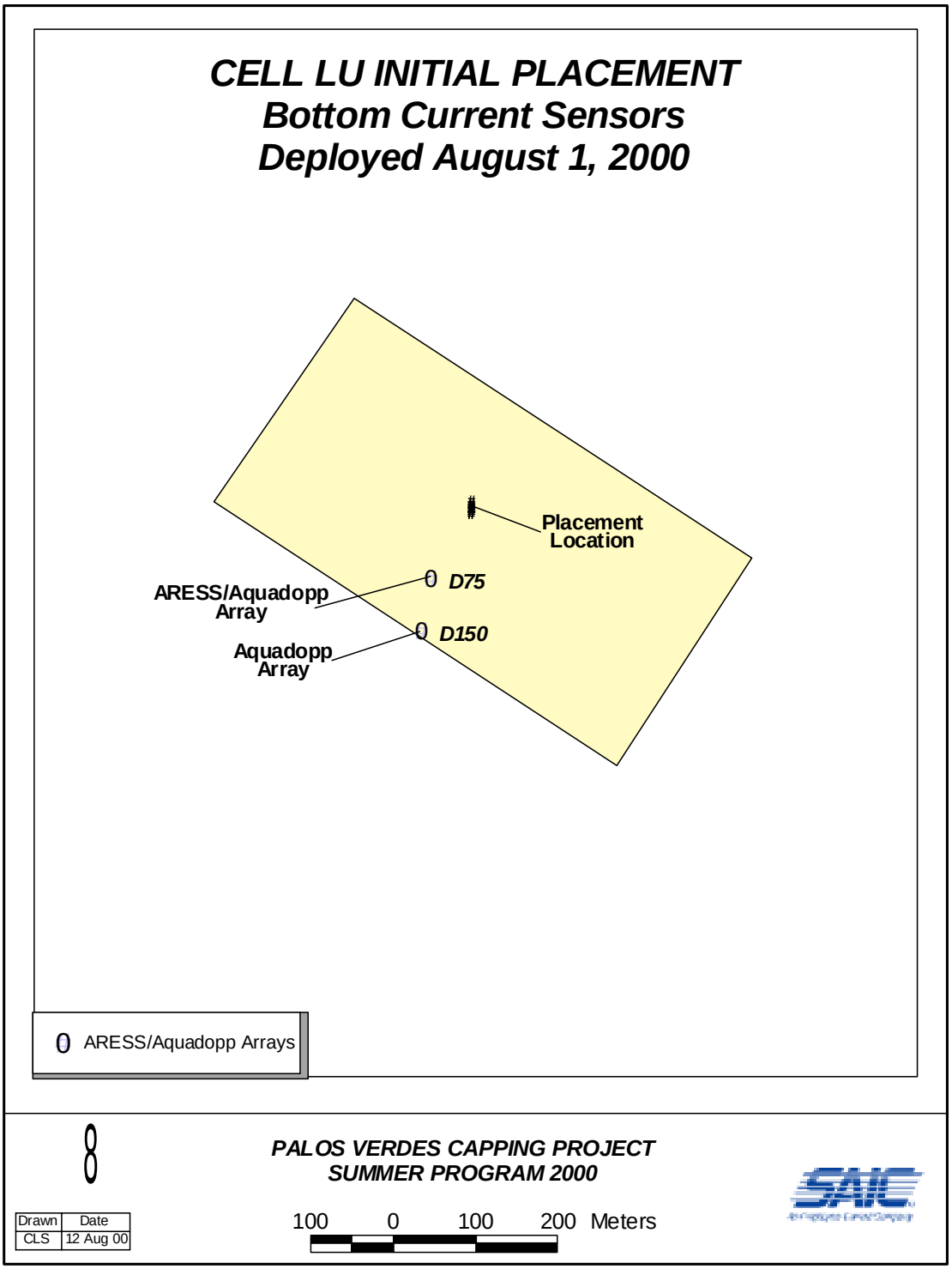
Problems Encountered

No problems were encountered with the deployment operation. However please note that this operation was originally planned to take place with the deployment of additional equipment. The equipment was held up in the shipping process en route from the east coast to the SCMI facility. Due to this misfortune, the event was not fully monitored as described in the work plan. *All future surveys under this project should have the full compliment of equipment present.

Custody of Samples: None

Custody of Survey Data:
All navigation data was transferred to the custody of the Data Manager.

Navigation Data Files:
RAW0801.tgt, Points_08012000_TN.csv


CELL LU INITIAL PLACEMENT
Bottom Current Sensors
Deployed August 1, 2000
Placement Location
D75
ARESS/Aquadopp Array
D150
Aquadopp Array
ARESS/Aquadopp Arrays
PALOS VERDES CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
12 Aug 00
100 0 100 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 3, 2000**
Survey: **TRBM Placement, ARESS Array recovery following LU Initial Placement (6Bi)**
Cell: **SU, LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Allan Quintal(Navigation), Steve Pace (ARESS), John Evans(Crew), Jim Singer(TRBM)
Vessel: Josh (Captain), Bob Greeno (Mate)

Survey Operations:
Survey Schedule
The R/V *Tuna* departed the Southern California Marine Institute (SCMI) at 14:24 to place a TRBM (Trawl Resistant Bottom Mount) at site ADCP1 (1968323.1, 522667.8), between Cells SU and LU. This instrument contains an ADCP for current measurements and an acoustic release for instrument recovery. Placement operations were conducted between 15:14 and 15:45. Two ARESS current meter arrays that had been placed prior to the LU initial placement were also recovered. ARESS recovery operations were conducted between 16:10 and 16:31.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Trawl Resistant Bottom Mount (TRBM)
  1 Acoustic Doppler Current Profiler (ADCP)
  1 Acoustic Release

  RECOVERY
  Please refer to August 1 Cruise Report for descriptions of instruments recovered.

Problems Encountered

Navigation logged one hour ahead of UTC.

Custody of Samples:

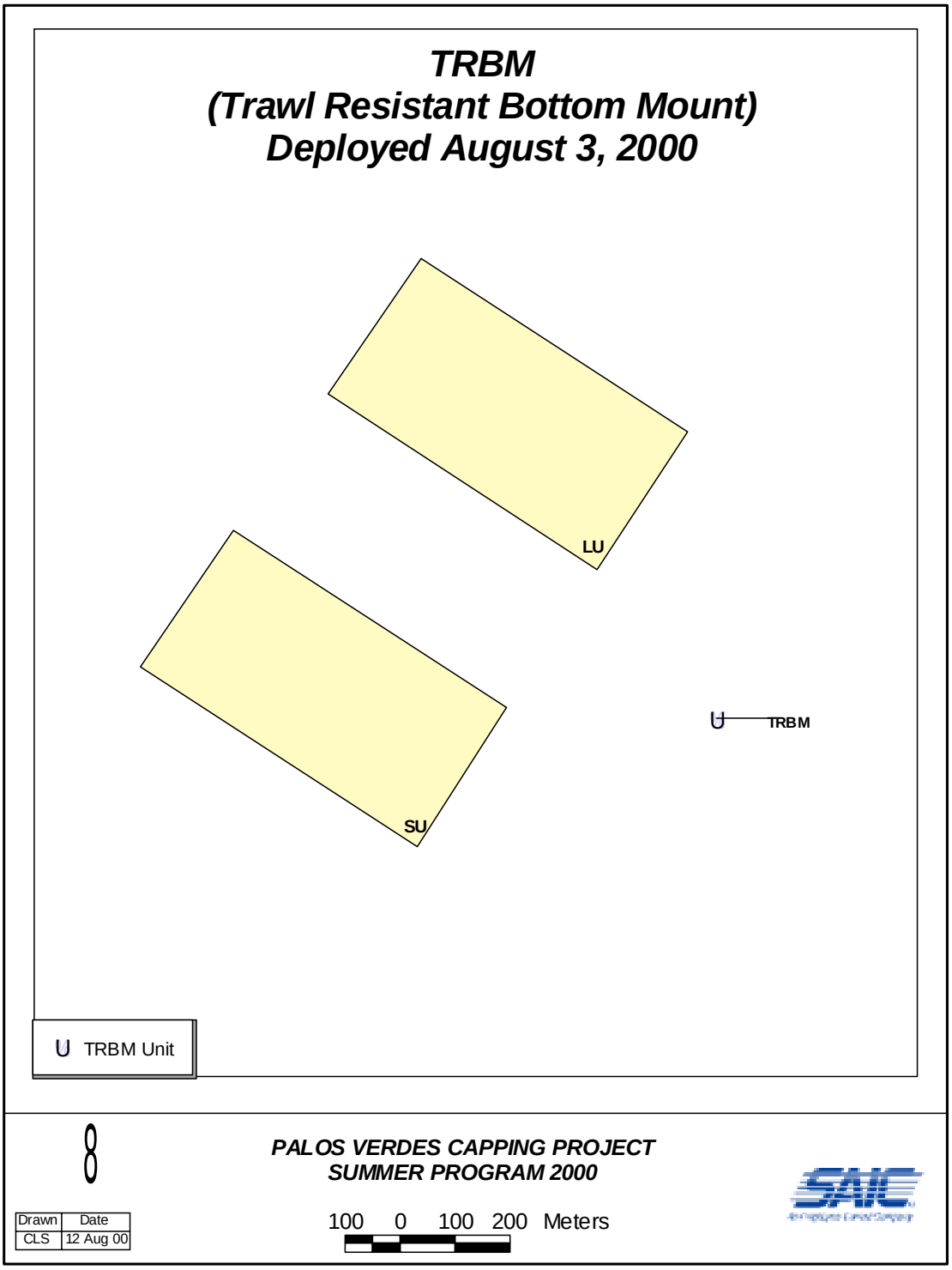
Jim Singer and Steve Pace had custody of the data following the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0803.tgt


TRBM
(Trawl Resistant Bottom Mount)
Deployed August 3, 2000
LU
SU
TRBM
TRBM Unit
PALOS VERDES CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
12 Aug 00
100 0 100 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 11, 2000**
Survey: **ARESS Array Deployment, Placements 2-5 (6Ci)**
Cell: **LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: John Evans (crew), Jim Singer (ADCP, Aquadopp), Marc Wakeman (ARESS), Lisa McAuliffe (Navigation)
Vessel: Bob Greeno (Captain), Mate (name unknown)

Survey Operations:
Survey Schedule
The crew arrived at SCMI at 14:40 to finish prepping the gear. The vessel departed the dock at 16:04 and arrived on site in Cell LU at 17:00. The first two current arrays were deployed at sites LU75 Down and LU250 Down. The vessel then returned to SCMI to pick up the final two current arrays, and was back on site at 20:30. The third array, deployed at site LU150 Down, caused some minor difficulty for the crew, as the recovery lines got tangled. The second attempt at deployment was successful. The fourth array was deployed at site LU75M UP with no trouble. Following the completion of array placement activity, the vessel returned to SCMI, arriving at approximately 24:00 for demobilization.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: 75MUp
  1 Nortek AS Aquadopp current meter with OBS-3 Suspended Solids and Turbidity Monitor
  1 Acoustic Release

  75MDown
  1 Acoustic Doppler Current Profiler (ADCP)
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

  150MDown
  1 ARESS array with 1 current sensor and 2 Seapoint turbidity sensors
  1 Acoustic Release

  250MDown
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

Problems Encountered

The navigation computer locked up once. There was no immediately obvious answer for this. The computer was rebooted twice and operated smoothly thereafter.

Custody of Samples:

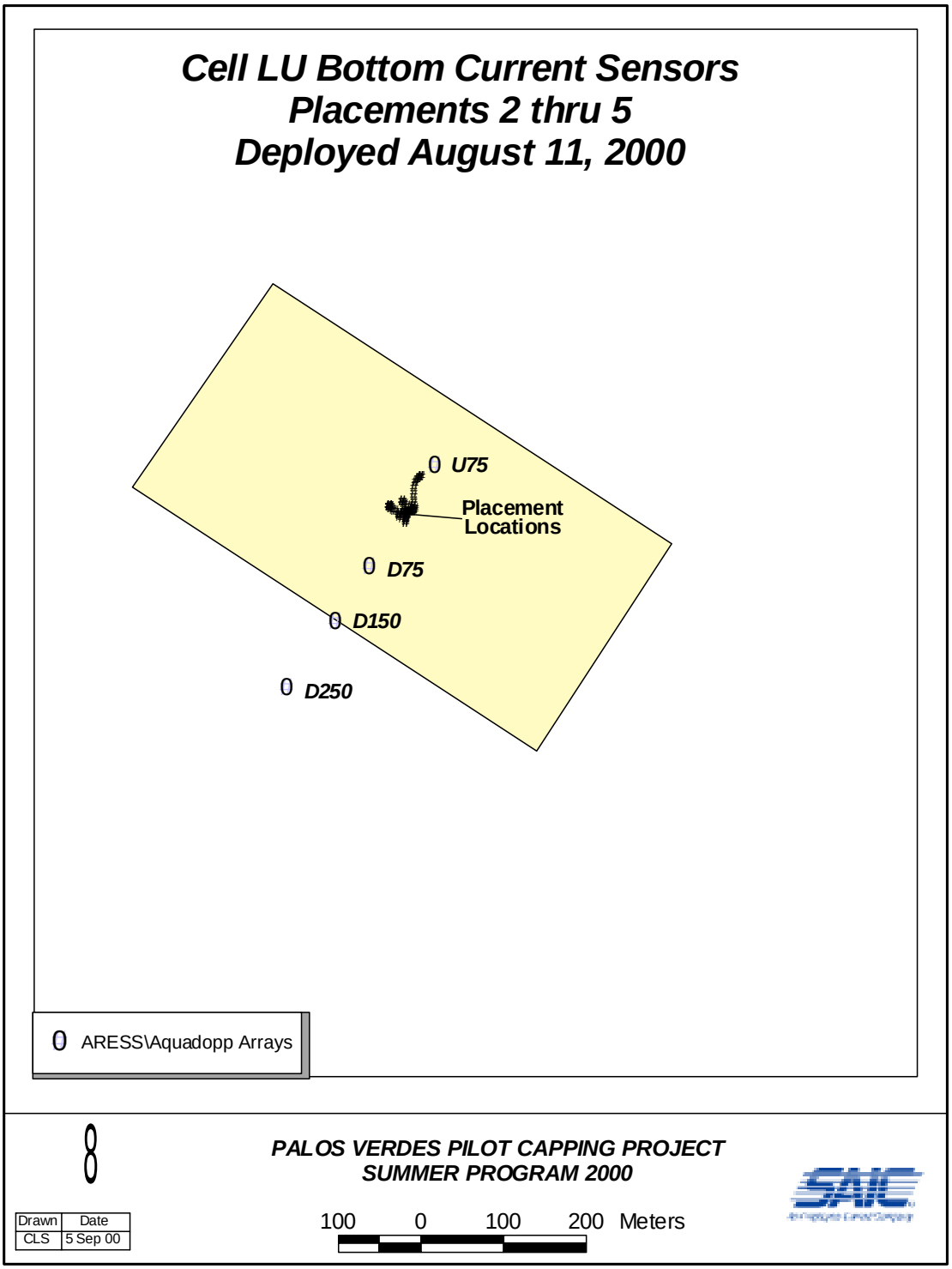
None

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0811.tgt
Points_08112000_TN.csv


Cell LU Bottom Current Sensors
Placements 2 thru 5
Deployed August 11, 2000
U75
Placement Locations
D75
D150
D250
ARESS\Aquadopp Arrays
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
5 Sep 00
100 0 100 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 14, 2000**
Survey: **ARESS Array Recovery, LU Placements 2 - 5 (6Ci)**
ARESS Array Deployment, LD Initial Placement (7Bi)
Cell: **LU, LD**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Marc Wakeman (ARESS), Scott McDowell (Deck), Jim Singer (Aquadopp, ADCP) Allan Quintal (Navigation)
Vessel: Josh (Captain), Steve Warth (Mate)

Survey Operations:
Survey Schedule
The ARESS array deployment crew departed the Southern California Marine Institute (SCMI) at 14:15 to recover four arrays from Cell LU and redeploy two of the recovered arrays in Cell LD. Recovery and deployment operations for the two arrays were conducted between 15:08 and 18:47. The vessel returned to SCMI at 19:35 with the other two arrays recovered from Cell LU. Data were recovered from both arrays and all instruments were subjected to pre-deployment tests. The ARESS crew departed the Southern California Marine Institute (SCMI) at 23:15 to deploy one array each at station LD1_D75 and station LD1_U75 in Cell LD. Deployment operations were conducted between 00:01 and 00:38. The vessel returned to SCMI at 01:23.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RECOVERY FROM CELL LU
  Please refer to August 11 Cruise Report for descriptions of those instruments recovered.

  DEPLOYMENT IN CELL LD
  75MUp
  1 Nortek AS Aquadopp current meter with OBS-3 Suspended Solids and Turbidity Monitor
  1 Acoustic Release

  75MDown
  1 Acoustic Doppler Current Profiler (ADCP)
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

  150MDown
  1 ARESS array with 1 current sensor and 2 Seapoint turbidity sensors
  1 Acoustic Release

  250MDown
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors

1 Acoustic Release

Problems Encountered

At 18:01 the marker buoy for site LD1_D150 hung briefly on the rudder. *Tuna* personnel untangled the line. No movement of ARESS array was evident.

Custody of Samples:

Marc Wakeman had custody of the ARESS data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0814.tgt, RAW0814B.tgt
Points_08142000_tn.csv

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 16, 2000**
Survey: **ARESS Recovery following LD Initial Placement (7Bi)**
LU and SU, TRBM Recovery
Cell: **LD, LU, SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jim Singer (Current Arrays,TRBM), John Evans (Current Arrays), Lisa McAuliffe (Navigation), Allan Quintal (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:
Survey Schedule
The R/V *Tuna* departed SCMI at 14:12 to recover four ARESS Current Arrays from Cell LD and the TRBM from its location SE of Cells LU and SU. The first array recovered was LD1_U75. As it was brought onboard, the buoy line became fouled with the rudder and the starboard prop. Once the array was secure on deck, the line was untangled. The vessel then moved to location LD1_D75, where a second ARESS array was recovered. The third array was recovered from site LD1_D150, and the R/V *Tuna* returned to SCMI. The three recovered arrays were unloaded and Allan Quintal joined the crew to assist in the TRBM recovery. The vessel returned to Cell LD, where the LD1_D250 array was retrieved. The vessel then moved SE to the TRBM location. J. Singer sent the release command, but the instrument did not surface. After repeated attempts to activate the acoustic release, J. Singer and J. Evans decided to tow for the drop weight line. The line was caught properly on the first attempt and the instrument recovered. As the TRBM was brought to the surface, it was in the upside down position. The release triggers had activated at the first signal, but had not sent the instrument to the surface, indicating that the instrument may have been upside down for an indeterminate length of time during this deployment. Following the TRBM recovery, the vessel returned to SCMI, arriving at 20:15.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RECOVERY
  Please refer to the August 3rd and August 14th Cruise Reports for descriptions of the instruments recovered.

Problems Encountered
The buoy line for the first array recovered wrapped around the rudder and the starboard prop. Also, the TRBM appears to have been resting upside down on the bottom at the time of recovery. It is unknown whether or not it rested in that orientation for the duration of its deployment.

Custody of Samples:

Jim Singer had custody of the data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08162000_TN

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 17, 2000**
Survey: **Trawl Resistant Bottom Mount (TRBM) 30-day Placement**
Cells: **LU, SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Jim Singer (Leader), John Evans (Deck Hand), and Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate, and Deck Hand

Survey Operations:
Survey Schedule
The TRBM crew departed the Southern California Marine Institute (SCMI) at 14:13 to place the TRBM east of Cells LU and SU at 1968333.23E, 522647.36N. After several in-water tests of the release trigger, the TRBM was in place on the bottom at approximately 15:40. The sensor will be in place for approximately 30 days. Survey operations were conducted between 15:00 and 15:47. Following TRBM placement, the vessel returned to SCMI, arriving at 16:38.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Trawl Resistant Bottom Mount (TRBM)
  1 Acoustic Doppler Current Profiler
  1 Acoustic Release

Problems Encountered

None

Custody of Samples:

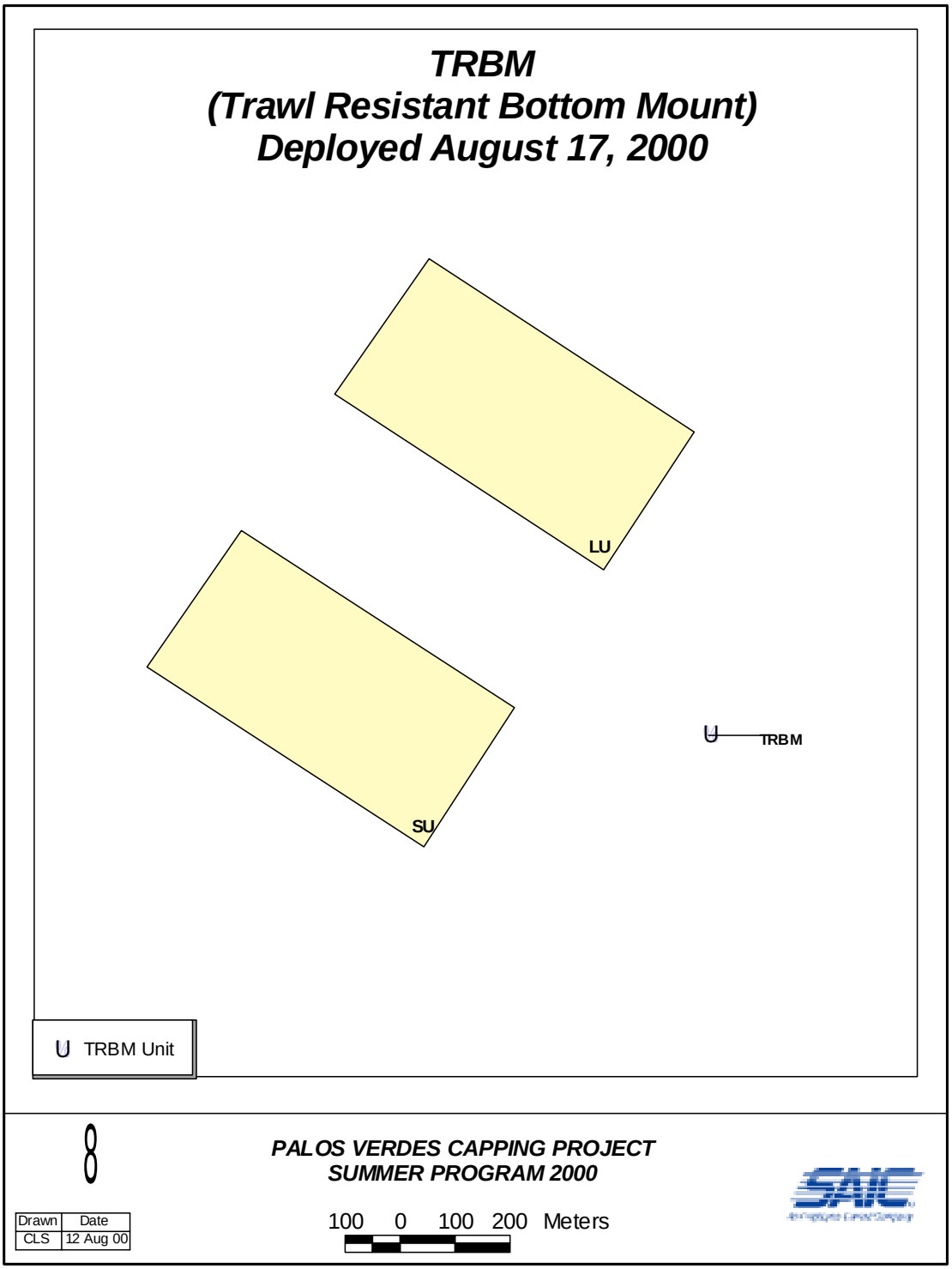
None

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0817_TRBM.tgt
Points_08172000_sw.csv


TRBM
(Trawl Resistant Bottom Mount)
Deployed August 17, 2000
LU
SU
TRBM
TRBM Unit
PALOS VERDES CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
12 Aug 00
100 0 100 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 24, 2000**
Survey: **Trawl Resistant Bottom Mount (TRBM) 30-day Recovery**
Cells: **LU, SU**
Survey Vessel: **R/V SEAWATCH**
(All Times UTC)

Survey Team:
SAIC: Jim Singer (Leader), John Evans (Deck Hand), and Craig Boyd (Deck Forman)
SCMI: Ken Kivett (Captain), David (Mate)

Survey Operations:
Survey Schedule
The TRBM crew departed the Southern California Marine Institute (SCMI) at 14:00 to recover the TRBM from the position east of, and midway between Cells LU and SU. Upon arrival at the deployed position, an acoustic transmitter was deployed to determine the precise location and position of the TRBM. The command release function was employed to separate the flotation element from the mooring element and allow the ADCP to return to the surface. Several release attempts were made without successfully recovering the flotation element. A grapnel was then rigged and the entire TRBM package was recovered using it's ground tackle, which is a soft line stretched out between the main TRBM mooring and a secondary weight element. Recovery of the TRBM was completed at 16:19 with the entire TRBM on deck.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Trawl Resistant Bottom Mount (TRBM)
  1 Acoustic Doppler Current Profiler (ADCP)
  1 Acoustic Release

Problems Encountered
The TRBM appears to have been resting upside down on the bottom at the time of recovery. It is unknown whether or not it rested in that orientation for the duration of its deployment.

Custody of Samples:

Jim Singer had custody of the TRBM data upon completion of the recovery cruise.

Custody of Survey Data:

None

Navigation Data Files:

None

CELL LU
TOWED ADCP CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 2, 2000**
Survey: **ADCP Tow Initial Placement (6Bii)**
Cell: **LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Rebecca DeKeyzer (Navigation), John Nakayama (crew)
COE: Mike Tubman (ADCP)
Vessel: Josh (Captain), Bob Greeno (Mate)

Survey Operations:
Survey Schedule
The ADCP crew departed the Southern California Marine Institute (SCMI) at 14:32 to conduct ADCP operations in cell LU. Survey operations were conducted between 15:35 and 21:32. A total of 22 lines[1] and one ~15 minute vertical current profiling site were surveyed. A 30 m drogue and a 15 m drogue were also deployed into the center of the placement surface plume from this vessel. Upon completion of survey operations the vessel returned to SCMI at 22:21.[2]

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RDInstruments Broad Band Acoustic Doppler Current Profiler (ADCP)

Problems Encountered
Navigation logged in local time. Navigation data may be incomplete as logging is automatically disabled at the end of a line. Tracklines should therefore be made from the ADCP data string, which will have navigation at all times that ADCP data were collected.

Custody of Samples:

Mike Tubman had custody of ADCP data upon completion of the cruise.

Custody of Survey Data:

All navigation was transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0802.tgt, RAW0802.log
Lines_08022000_TN.csv

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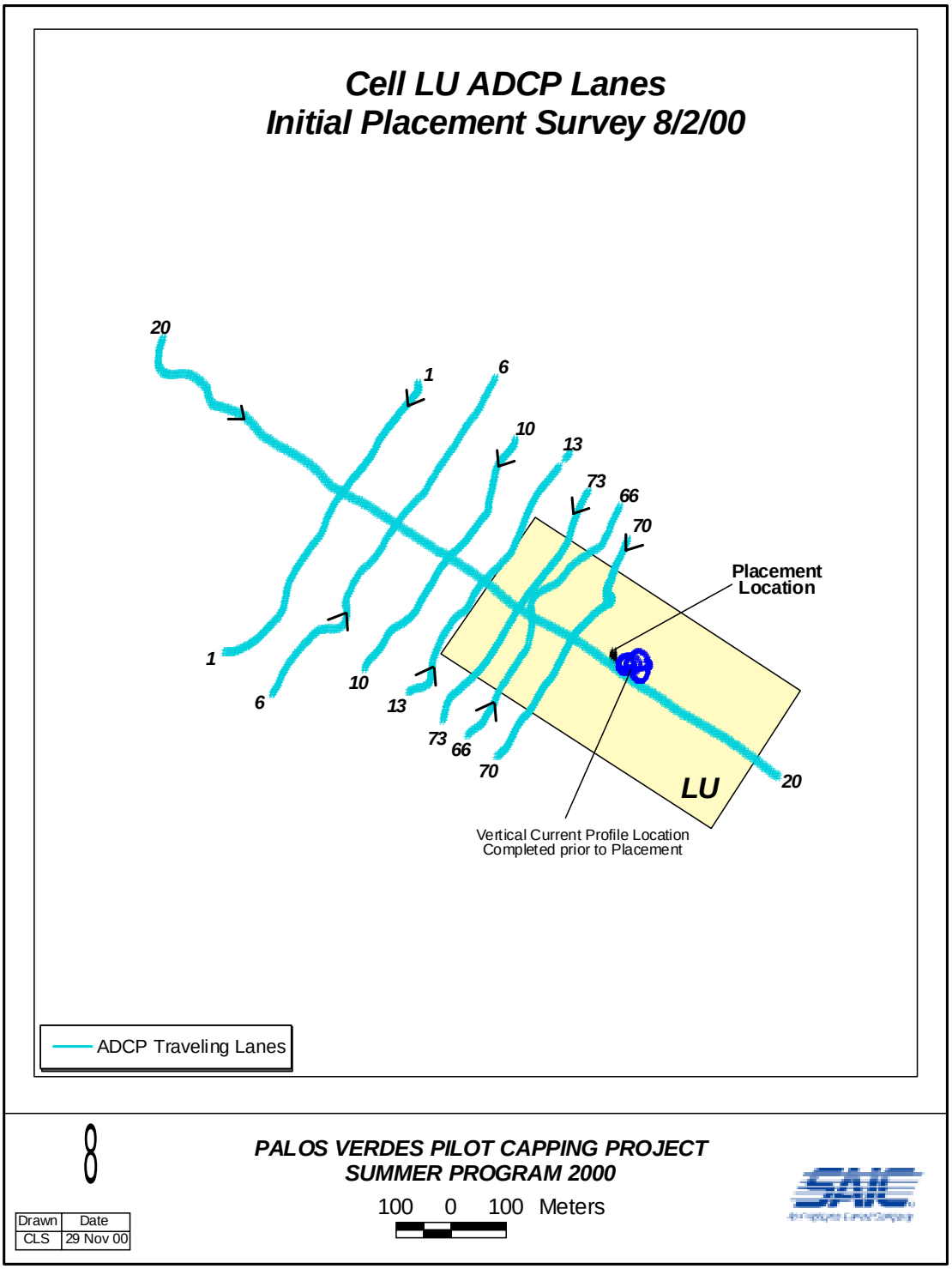
[1] Mike Tubman processed eight of the 22 lines in the days following the survey. These eight processed lines are shown on the following graphic.

[2] The numbering on the following graphic is a HypackMAX Artifact. When the ADCP survey was planned, the program automatically numbered each line incrementally from left to right. Thus, Line #1 was one of the last lines surveyed, whereas Line #70, near the centerline of the cell, was among the first.


Cell LU ADCP Lanes
Initial Placement Survey 8/2/00
20
1
6
10
13
73
66
70
Placement Location
LU
Vertical Current Profile Location Completed prior to Placement
ADCP Traveling Lanes
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 Meters
Drawn
Date
CLS
29 Nov 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 13, 2000**
Survey: **ADCP, Placements 4 & 5 (6Cii)**
Cell: **LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Rebecca DeKeyzer (Navigation)
COE: Mike Tubman (ADCP)
Vessel: Captain, Mate

Survey Operations:
Survey Schedule
The ADCP crew departed the Southern California Marine Institute (SCMI) at 13:28 to conduct ADCP operations for two consecutive placements in Cell LU. Survey operations for Placement 4 were conducted between 14:19 and 18:46, while survey operations for Placement 5 were conducted between 18:54 and 22:24. A total of 23 lines and one vertical current profile sites were surveyed for the 4th placement[3]. The 5th placement survey consisted of 13 lines and two vertical current profile sites[4]. The vessel returned to SCMI at 23:15.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RDInstruments Broad Band Acoustic Doppler Current Profiler (ADCP)

Problems Encountered
Multiple computer and software crashes caused several gaps in the navigation data. The most persistent problem seems to be Hypack Survey. Several times an error message came up while surveying that read: 'This program has performed an illegal operation and will shut down.' Then Hypack Survey would shut down and therefore create a gap in navigation logging.

Custody of Samples:

Mike Tubman had custody of the ADCP data upon completion of the cruise.

Custody of Survey Data:

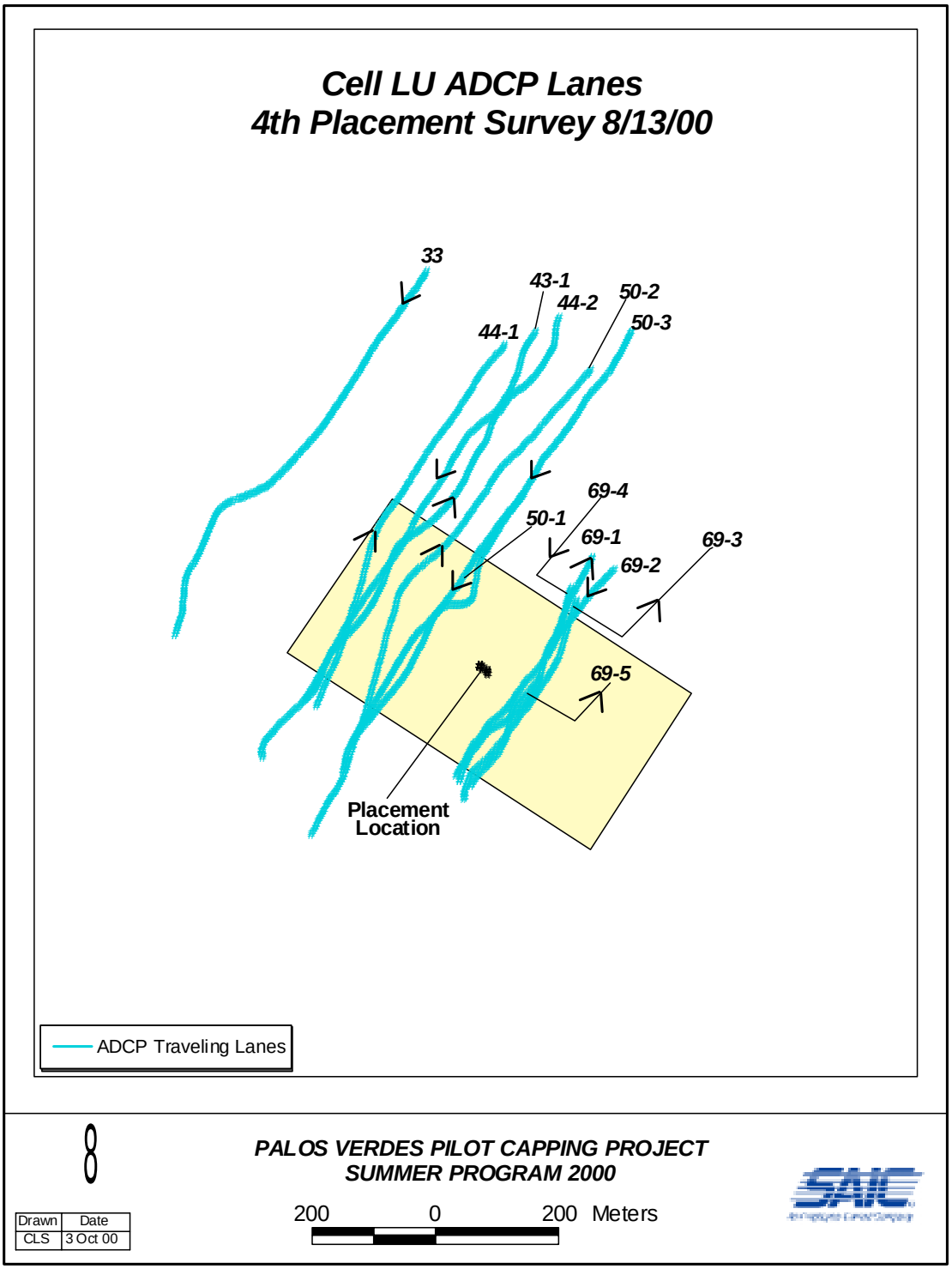
All navigation data were transferred to the custody of the Data Manager.

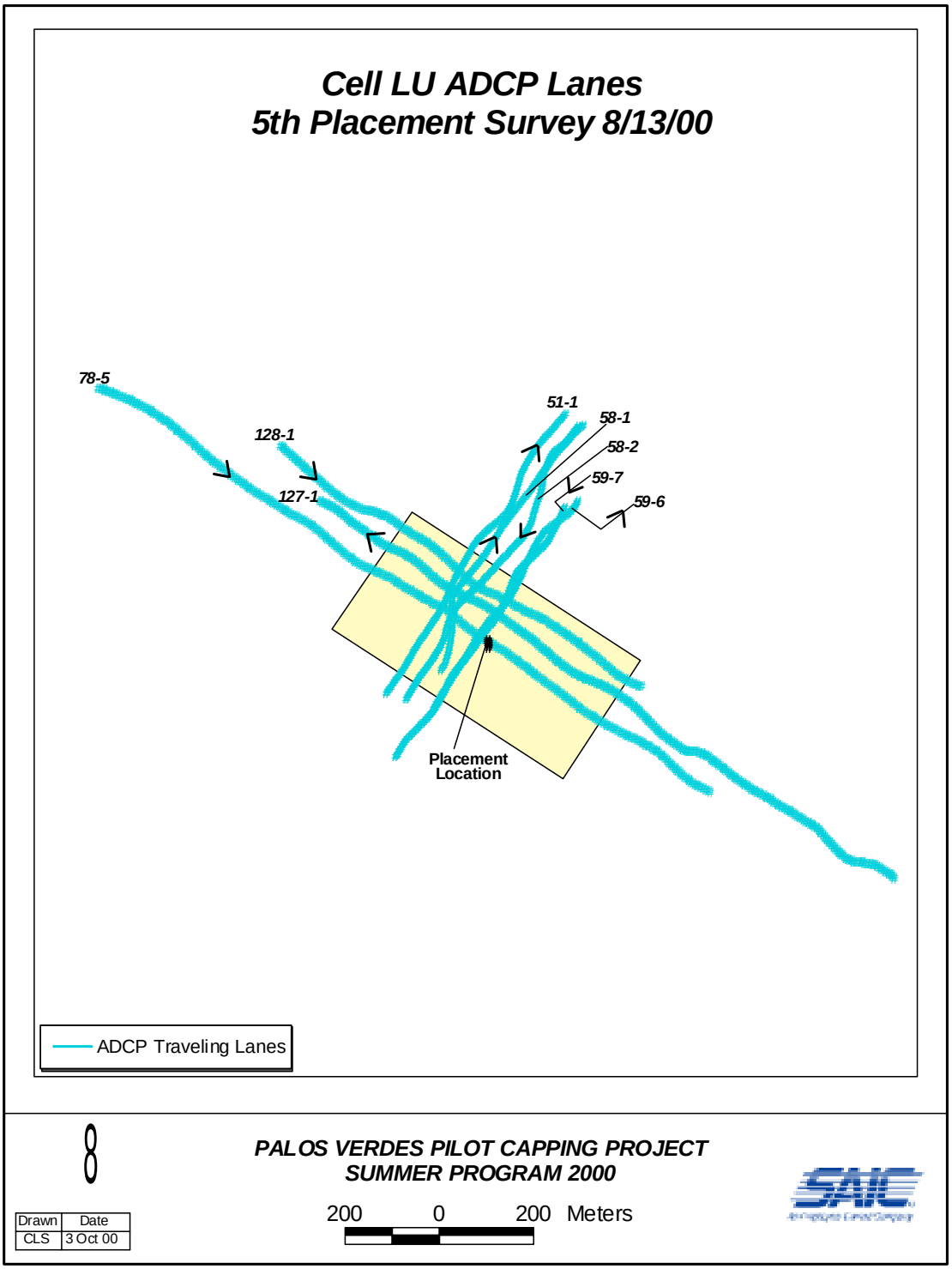
Navigation Data Files:
RAW0813.tgt, RAW0813.log
Lines_08132000_TN.csv

---

[3] Mike Tubman processed 12 of the 23 lines in the days following the survey. These 12 processed lines are shown on the following graphic.

[4] Mike Tubman processed eight of the 13 lines in the days following the survey. These eight processed lines are shown on the following graphic.


Cell LU ADCP Lanes
4th Placement Survey 8/13/00
33
43-1
44-2
50-2
50-3
44-1
69-4
50-1
69-1
69-3
69-2
69-5
Placement Location
ADCP Traveling Lanes
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
3 Oct 00
200
0
200
Meters


Cell LU ADCP Lanes
5th Placement Survey 8/13/00
78-5
128-1
127-1
51-1
58-1
58-2
59-7
59-6
Placement Location
ADCP Traveling Lanes
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
CLS
3 Oct 00

CELL LU
UNDERWATER VIDEO CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 2, 2000**
Survey: **Video Initial Placement (2i)**
Cell: **LU**
Survey Vessel: **R/V *Bottom Scratcher***
(All Times UTC)

Survey Team:
SAIC: Allan Quintal (Video, Navigation), Vicki Frank (Crew), John Evans (Crew), Greg Tufts (Crew)
SCMI Vessel: Greg Elliot (Captain), Gerry Smith (Mate)

Survey Operations:
Survey Schedule
The video crew departed the Southern California Marine Institute (SCMI) at 15:20 to conduct video operations in Cell LU. Survey operations were conducted between 18:52 and 20:31. A total of 5 deployments were conducted. Four of these deployments were conducted at stationary locations spaced at 50, 200, 300 and 400-meter intervals from the disposal location (center of Cell LU). The remaining deployment was conducted while drifting. The maximum depths of the video camera deployment for the stationary locations were 150, 160, 174 and 177 feet, respectively. The depth of the camera for the drift varied due to changes in seafloor topography. The depth at the beginning of the drift was approximately 200 feet.

Emergency evasive action was taken to avoid collision with the dredge at the 50-meter location. The decision to move away from the dredge should have been made by the *R/V Bottom Scratcher* earlier than it was to avoid this situation. Upon survey completion the vessel returned to SCMI at 21:30.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Outland CON3000 Video camera Console
  Outland UWC-160 Underwater Camera

Problems Encountered

Data quality may have been adversely affected by maneuvering immediately prior to placement to avoid vessel collision.

Custody of Samples:

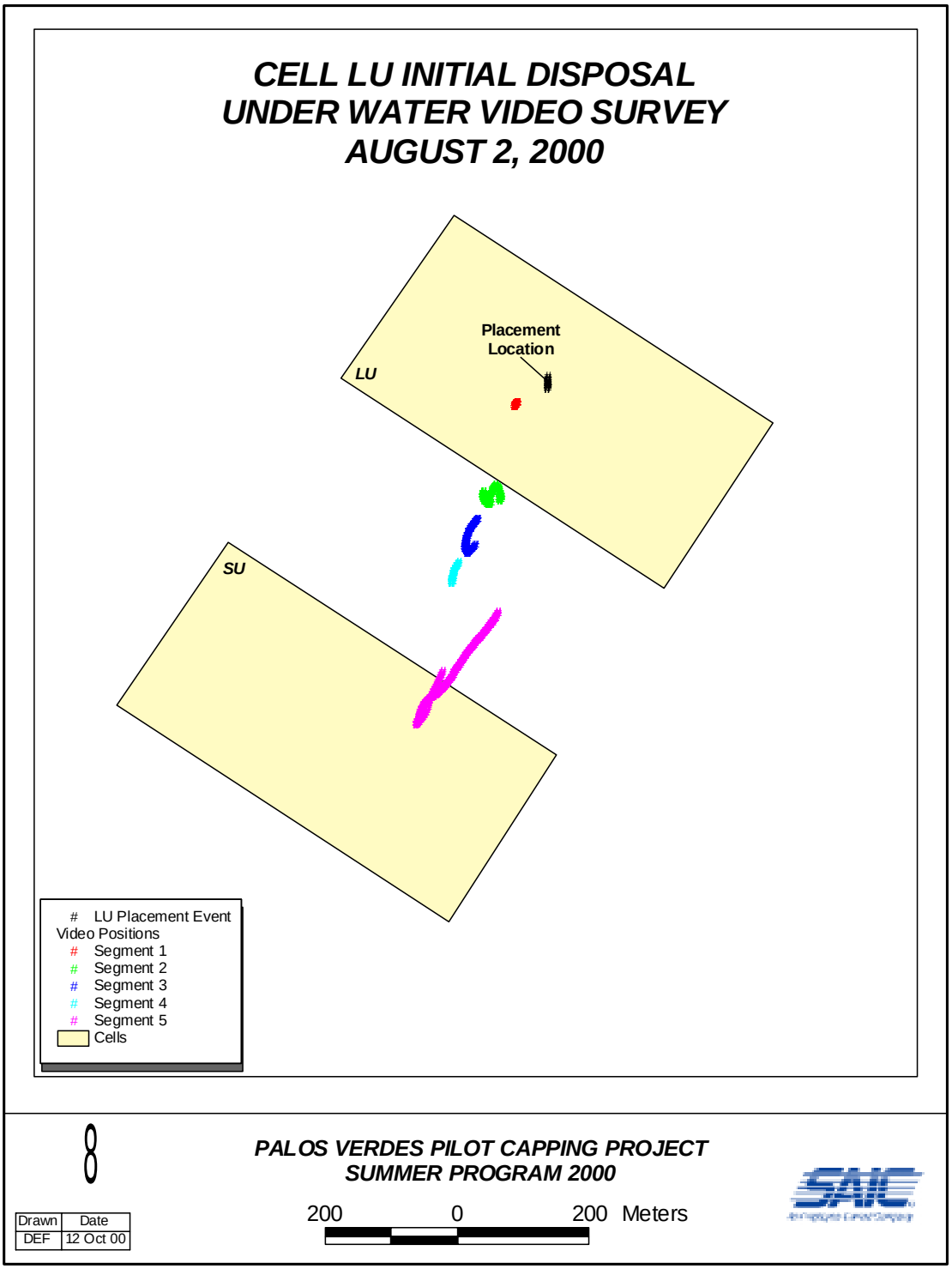
Allan Quintal had custody of video data upon completion of the cruise.

Custody of Survey Data:

All navigation data was transferred to the custody of the Data Manager.

Navigation Data Files:

Pvtape#1, PV_Drop.txt
Lines_08022000_BS.csv


CELL LU INITIAL DISPOSAL
UNDER WATER VIDEO SURVEY
AUGUST 2, 2000
Placement Location
LU
SU
LU Placement Event
Video Positions
Segment 1
Segment 2
Segment 3
Segment 4
Segment 5
Cells
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
DEF
12 Oct 00
200
0
200
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 22, 2000**
Survey: **Video, LU Placement #8/#9 (2iii[5]), LD Interim (Flex)**
Cells: **LU, LD**
Survey Vessel: **R/V *Sea World***
(All Times UTC)

Survey Team:
SAIC: Allan Quintal (Leader), Pam Walter (Deck Operations), and Rebecca DeKeyzer (Navigation).
Vessel: Willie McCarthy (Captain), Dennis (Mate)

Survey Operations:
Survey Schedule
The Video crew departed the Southern California Marine Institute (SCMI) at 14:09 to conduct video survey operations in Cell LU and Cell LD. They were scheduled to monitor the plume of Placements 8 and 9 in Cell LU, collecting video data from the beginning of the disposal until the plume was no longer visible. The vessel arrived on site at 15:21 and waited until the dredge arrived at approximately 16:48. The first placement occurred at approximately 16:54. Eight down casts and one drift line were taken through the first plume. The vessel then moved to Cell LD to run one drift line across the cell. The *Sea World* returned to Cell LU for the second disposal event at 19:15. The disposal occurred at 20:10 and 21 down casts were taken. Survey operations were conducted between 15:27 and 21:01. Following completion of survey activities, the vessel returned to SCMI at 21:52.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Outland CON3000 Video camera console
  Outland UWC-160 Underwater Camera

Problems Encountered

No problems were encountered.

Custody of Samples:

Allan Quintal has custody of the video data.

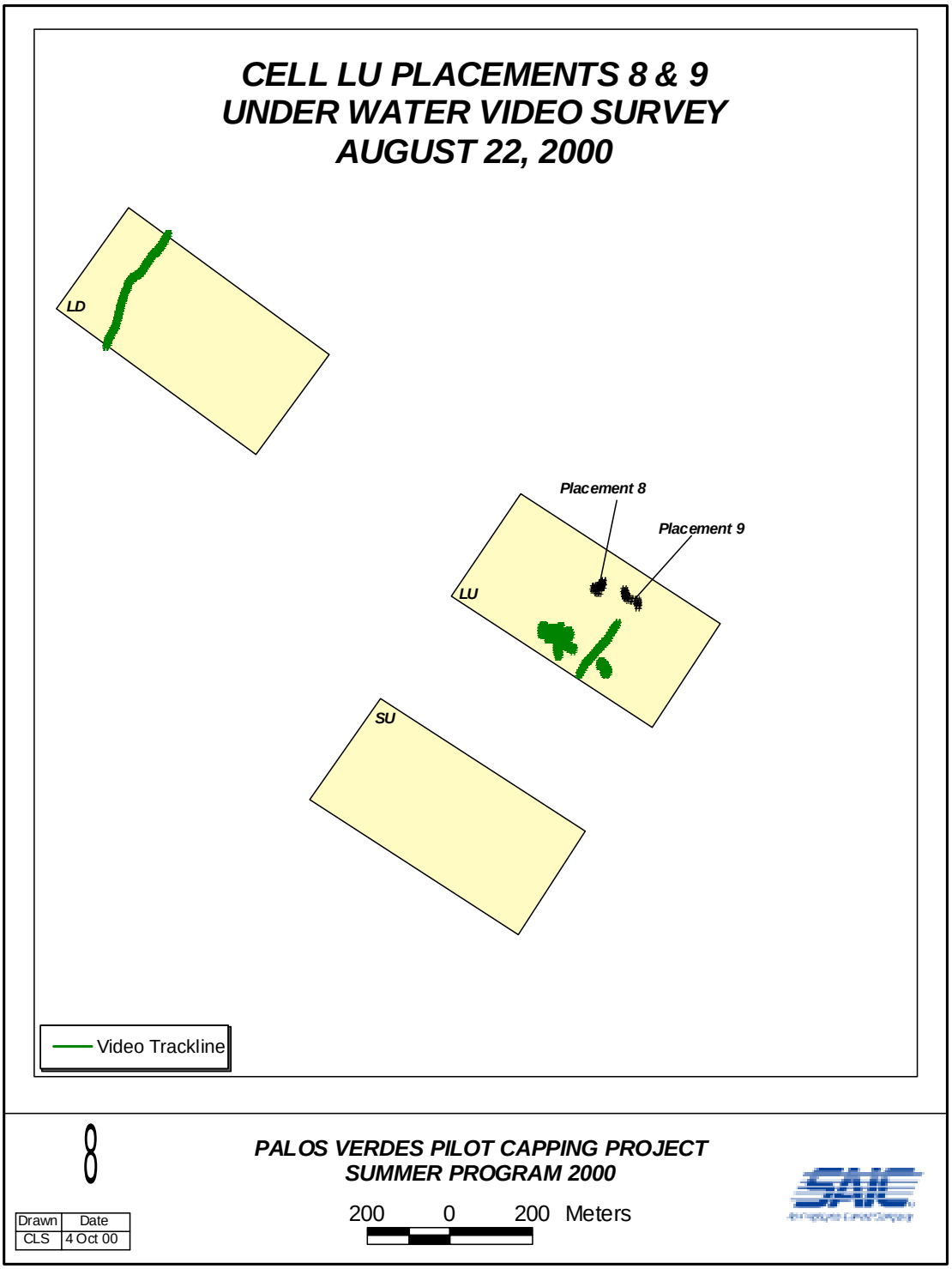
Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0822.tgt and RAW0822.log
Lines_08222000_SeaWorld.csv

[5] SAIC was obligated to provide video monitoring of the 4th and 5th placements in Cell LU, however no vessel was available at that time. Therefore, as soon as a vessel became available, an Interim video survey was run during the 8th and 9th placements.


CELL LU PLACEMENTS 8 & 9
UNDER WATER VIDEO SURVEY
AUGUST 22, 2000
LD
Placement 8
Placement 9
LU
SU
Video Trackline
8
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
4 Oct 00
200
0
200
Meters

CELL LU
ADISS MONITORING
OF
HOPPER DREDGE OPERATIONS

Survey Dates: **August 2, 2000 – September 15, 2000**
Survey: **ADISS Hopper Dredge Position Tracking**
Cell: **LU**
Survey Vessel: **Dredge Sugar Island**
(All Times UTC)

Survey Team:
SAIC: Steve Pace, Mike Mueller, David Fischman, Marc Wakeman

Survey Operations:
Survey Schedule
The NATCO dredge Sugar Island was outfitted with an Automated Disposal Surveillance System (ADISS) box prior to the commencement of any placement operations. This box recorded vessel position and draft for each placement throughout the Pilot Capping project. The system defined the precise location of each placement by recording the changes in draft that occur as the dredge released the capping material. Position information was downloaded following the completion of each survey type, i.e., following the initial placement, after the first interim placements were complete, after the 2nd interim placements were complete, etc. The dates on which various placements were made in Cell LU are listed below.

Initial:	08/02/00
2 –5:	08/13/00
6 – 25:	08/22/00 – 08/25/00
26 – 45:	08/30/00 – 09/02/00
46 – 71:	09/10/00 – 09/15/00

Surveying Equipment
- Survey:

ADISS Box
Data Card (records raw position data)

DGPS & GPS Antennae

Toshiba Satellite computer
AdissPLAY® – Database program

Problems Encountered
None

Custody of Samples:

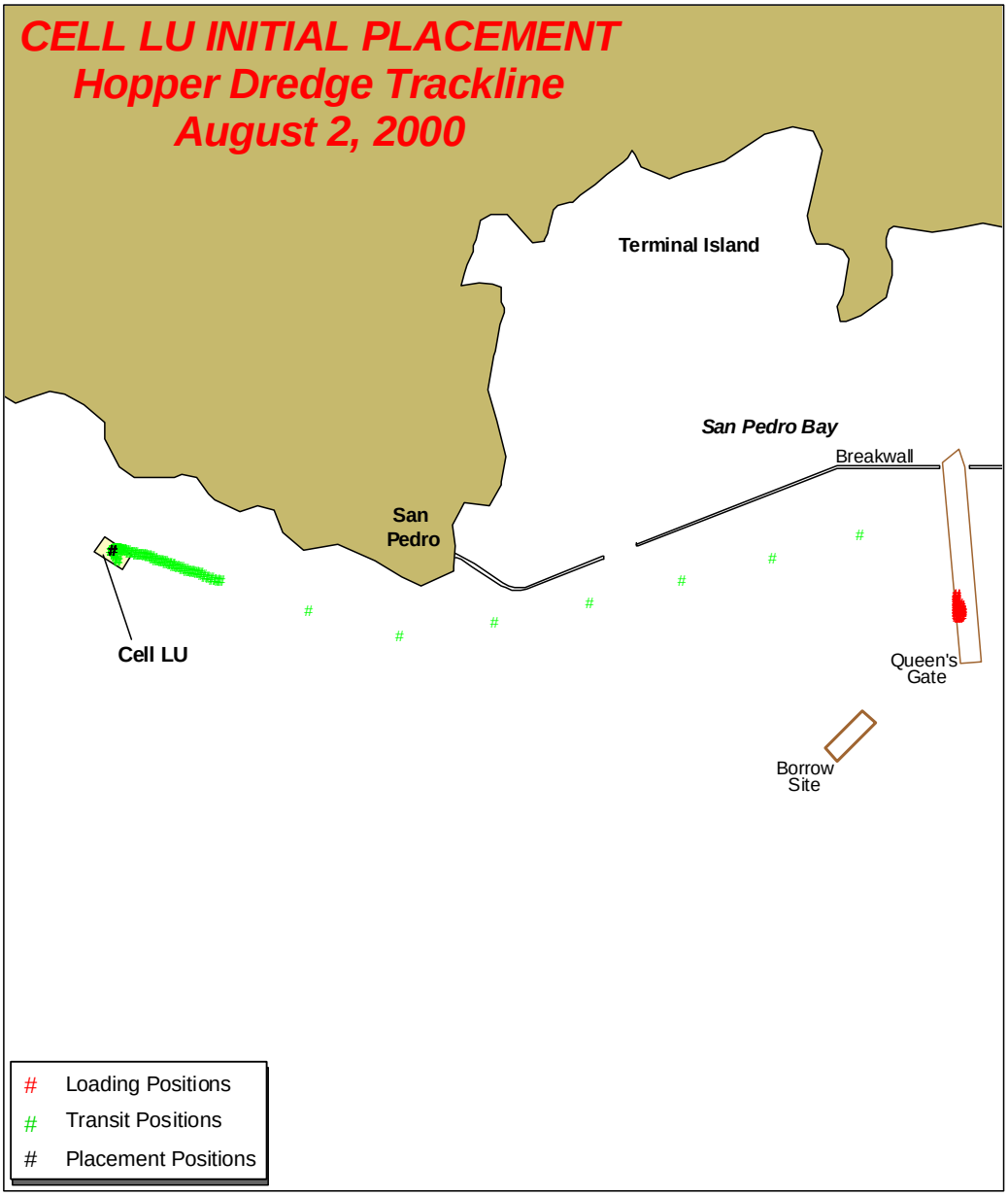
None

Custody of Survey Data:

David Fischman had custody of the ADISS data following each download and upon final completion of all survey operations on the Palos Verdes shelf.

Navigation Data Files:

None

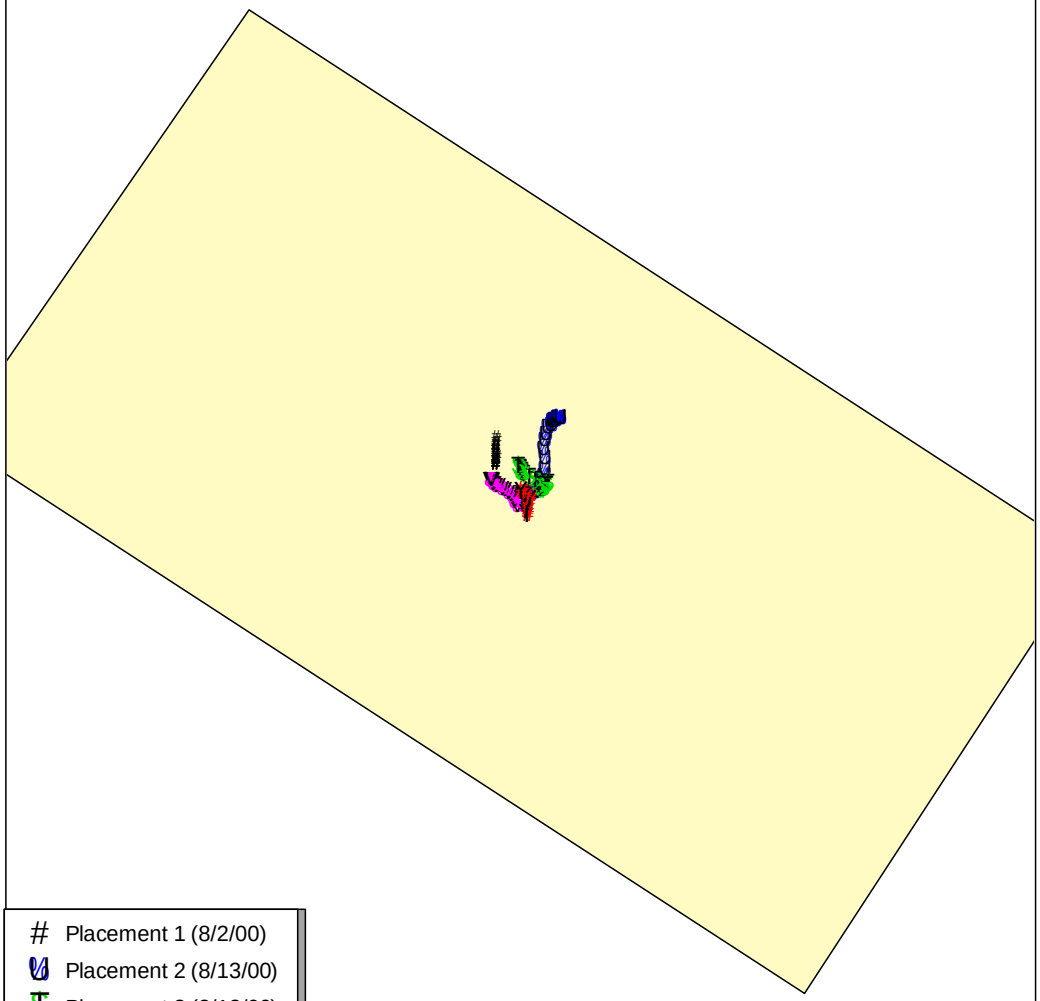


PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
CLS	19 Aug 00

2 0 2 4 Kilometers

CELL LU PLACEMENT POSITIONS



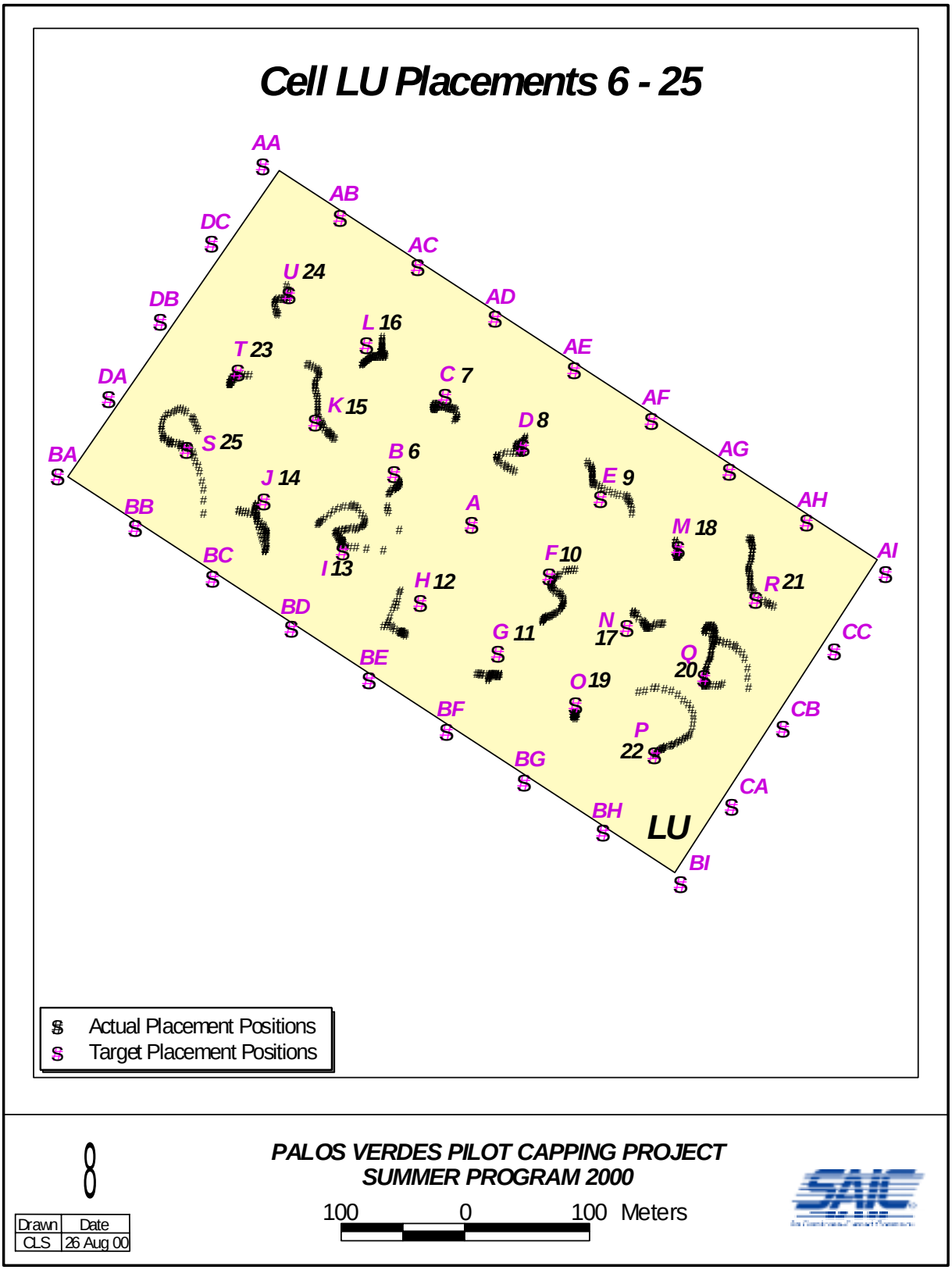
Placement 1 (8/2/00)
% Placement 2 (8/13/00)
$ Placement 3 (8/13/00)
& Placement 4 (8/13/00)
¥ Placement 5 (8/13/00)

8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
CLS	16 Aug 00

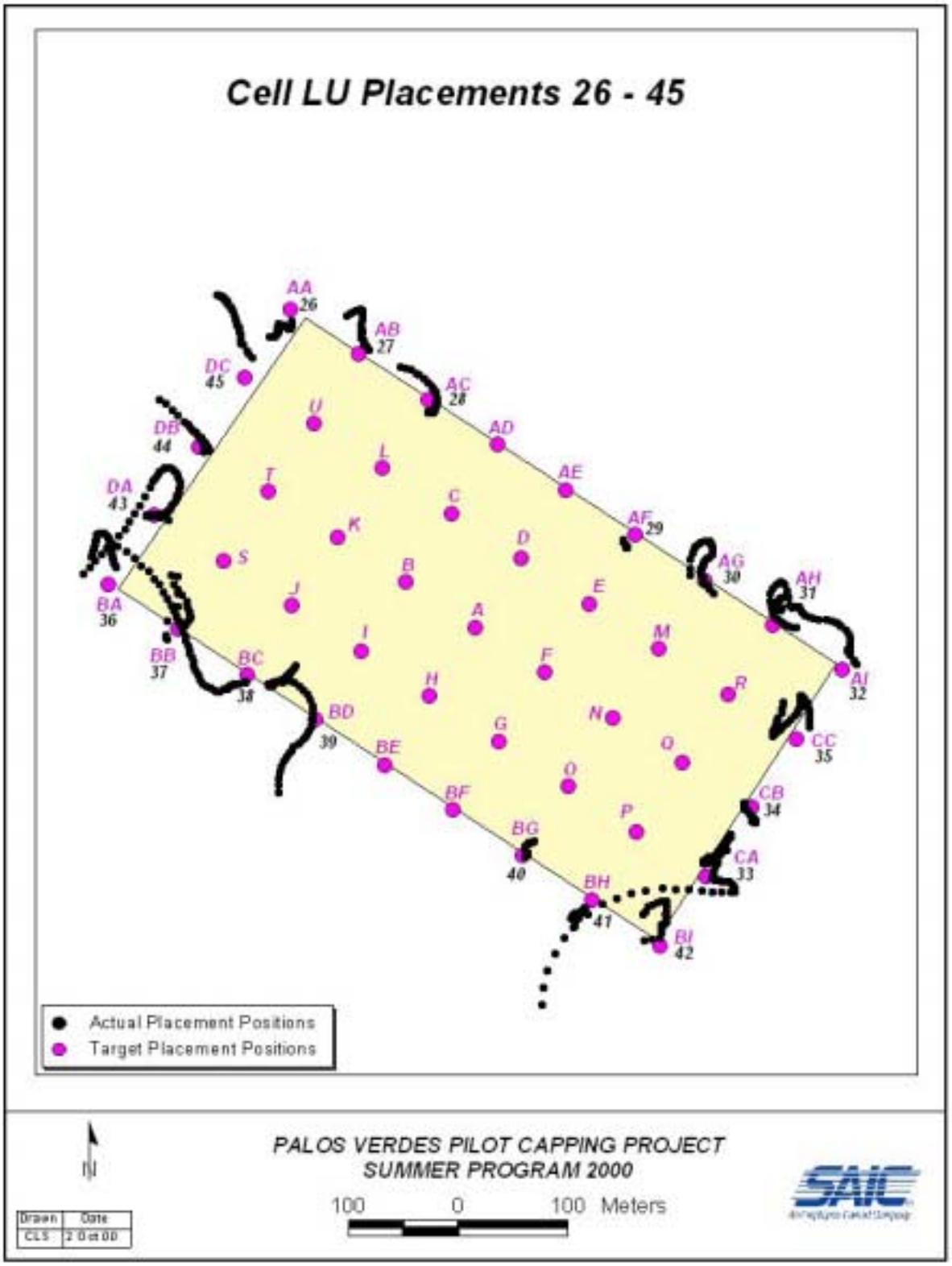
100 0 100 Meters



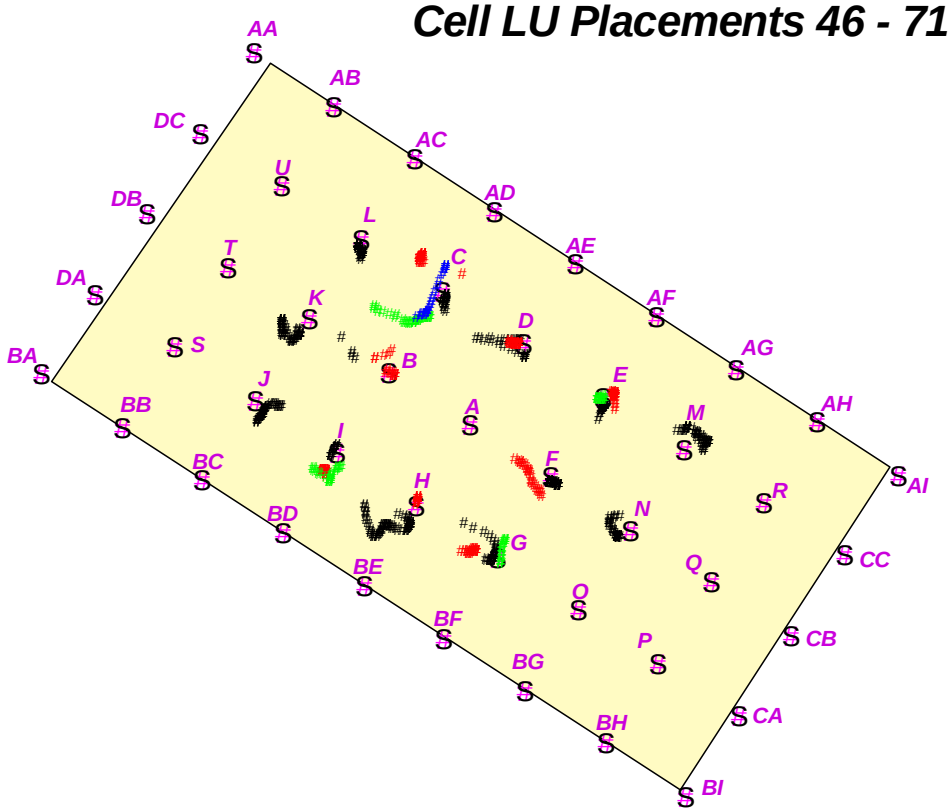
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

100 0 100 Meters

Drawn	Date
CLS	26 Aug 00


Cell LU Placements 26 - 45
AA 26
AB 27
AC 28
AD
AE
AF 29
AG 30
AH 31
AI 32
CC 35
CB 34
CA 33
BI 42
BH 41
BG 40
BF
BE
BD 39
BC 38
BB 37
BA 36
DA 43
DB 44
DC 45
U
L
T
C
K
D
S
B
J
E
A
I
M
F
H
R
N
G
Q
O
P
Actual Placement Positions
Target Placement Positions
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 Meters
Drawn
Date
CLS
2 Oct 00
SAIC

Cell LU Placements 46 - 71



Actual Placement Positions

#	1st placement at station
#	2nd placement at station
#	3rd placement at station
#	4th placement at station
S	Target Placement Positions

Placement Station Names and Corresponding Placement Numbers

B	C	D	E	F	G	H	I	J	K	L	M	N
46	47	48	49	50	51	52	53	54	55	56	58	57
63	59	65	60	68	61	70	62					
	64		67		69		71					
	66											

8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

100 0 100 Meters

Drawn	Date
CLS	2 Oct 00

APPENDIX B
CELL SU

Palos Verdes Cruise Report Reference Table
Appendix B – Cell SU

Cell	Data Type	Survey Sequence	Fredette Task No.	Survey Type	Survey Date	Cruise Report Page No.	Graphic(s) Page No.
SU	SPC/PVC	Baseline	8A	Primary[1]	07/28/00	B2	B3
SU	SPC/PVC	Baseline	8A	Primary	08/03/00	B4	B5
SU	SPC/PVC	Post Initial	8Biii	Primary	08/09/00	B6	B7
SU	SPC/PVC	Post Initial	8Biii	Primary	08/17/00	B8	B9
SU	SPC/PVC	Interim	8Ciiia	Primary	08/22/00	B10	B11
SU	SPC/PVC	Interim	8Ciiia	Primary	08/24/00	B12	B13
SU	SPC/PVC	Interim	8Ciiia	Primary	08/25/00	B14	B15
SU	SPC/PVC	Post Cap	8Di	Primary	08/31/00	B16	B17
SU	SPC/PVC	Post Cap	8Di	Primary	09/01/00	B18	B19
SU	SPC/PVC	Post Post Cap	Flex 2C[3]	Mod #1	09/13/00	B20	B21
SU	SPC/PVC	Post Cap		Supp.	02/24/01	B22	B24
SU	Cores	Post Initial	8Biv	Primary	08/10/00	B26	B27
SU	Cores	Interim	8Civ	Primary	08/22/00	B28	B29
SU	Cores	Post Cap	Flex 1[2]	Primary	08/29/00	B30	B31
SU	Cores	Post Cap	8Dii	Primary	09/07/00	B32	B33
SU	Cores	Post Cap		Supp.	02/27/01	B34	B35
SU	Cores	Post Cap		Supp.	03/01/01	B36	B35
SU	Sidescan	Post Initial	8Bv	Primary	08/10/00	B38	B39
SU	Sidescan	Interim	Flex 1	Primary	08/19/00	B40	B41
SU	Sidescan & Subbottom	Post Cap	8Div, 8Dii	Primary	09/06/00	B42	B43, B44
SU	Current Arrays	Initial Placement	8Bi	Primary	08/07/00	B46	B48
SU	Current Arrays	Initial Recovery	8Bi	Primary	08/09/00	B49	No Graphic
SU	CTD & Water Quality, Drogues	Initial Placement	8Bii	Primary	08/08/00	B51	B53

Palos Verdes Cruise Report Reference Table
Appendix B – Cell SU (continued)

SU	Towed ADCP	Initial Placement	8Bii	Primary	08/08/00	B55	B56
SU	Video	Initial Placement	2ii	Primary	08/08/00	B58	B59
SU	ADISS	Pilot Capping Monitoring	3	Primary	08/08/00 - 08/21/00	B61	B62-65

1. Primary surveys were contracted in SoW v. 4.1, Tasks 2, 3, 6-8, and 11.
2. Flex 1 surveys were contracted in SoW v. 4.1, Task 5.
3. Flex 2 surveys were contracted in Contract Modification 1, Tasks A, B, and C.

CELL SU
SPC/PVC CRUISES

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **July 28, 2000**
Survey: **SPC and PVC, SU Baseline (8A)**
Cell: **SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Melissa Swanson (SPC), Greg Tufts (PVC), Ellen Tobey (Deck Ops), Pam Walter (Deck Ops), Jason Infantino (Navigation), Lisa McAuliffe (Navigation)
SCMI: Ken Kivett (Captain), David Reynoso (Mate), Kathleen Snow (Deckhand)

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 14:10 to conduct SPC/PVC operations for surveys SU Baseline and SU Extra (added stations outside of original PWP). Survey operations were conducted between 15:22 and 21:55. A total of 25 sites (I01-I15 and O01-O10) for survey SU Baseline and 16 additional Baseline sites (O23-O35 and O40-O42) in Cell SU were sampled. Three replicates were conducted at each site. Upon completion of survey operations the vessel returned to SCMI at 22:42.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

Hypack crash at 20:40. All data recovered.

Custody of Samples:

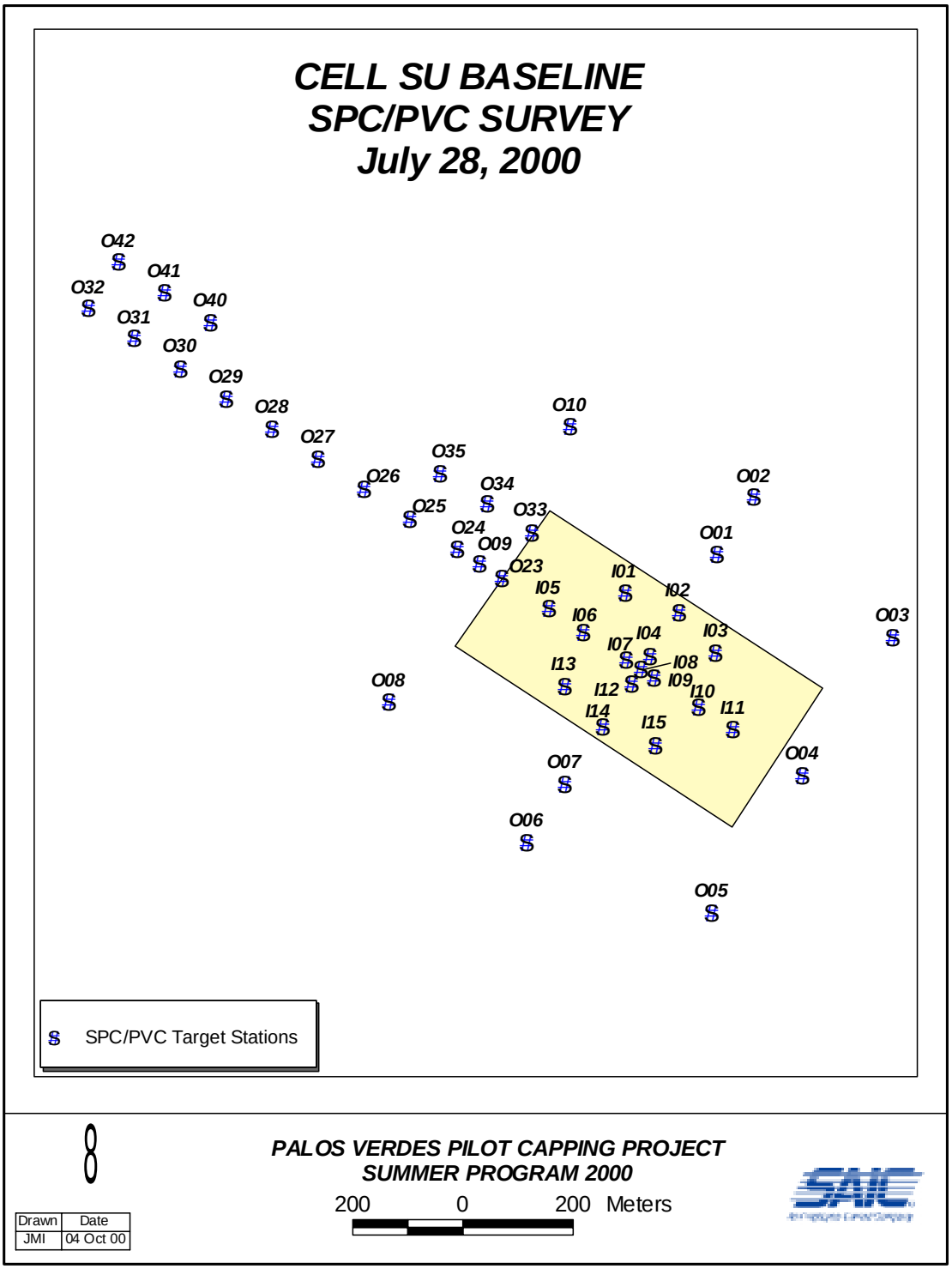
Melissa Swanson had custody of film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0728_A.tgt, RAW0728_B.tgt
Points_07282000_SW.csv


CELL SU BASELINE
SPC/PVC SURVEY
July 28, 2000
O42
O41
O32
O40
O31
O30
O29
O28
O27
O26
O35
O34
O25
O33
O24
O09
O23
O10
O02
O01
O03
O08
O07
O06
O05
O04
I01
I02
I03
I04
I05
I06
I07
I08
I09
I10
I11
I12
I13
I14
I15
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 3, 2000**
Survey: **SPC/PVC, LU Post Initial Placement (6Biii), SU Baseline Makeups (8A)**
Cell: **LU, SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Melissa Swanson (SPC), Greg Tufts (PVC), Vicki Frank (Deck Ops), Rebecca DeKeyzer (Navigation)
SCMI: Ken Kevitt (Captain), Unknown (Mate)

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 13:37 to conduct SPC/PVC operations for surveys LU Post Initial Placement. Two targets for the SU Baseline survey were also resurveyed. Survey operations were conducted between 14:36 and 21:43. Thirty-seven sites for the LU Post Initial Placement survey (I01-I15; O01-O22) and 15 additional sites (O23-33, O35, O37, O39 & O41) were sampled. All stations were sampled with a minimum of three replicates conducted at each site. A total of 57 sites had been planned in LU. Thirty-seven of these stations were required to be surveyed under this task. The additional 20 stations were "extra" stations to be surveyed if time and conditions permitted and were not mandatory. Only fifteen of these stations were sampled. The remaining five "extra" stations were not sampled due to time constraints. Two sites for SU Baseline (I09 & O07) were also re-sampled to acquire plan-view images that were not obtained during the July 28th baseline survey. Upon completion of the survey activities, the vessel returned to SCMI at 22:34.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

No problems were encountered.

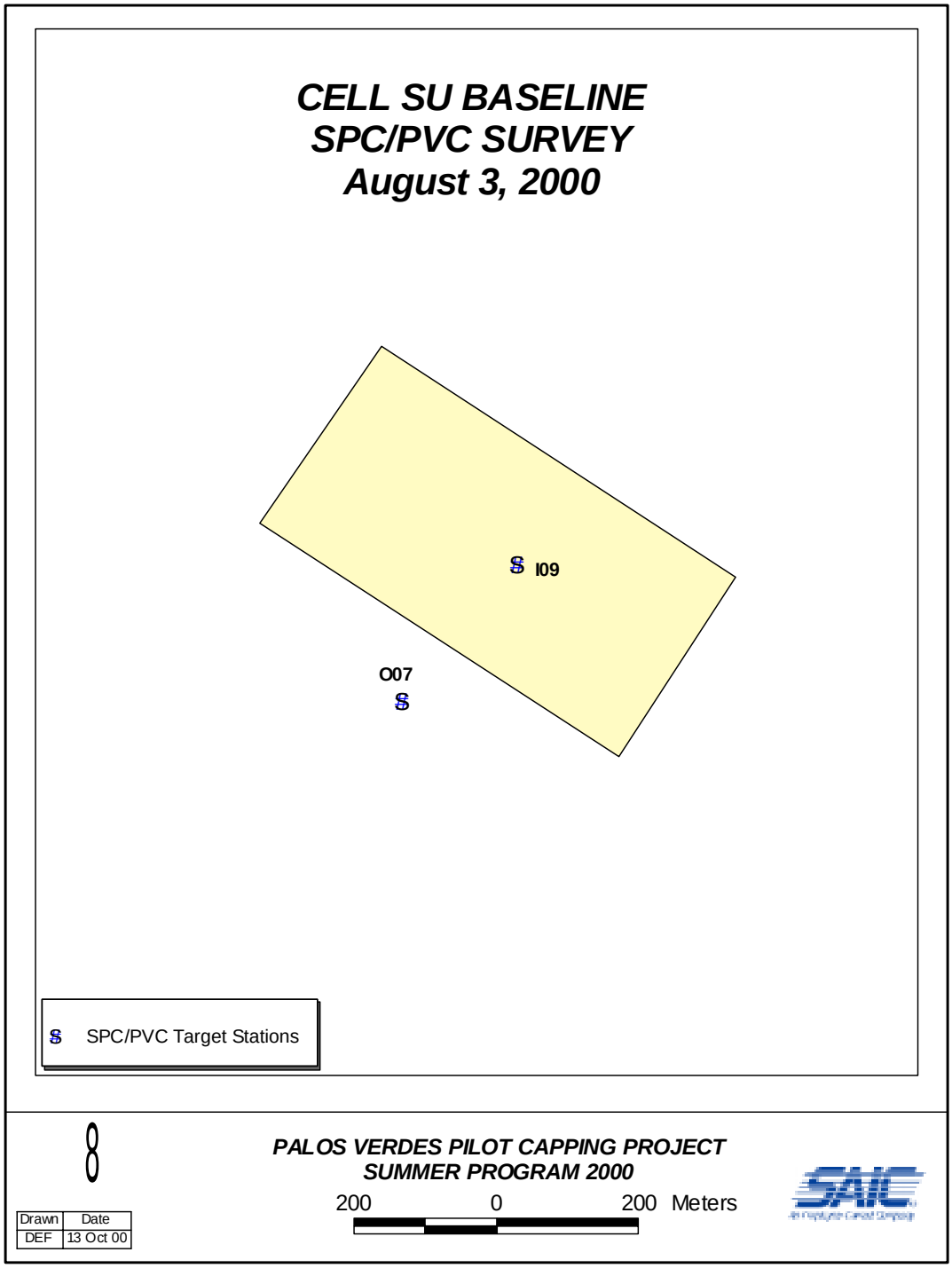
Custody of Samples:

Melissa Swanson had custody of film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files: RAW0803.tgt, Points_0803_SW.csv


CELL SU BASELINE
SPC/PVC SURVEY
August 3, 2000
I09
O07
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
DEF
13 Oct 00

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **August 9, 2000**
Survey: **SPC and PVC, SU Post Initial Placement (8Biii)**
LU Post Initial Placement Makeups (6Biii)
Cell: **SU, LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Melissa Swanson (SPC), Greg Tufts (PVC), Vicki Frank (Deck), Lisa McAuliffe (Navigation)
SCMI: Ken Kivett (Captain), Dave Reynoso (Mate), Justin Myer (Deck hand)

Survey Operations:

Survey Schedule

The SPC/PVC crew arrived at SCMI at 13:00, and departed dock at 13:18. Cell SU Post-Initial Placement survey was conducted until the R/V *Tuna* arrived at the cell to recover several current meters. The R/V *Sea Watch* then moved operations to Cell LU. Ten additional post-placement stations (I22-I29) were added to the LU Post Initial Placement survey that was conducted on August 3, 2000 and surveyed today. These stations were added to better delineate the cap material footprint of the single hopper placement and were based on the sediment profile image results of the August 3rd survey. Two other stations from the August 3rd survey (I20&I21) were also re-sampled today as they were originally collected in the wrong location. Following the completion of Cell LU additions, the R/V *Sea Watch* returned to Cell SU and completed the post-initial placement survey (O01-O13 ; O15-O19; O21-22), (I1-I15 and I20-I29) at 22:38. A minimum of three replicates were taken at each site in both cells. The vessel returned to dock at approximately 23:20 and was demobilized.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

The navigation computer locked up twice. There was no immediately obvious answer for this. Differential settings had to be corrected following the second crash. Also, Hypack did not write the navigation string data to the navigation file it created. However, the positions had been recorded in the electronic log, so the nav target file was recreated with little trouble.

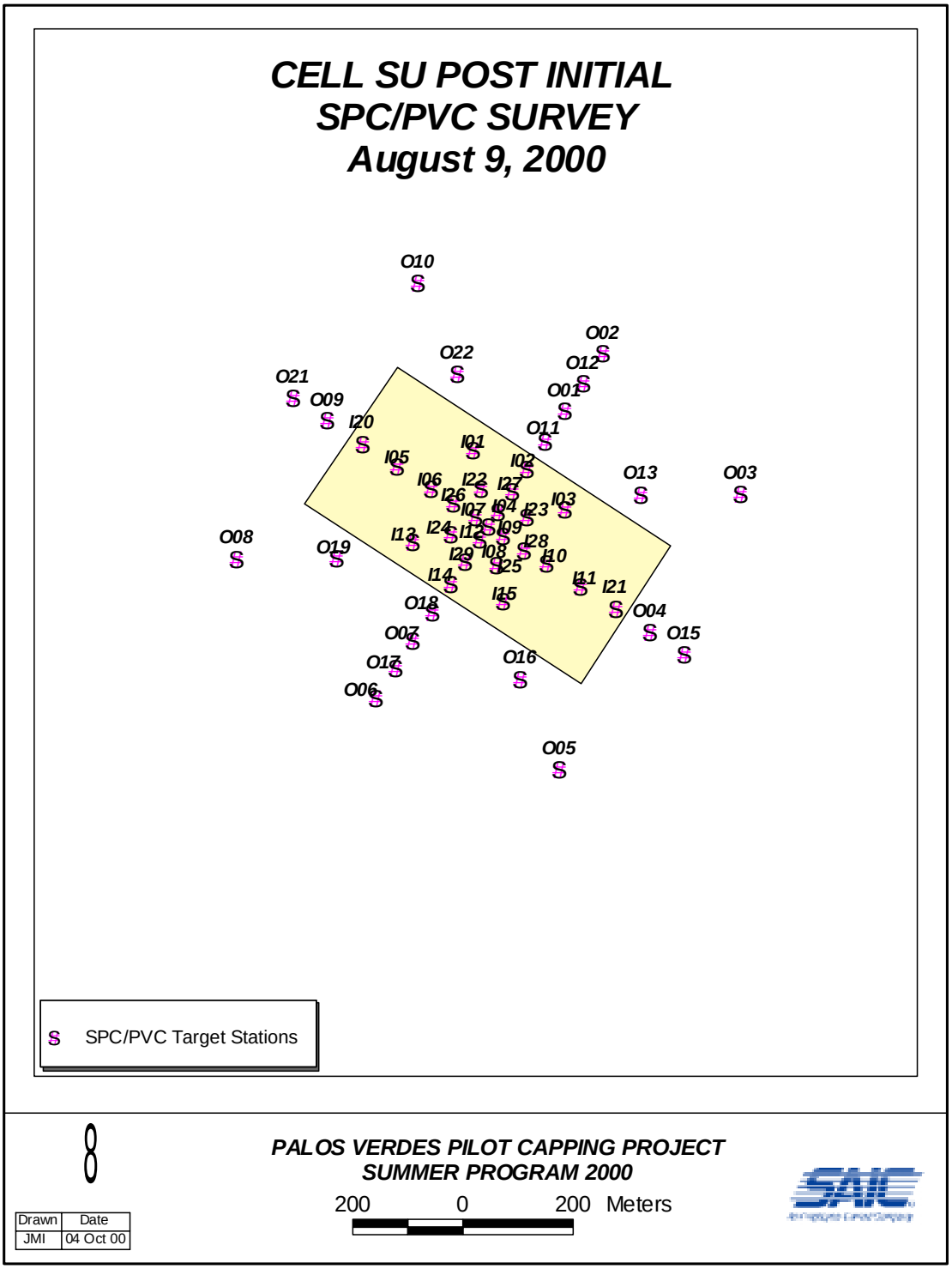
Custody of Samples:

Melissa Swanson and Greg Tufts had custody of the samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:
RAW0809.tgt
Points_08092000_SW.csv


CELL SU POST INITIAL
SPC/PVC SURVEY
August 9, 2000
O10
O02
O22
O12
O21
O01
O09
O11
I20
I01
I05
I02
O13
O03
I06
I22
I27
I26
I03
I07
I04
I23
I24
I12
I09
O08
I13
I28
O19
I29
I08
I10
I25
I14
I11
I21
I15
O18
O04
O07
O15
O17
O16
O06
O05
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **August 17, 2000**
Survey: **SPC and PVC, SU Post Initial (8Biii), LU Interim (6Ciiia)**
Cell: **SU, LU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation), Allan Quintal (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:

Survey Schedule

The survey crew arrived at the vessel at approximately 14:10 to spool a new 350-ft cable onto the vessel winch and perform routine maintenance on the cameras. The crew was scheduled to complete a re-survey of selected stations in Cell SU for the Post-Initial Placement survey. If there was still time, they were then to begin the Cell LU Interim Survey. The vessel departed the dock at 15:53 and arrived at Cell SU at 17:05. At the second repetition of the second station, the pinger did not go off. The camera was raised on deck and reset. The station was sampled successfully and the vessel moved to the deepest stations of the survey. However, there was not enough wire on the winch to reach the bottom. The vessel has a second winch, spooled with longer, thinner wire. The crew attached this wire to the camera frame, but neither the captain nor the survey leader were comfortable with the condition of the second wire. The decision was made to abort the two deepest stations until a reliable wire could be acquired. Cell SU Initial Placement survey make-ups were completed at approximately 21:10 (I02, I03, I09, I12, I14, O18, I25, I28, and I29). The vessel moved on to Cell LU and completed 13 of the 19 stations planned by 23:55 (I04, I06 – I15, I18, and I19). A minimum of three replicates were taken at each site in both cells. Following the cessation of survey activity, the R/V *Tuna* returned to SCMI, arriving at dock at 00:45.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

There was not enough cable on board to reach the two deepest stations (SUHO06, SUHO17) in Cell SU. They will have to be surveyed tomorrow.

Custody of Samples:

Greg Tufts and Jason Infantino had custody of samples upon completion of the cruise.

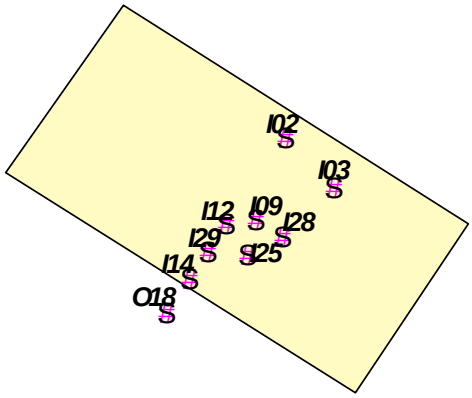
Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08172000_TN

CELL SU POST INITIAL SPC/PVC SURVEY August 17, 2000



SPC/PVC Target Stations

8

Drawn	Date
JMI	04 Oct 00

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

200 0 200 Meters

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **August 22, 2000**
Survey: **SPC and PVC, SU Interim (8Ciiia)**
Cell: **SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation), Chris Seidel (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:

Survey Schedule

The survey crew arrived at the vessel at approximately 13:15 and departed from SCMI at approximately13:38. The crew was scheduled to complete the Cell SU Interim Survey (19 sites) and the Cell LD Post-Initial Placement survey makeups (9 sites).

The vessel arrived at the Cell SU at 14:26. Twelve sites were completed with no trouble, but at the 13th (SUII11) and 14th (SUII10) stations, the pinger was not going off with any reliability. After the second repetition at Station SUII11, the camera was pulled on deck and the film removed. A new roll was installed and the site was resampled. The pinger was no more reliable the second time than it had been the first time. The vessel returned to Site SUII10 to resample it, but after two reps, the camera was pulled back on deck. The hydraulic piston that lowers the head into the substrate was broken. As it is not possible to fix it on board the vessel, the *Tuna* returned to dock at SCMI at 18:12. Thirteen SU Interim sites were sampled (II01, II03-II12, II16, and II17). A minimum of three replicates were taken at each site in both cells. The remainder of the SU Interim survey and the entirety of LD Post Initial Makeup stations will have to be completed at a later date.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

The pinger was somewhat unreliable. The hydraulic piston on the rear of the SPC broke. It may have hit the transom as it was reaching the surface, or it may have gotten a loop of wire slack wrapped around it at the bottom.

Custody of Samples:

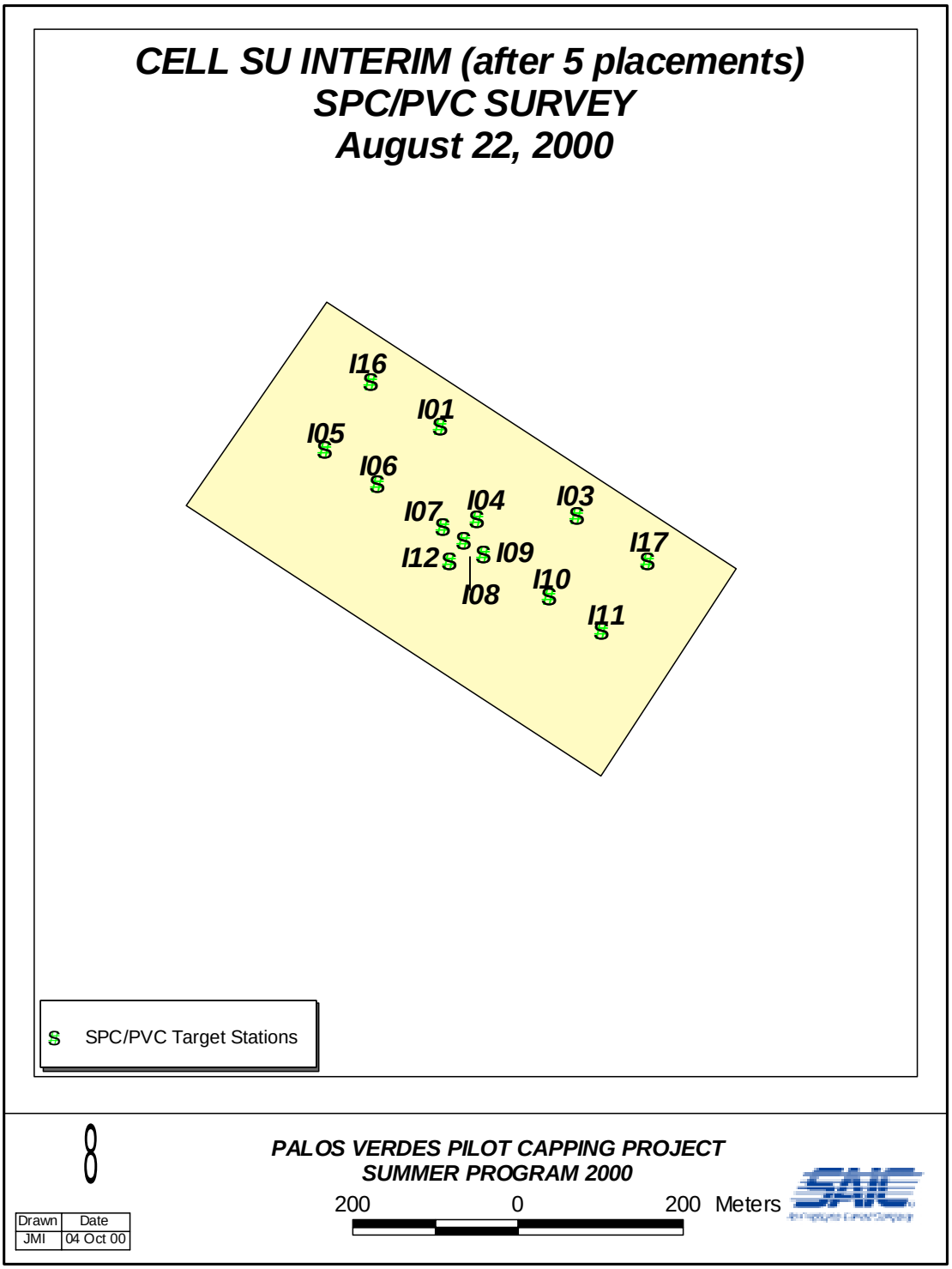
Greg Tufts and Jason Infantino had custody of the samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08222000_TN_SUI_LDH


CELL SU INTERIM (after 5 placements)
SPC/PVC SURVEY
August 22, 2000
I16
I01
I05
I06
I07
I04
I03
I17
I12
I09
I10
I08
I11
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 24, 2000**
Survey: **SPC and PVC, SU Interim (8Ciiia), LD Post Initial (7Biii)**
Cell: **SU, LD**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation), Rebecca DeKeyzer (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 13:30 and departed from SCMI approximately 13:48. The crew was scheduled to complete the Cell SU Interim Survey (6 sites) and the Cell LD Post-Initial Placement survey makeups (9 sites).

The vessel arrived at the Cell SU at 14:35. The six sites in Cell SU were completed by 15:45 with no difficulties and no extra repetitions necessary (II02, II13-II15, II18, and II19). The R/V *Tuna* then moved to Cell LD to complete the Post Initial survey (HI01, HI03, HI13, HO03, HO08, HO10, HO13, HO19, and HO22). These nine sites were completed in 1.5 hours. J. Infantino contacted Chris Seidel via cellphone and positions for seven additional LD Post Initial sites were relayed to the survey crew. These seven sites were outside the boundaries of the cell and are intended to aid in the footprint definition from the spreading placement (HO43-HO49). The extra survey was completed at 18:46 and the vessel returned to SCMI at 19:45.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
None.

Custody of Samples:

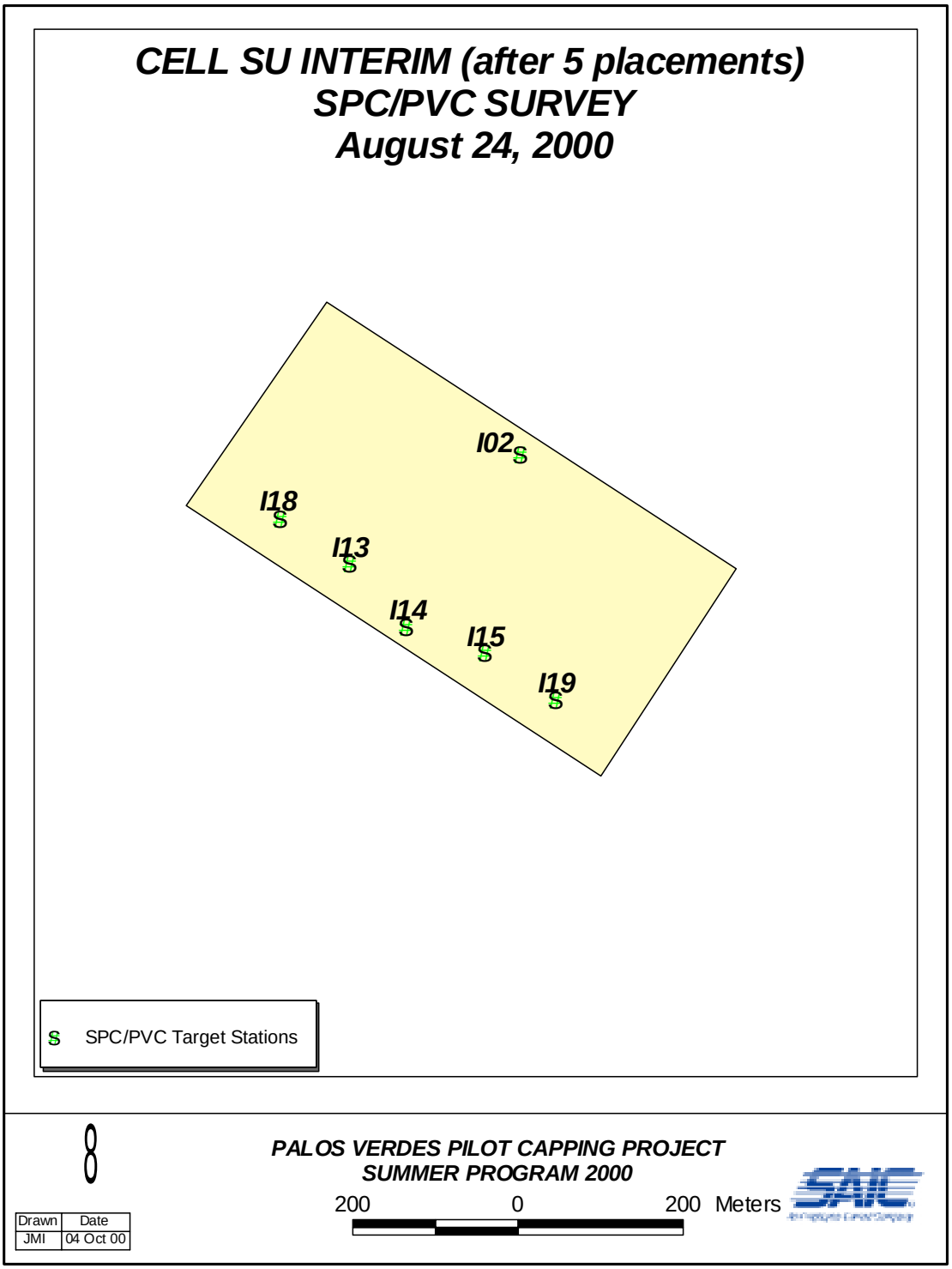
Greg Tufts and Jason Infantino had custody of the samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08242000_TN_SUI_LDH


CELL SU INTERIM (after 5 placements)
SPC/PVC SURVEY
August 24, 2000
I02
I18
I13
I14
I15
I19
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 25, 2000**
Survey: **SPC and PVC, LU Second Interim (6Ciiib), SU Interim Makeups (8Ciiia)**
Cell: **LU, SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Deck Ops), and Rebecca DeKeyzer (Navigation).
Vessel: Bob Greeno (Captain), Mate

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 13:51 to conduct the Second Interim SPC/PVC Survey in Cell LU and to re-survey two sites for the SU Interim Survey. Survey operations were conducted between 14:40 and 20:42. A total of 31 sites (I01 – I19, I30 – I41) were surveyed in Cell LU, while two stations (I13, I19) were surveyed in Cell SU. A minimum of three replicates were taken at each site in both cells. Following the completion of survey activities, the vessel returned to SCMI at 21:33.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

None

Custody of Samples:

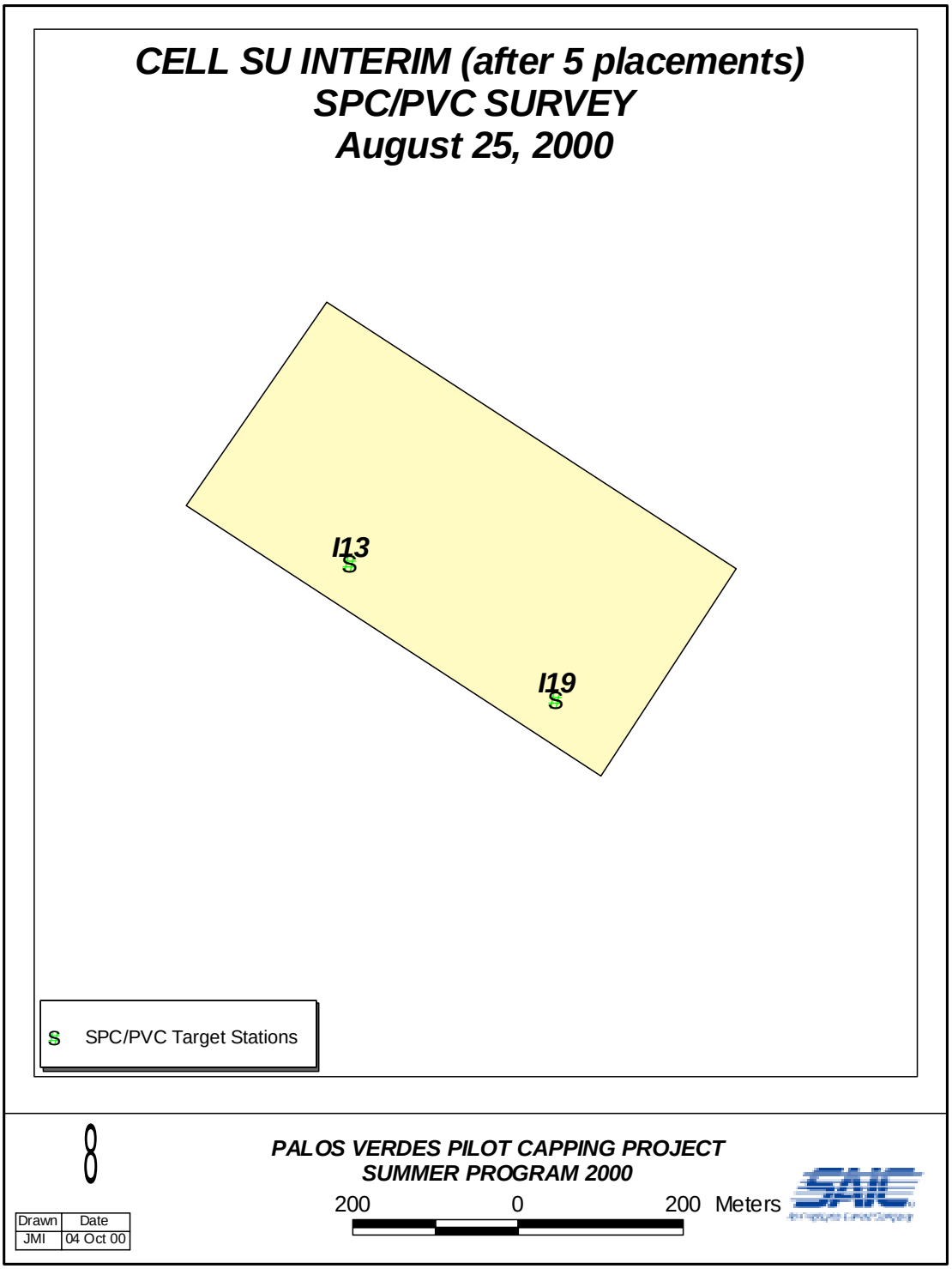
Jason Infantino had custody of the film upon survey completion.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Point_0825_LU.csv
Point_0825_LU.csv


CELL SU INTERIM (after 5 placements)
SPC/PVC SURVEY
August 25, 2000
I13
I19
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 31, 2000**
Survey: **SPC and PVC, SU Post Cap (8Di)**
Cell: **SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), and Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate, Deckhand (names unknown)

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 14:00 to conduct the Cell SU Post Cap SPC/PVC Survey. Survey operations were conducted between 14:53 and 20:39. A total of 37 sites (I01-I20, I42-I45, O05-O09, O15-O19, O21, O52, and O53) were surveyed out of 49 total sites. A minimum of three replicates were taken at each surveyed site. Following the 37th station, Greg Tufts and Jason Infantino noticed that the stainless steel hydraulic lines were bent and broken. As the parts could not be fixed at sea, the vessel returned to SCMI at 21:35. The remaining twelve sites will have to be completed at a later date.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
Upon bringing the SPC/PVC unit up to the surface for transit between sites, Greg Tufts and Jason Infantino noticed that the hydraulic brake lines (stainless steel) were bent and broken. Survey operations were aborted since new parts would need to be ordered.

Custody of Samples:

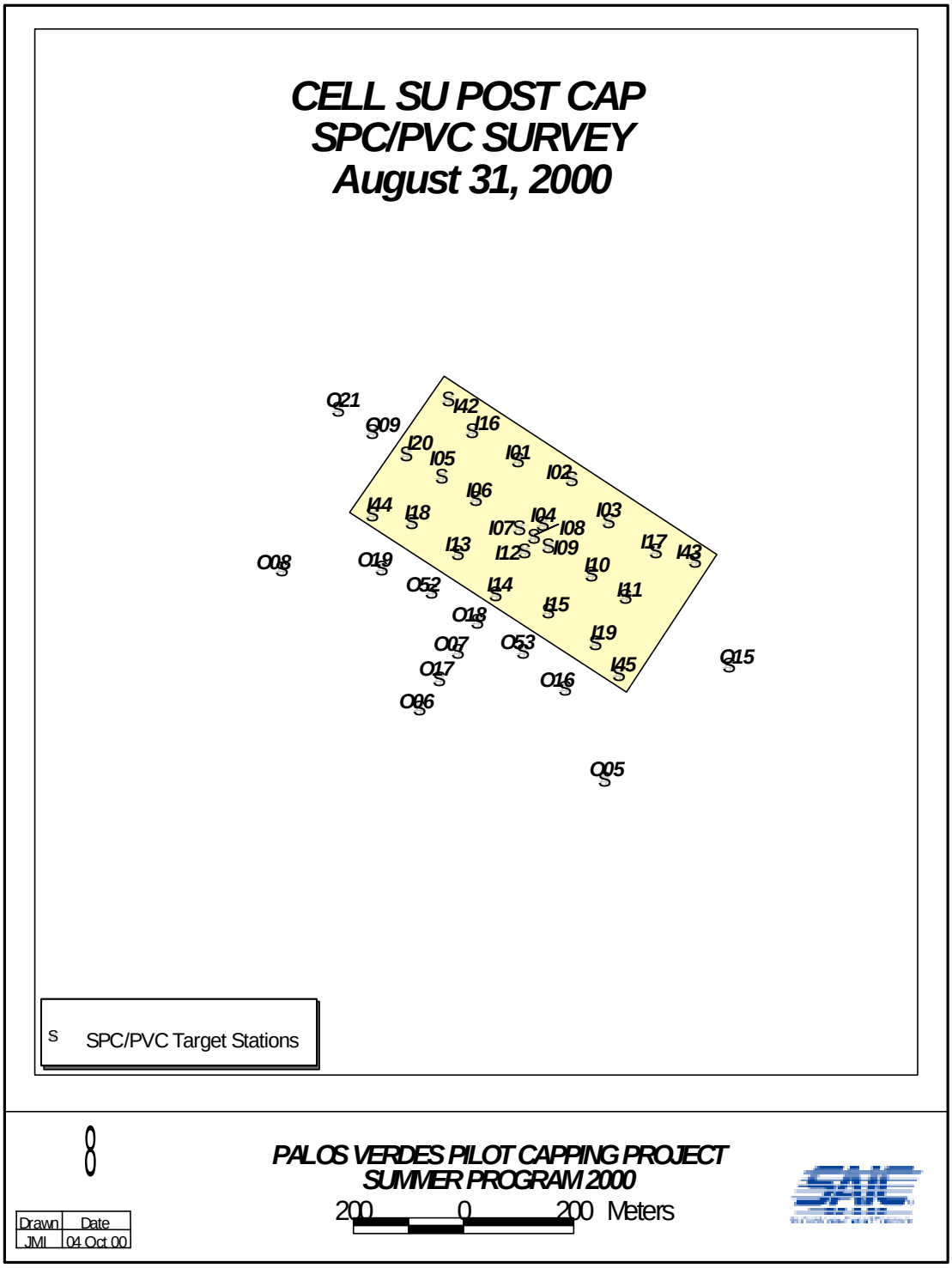
Greg Tufts had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW08031.tgt
Points_08312000_sw.csv


CELL SU POST CAP
SPC/PVC SURVEY
August 31, 2000
O21
O09
I42
I16
I20
I05
I01
I02
I06
I44
I18
I04
I03
I07
I08
I13
I12
I09
I17
I43
O08
O19
I10
O52
I14
I11
I15
O18
I19
O07
O53
O15
O17
I45
O16
O06
O05
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 1, 2000**
Survey: **SPC and PVC, SU Post Cap (8Di)**
Cell: **SU**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: Greg Tufts (SPC/PVC), John Evans (Deck) and Pam Walter (Navigation)
SCMI: Captain, Mate and Deckhand (names unknown)

Survey Operations:

Survey Schedule
The survey crew arrived at the vessel at approximately 18:00 and departed from SCMI approximately 19:45. The crew was scheduled to complete the Cell SU Post Cap Survey (12 sites). The vessel arrived at the Cell SU at 20:34. The twelve sites in SU were completed by 23:45 with no difficulties and no extra repetitions necessary (O01-O04, O10-O13, O22, O50, O51, and I21). Survey operations were temporarily interrupted for approximately one half hour due to the dredge Sugar Island performing a cap placement in Cell LU. Following the completion of survey activities, the R/V *Yellowfin* arrived back at SCMI at 00:25.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
None

Custody of Samples:

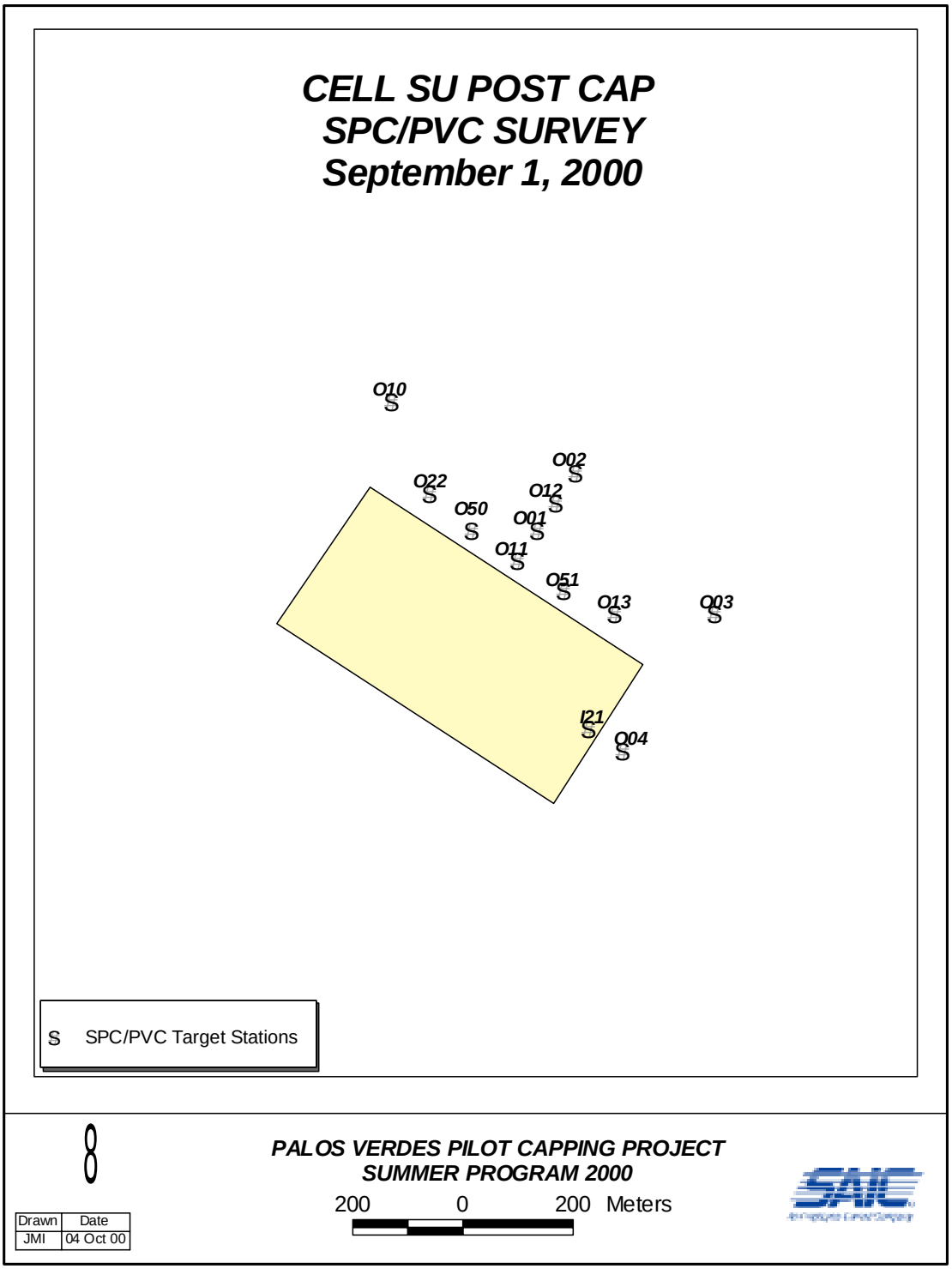
Greg Tufts had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0901.txt


CELL SU POST CAP
SPC/PVC SURVEY
September 1, 2000
O10
O02
O22
O12
O50
O01
O11
O51
O13
O03
I21
O04
S SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 13, 2000**
Survey: **SPC and PVC, SU Post Post Cap/Farfield (Flex), LU Post Post Cap/Farfield (Flex)**
Cell: **SU, LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation)
SCMI: Captain, Mate and Deckhand (names unknown)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 14:15 and departed from SCMI at approximately 14:55. The crew was scheduled to complete the Cell LU Post Post Cap Survey (15 sites) and the Cell SU Post Post Cap Survey (20 sites). The vessel arrived at the Cell SU at 15:41. The twenty sites in SU were completed by 17:53 with no difficulties (O62-O73, O54-O61). One site had six replicates taken, as there was a temporary breakdown of communication between deck crew and navigation. Immediately following the completion of the SU 'A' survey, the *Sea Watch* moved to complete ten additional SU sites (I02C, I02N, I02E, I02S, I02W, I19N, I19C, I19S, I19W, and I19E) to assess small-scale, intra-station cap thickness variability. The additional SU sites were completed between 18:15 and 19:14, and the *Sea Watch* moved to Cell LU. The first 7 LU sites were completed with no difficulty (O62-O68). There was a brief delay while the Sugar Island dredge completed a placement inside the cell. Following that, the remaining eight LU sites (O54-O61) were completed. Each site in both cells had a minimum of three replicates taken. The vessel departed the survey area upon completion of survey activities and returned to SCMI at 21:36.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
None

Custody of Samples:

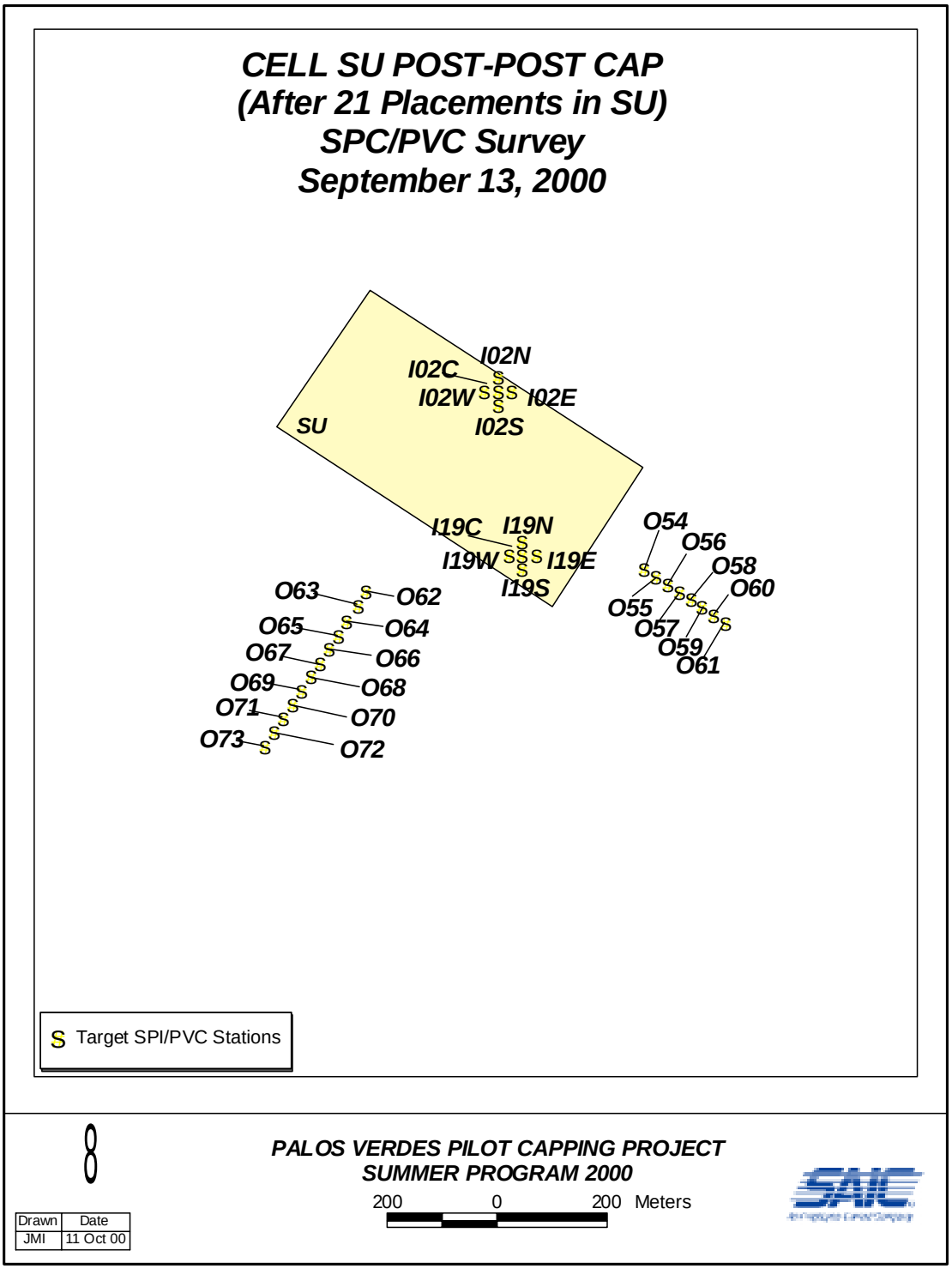
Jason Infantino and Greg Tufts had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0913.tgt
Points_09132000_SW_remots.csv


CELL SU POST-POST CAP
(After 21 Placements in SU)
SPC/PVC Survey
September 13, 2000
SU
I02N
I02C
I02W
I02E
I02S
I19C
I19N
I19W
I19E
I19S
O54
O56
O58
O60
O55
O57
O59
O61
O62
O63
O64
O65
O66
O67
O68
O69
O70
O71
O72
O73
S Target SPI/PVC Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn JMI
Date 11 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 24, 2001
Survey: Supplemental SPC and PVC
Survey Vessel: R/V Sea Watch
(All Times UTC)

Survey Team:
SAIC: Greg Tufts (PVC), Jason Infantino (SPC/Navigation)
SCMI: Mike Quinn (Captain), Shoshana Grunwald (Mate), David Renoso (Mate)
Army Corp of Engineers: Joe Ryan (Deck)

Survey Operations:

Survey Schedule
The R/V Sea Watch departed SCMI at approximately 1433 UTC for the Supplemental Sediment Profile Camera (SPC) and Plan View Camera (PVC) survey. The purpose of the survey was to collect SPC and PVC images at primary, secondary and tertiary stations, respectively, within Cells LD, LU and SU. The vessel arrived at Cell LD at 1515 and maneuvered to begin sampling at Station LDSIO5. A total of 22 stations were occupied for this survey.

A total of 5 primary stations were sampled in and near Cells LD, LU and SU, respectively. Four replicates were taken at each of the 5 stations to ensure that at least 3 analyzable images were acquired at each station. Upon completion of the 5 primary stations, the survey team occupied 17 of the planned 19 secondary stations. Stations LUSO 06 and 07 were not sampled due to adverse weather conditions (see Problems Encountered below). Three replicates were taken at 13 of the 17 stations. Four replicates were taken at station SUSO 13 due to a potential "pullouts" of the SPC/PVC equipment due to boat heave during deployment. Two replicates were taken at Stations LUSO 05, 08 and 74. The secondary stations required only one analyzable image to be collected. The tertiary stations were not sampled due to the adverse weather conditions that are described below.

At 1705 the SPC/PVC system was secured on deck and the film with images from the 5 primary stations and 5 of the secondary stations was developed at sea by SAIC personnel. Following development, the film was examined to confirm that each of the five primary stations had a minimum of three analyzable replicate images. It was determined that all of the primary stations met this requirement. The developing process was completed at approximately 1815 and the field survey resumed to acquire images at the remaining secondary stations.

At 1827 survey operations resumed at secondary station LUSO19. The remaining secondary stations were surveyed until 1938 when the SPC camera required a film change. The camera was secured on deck and the decision to head back to SCMI was made due to the persistent, unfavorable, sea conditions. Upon return to SCMI the second roll of film was developed and analyzed by SAIC personnel. The SPC/PVC equipment was demobilized, packed and processed for shipment back to SAIC immediately following the film development.

On February 23, 2000 the DGPS navigation system used during the SPC/PVC survey (see Survey Equipment below) was calibrated from a known, geo-referenced, point at the Great Lakes Dredge and Dock facility located near SCMI. This was the same facility and point used to calibrate the navigation equipment that was used throughout the Summer 2000 surveys. Navigational test data was collected for approximately 30 minutes to assess the system's navigational accuracy. This calibration showed that the system was accurate to within 1 to 3 meters of the calibration point.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  SPC/PVC

Problems Encountered

Sea conditions were unfavorable for SPC/PVC sampling but a concerted effort was made by the entire survey team to conduct survey operations. There was a constant bi-directional 6-8 foot ground swell accompanied by a 25+ knot wind-chop coming from the Northeast. This mixture of wind derived waves and opposing swell made for an unstable sea state and survey vessel platform. Maneuvering to stations and maintaining vessel position was very difficult. These conditions also made the deployment and retrieval of the SPC/PVC equipment challenging. Weather was the only unfavorable variable that was encountered during the survey operation.

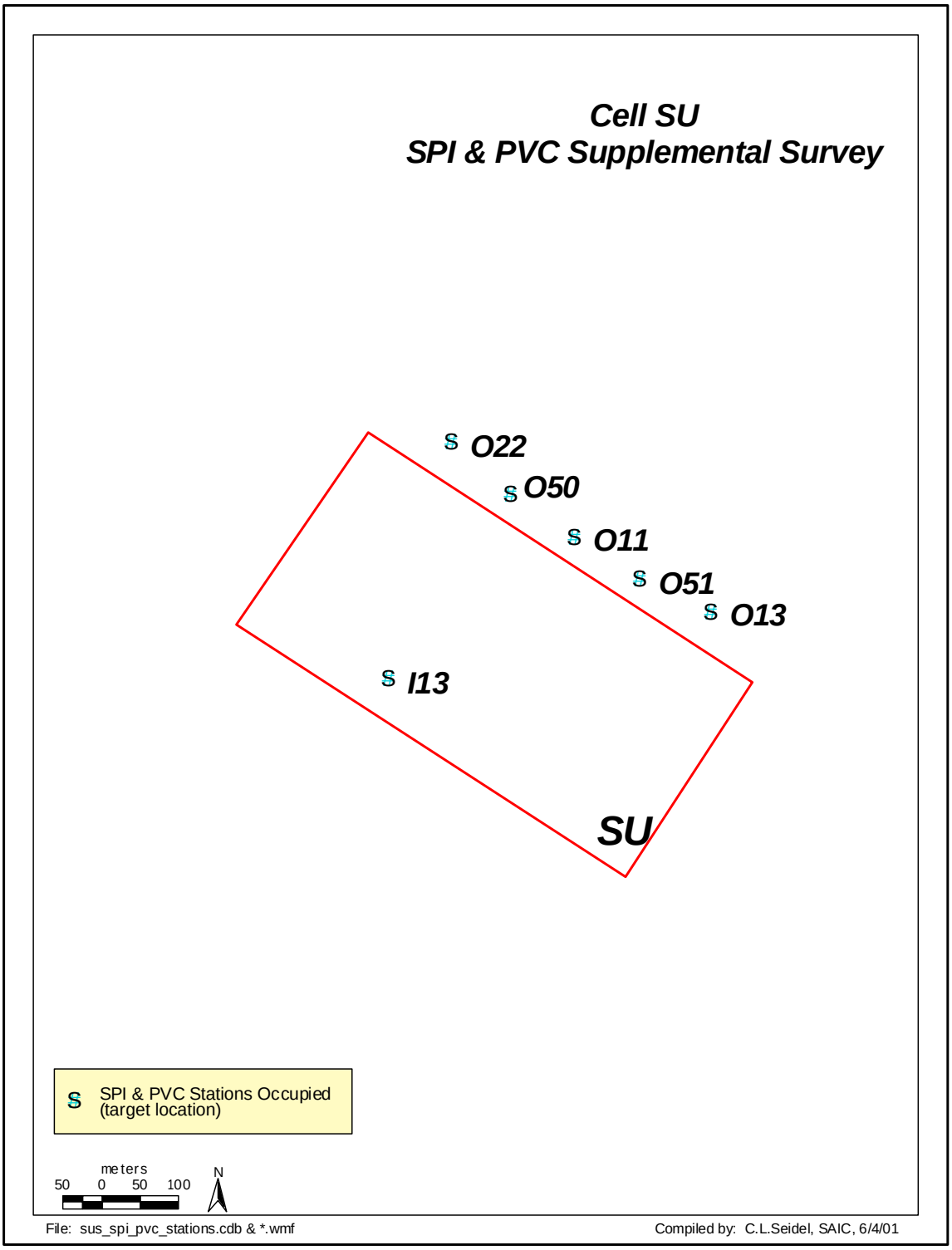
Custody of Samples:

Greg Tufts has custody of the developed film.

Custody of Survey Data:

N/A

Navigation Data Files:
Navlog_022401_SW.xls


Cell SU
SPI & PVC Supplemental Survey
O22
O50
O11
O51
O13
I13
SU
SPI & PVC Stations Occupied (target location)
meters
50 0 50 100
N
File: sus_spi_pvc_stations.cdb & *.wmf
Compiled by: C.L.Seidel, SAIC, 6/4/01

CELL SU
SEDIMENT CORING CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 10, 2000**
Survey: **Coring, SU Post Initial (8Biv), LU Post Initial 6Biv)**
Cell: **SU, LU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Coring), Vicki Frank (Coring), Rebecca DeKeyzer (Navigation)
USACOE: Mamie Brouwer(Observer)
SCMI: Captain, Mate, and Deckhand

Survey Operations:
Survey Schedule
The R/V *Sea Watch* departed the Southern California Marine Institute (SCMI) at 14:08 to conduct gravity coring operations for the Post Initial Placement survey in Cell SU and to take replicate cores at two stations of the Cell LU Post Initial Placement survey. Two stations were sampled in Cell LU, with three cores collected at LUH01 and one core collected at LUH02 for a total of four LU cores. Five sites were sampled in Cell SU, four of which had one core collected (SUH06-SUH09). One site in Cell SU required three cores (SUH10). A total of seven cores were collected in Cell SU. Coring operations were conducted between 15:08 and 19:26. Following the completion of survey operations, the R/V *Sea Watch* returned to SCMI, arriving at 20:25.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Corer

Problems Encountered

None

Custody of Samples:

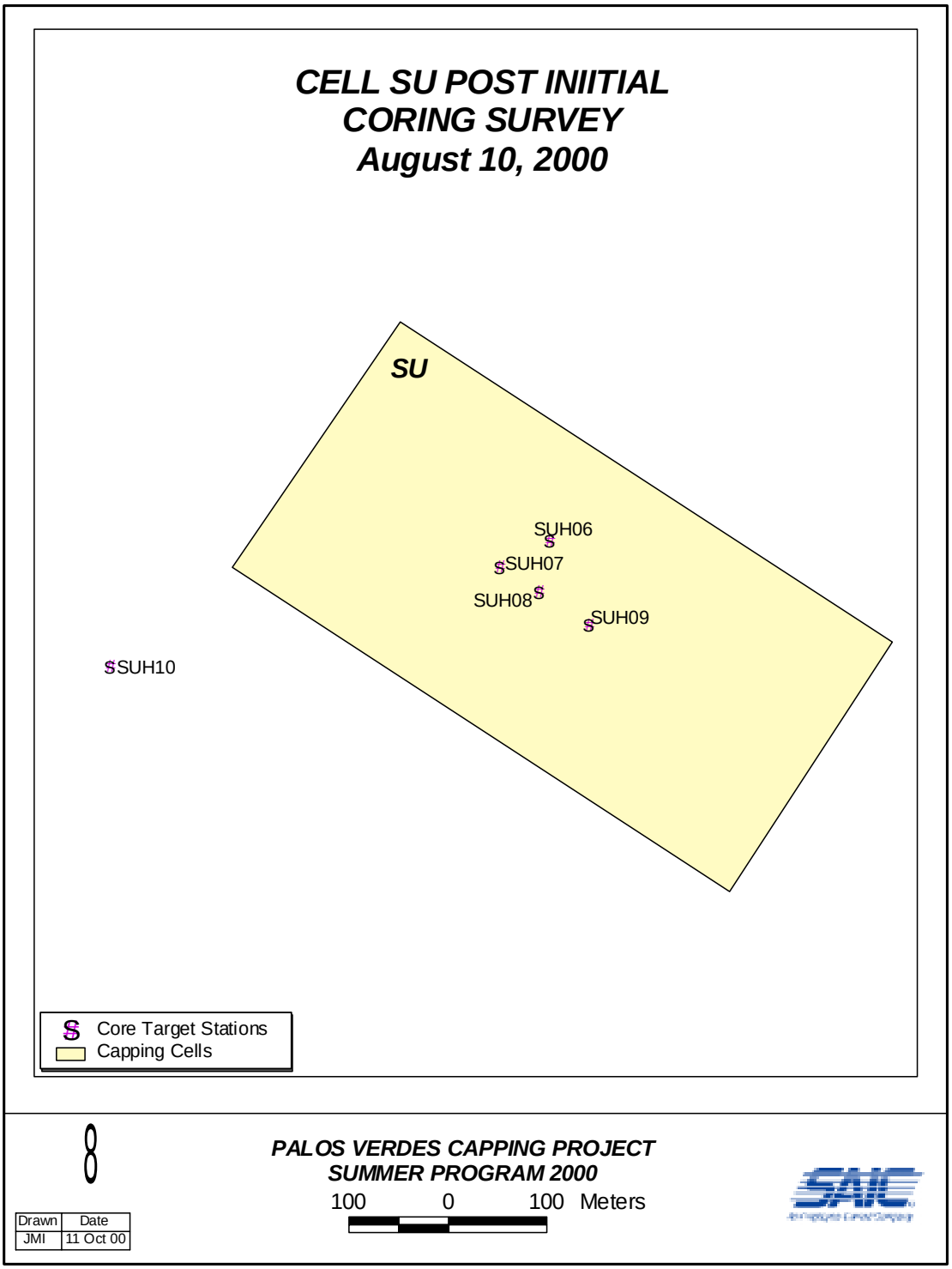
Upon arrival at dock, Pam Walter was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0810.tgt
Points_08102000_SW.csv


CELL SU POST INIITIAL
CORING SURVEY
August 10, 2000
SU
SUH06
SUH07
SUH08
SUH09
SUH10
Core Target Stations
Capping Cells
PALOS VERDES CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 Meters
Drawn
Date
JMI
11 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 22, 2000**
Survey: **Cell SU Coring, First Interim (8Civ)**
Cell: **SU**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), David Fischman, (Coring), Edward Basmadjian (Coring), and Ellen Tobey (Navigation)
SCMI: Jim Critanvich (Captain), Dennis Dunn (Mate), and Justin Myers (Deckhand)

Survey Operations:
Survey Schedule
The coring crew departed the Southern California Marine Institute (SCMI) at 14:20 to conduct coring operations in Cell SU for the First Interim survey. Coring operations were conducted between 15:14 and 17:54. Five sites were surveyed in Cell SU, with a total of five cores collected. Core SU-I-21_A was 61 cm long and showed no evidence of cap material. Core SU-I-22_A was 77 cm long and the top of the core was sandy and had shell fragments. Core SU-I-23_A was 79 cm long and had no evidence of cap material. Core SU-I-24_A was 99.5 cm long and had a sandy top. Core SU-I-25_A was 57 cm long and had tube worms at the top. Upon completion of survey operations, the vessel returned to SCMI at 1843.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Core

Problems Encountered
The gravity core equipment was too long for water entry over the stern. This was resolved by attaching the core barrel to the weighted top while the a-frame was out over the stern.

Custody of Samples:

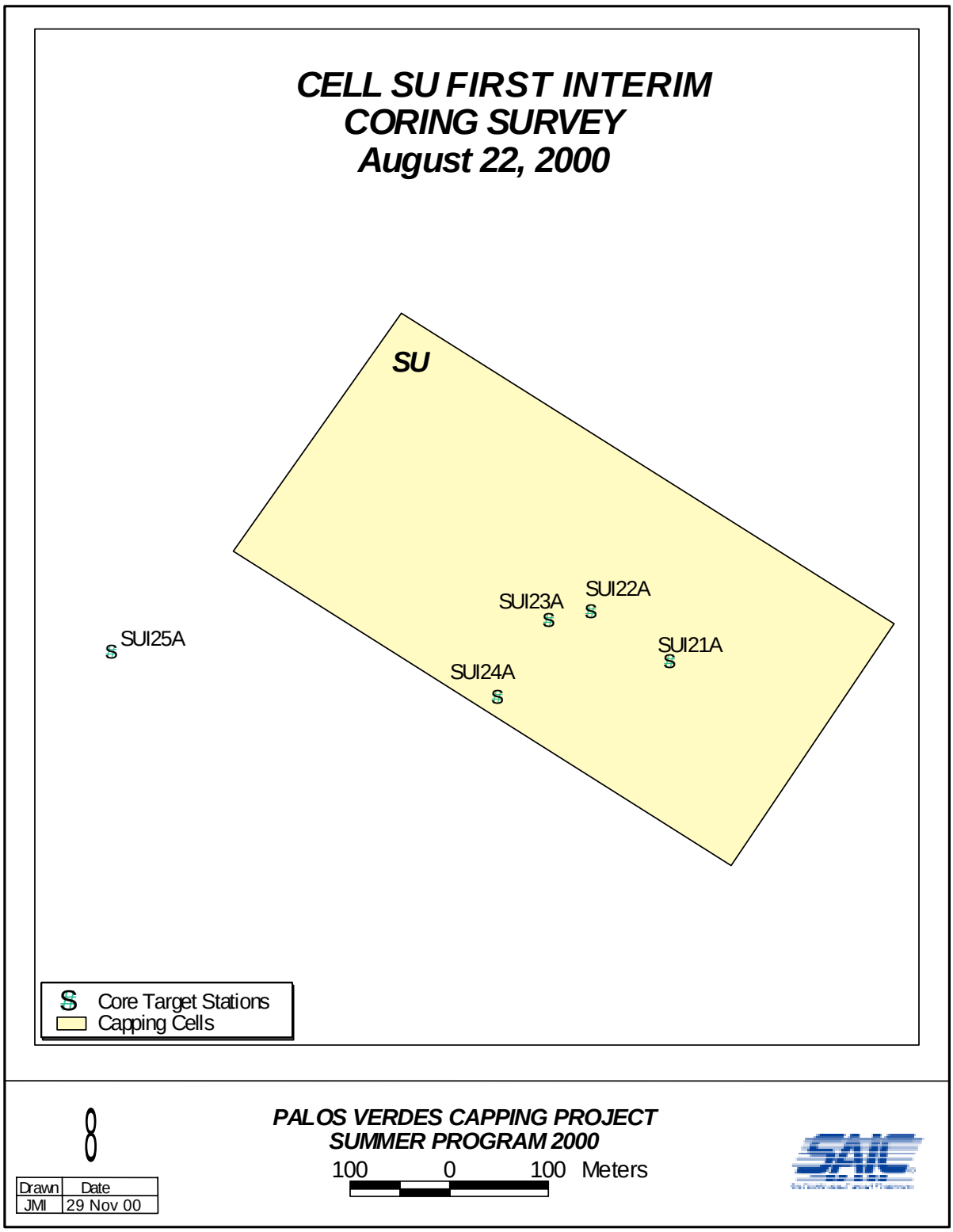
Upon arrival at dock, Pam Walter was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0822.tgt
Points_08222000_YF.csv


CELL SU FIRST INTERIM
CORING SURVEY
August 22, 2000
SU
SUI25A
SUI23A
SUI22A
SUI21A
SUI24A
Core Target Stations
Capping Cells
PALOS VERDES CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 Meters
Drawn
Date
JMI
29 Nov 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 29, 2000**
Survey: **Cell LU 2nd Interim Coring (6Civb), Cell SU Post Cap Coring (Flex)**
Cell: **LU, SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), David Fischman, (Coring), Vicki Frank (Coring), Lisa McAuliffe (Navigation)
SCMI: Mike Quinn (Captain), Dennis Mahaffy (Mate), and Justin Myers (Deck Hand)

Survey Operations:
Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 14:25 to conduct coring operations in Cell LU for the 2nd Interim survey (Sites 26 – 35), and in Cell SU for the Post Cap survey (Sites 36 – 41). Coring operations were conducted between 15:20 and 20:10. Ten sites were surveyed in Cell LU between 15:20 and 17:50 and eleven LU cores were collected. The first site, 26, required two cores due to an unacceptably short first core. The first core taken at Site 28 was only 20 cm long. Due to the limited number of coreliners onboard, the crew decided to return to the site after the SU survey was complete. All of the LU cores, with the exception of Site 28, were between 30 and 50 cm long. The Cell SU Post Cap survey was completed between 18:00 and 20:10. Six sites were visited and seven cores collected. Site 36 was repeated because the first sample was collected outside the 5 m target circle. All of the SU cores were over 50 cm in length. Following the completion of the SU survey, the vessel returned to Cell LU and re-sampled Site 28, which yielded a core 34 cm in length. Upon completion of survey activities, the R/V *Sea Watch* returned to SCMI and docked at 21:04.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Core

Problems Encountered
None

Custody of Samples:

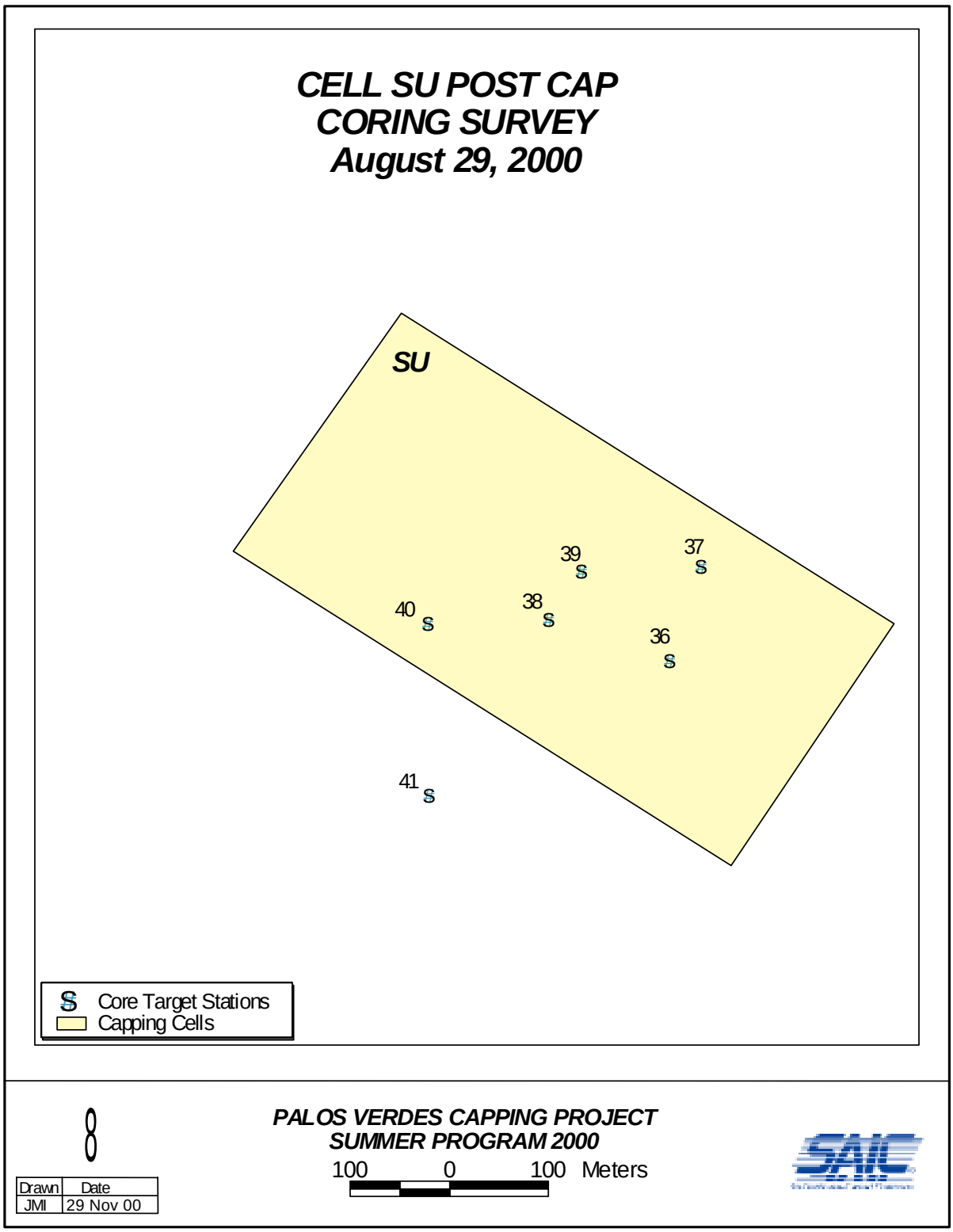
Upon arrival at dock, Vicki Frank was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0829.tgt
Points_08292000_sw.csv


CELL SU POST CAP
CORING SURVEY
August 29, 2000
SU
39
37
40
38
36
41
Core Target Stations
Capping Cells
PALOS VERDES CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 Meters
Drawn
Date
JMI
29 Nov 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 7, 2000**
Survey: **Coring, LU Post Cap (6Diii), SU Post Cap (8Diii)**
Cells: **LU, SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), David Fischman, (Coring), Vicki Frank (Coring), Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate, Deckhand (names unknown)

Survey Operations:
Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 14:11 to conduct coring operations for the Cell LU Post Cap (6Diii) coring survey and in Cell SU for the Post Cap (8Diii) coring survey. Coring operations were conducted between 15:07 and 18:49. Nine sites (51 – 59) were surveyed in Cell LU with a total of nine cores collected. Nine stations were also surveyed in Cell SU (42 – 50) with a total of twelve cores collected. Two sites, 43 and 44, required a replicate core to be taken due to over penetration. Approximately 330 pounds of weights were removed from the corer to prevent over penetration into the sediments. At Site 48, only 32 cm of sediment was recovered and therefore a replicate core was taken. The replicate core had 63 cm of recovery. Upon successful completion of the survey, the vessel returned to the dock at approximately 19:40.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity Core

Problems Encountered
None

Custody of Samples:

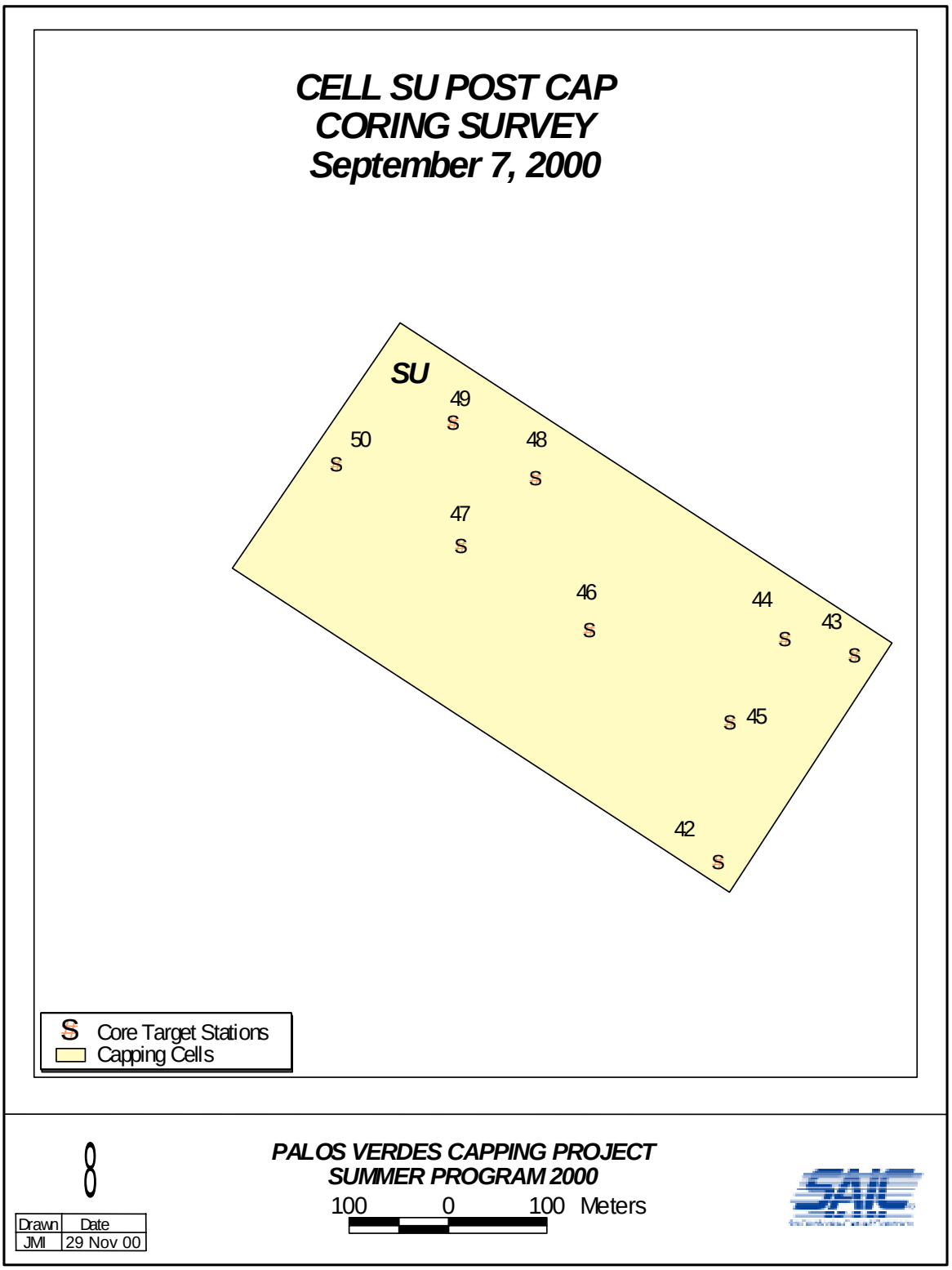
Pam Walter had custody of the cores upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0907.tgt and RAW0907_B.tgt
Points_09072000_sw.csv


CELL SU POST CAP
CORING SURVEY
September 7, 2000
SU
49
50
48
47
46
44
43
45
42
Core Target Stations
Capping Cells
8
Drawn
Date
JMI
29 Nov 00
PALOS VERDES CAPPING PROJECT
SUMMER PROGRAM 2000
100
0
100
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 27, 2001
Survey: Supplemental Vibra Coring and Box Coring
Cells: LU, LD, SU
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation), Pam Walter (Observer), Kate Montgomery (Observer)
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams(Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)
ACOE:	Larry Smith (Observer), Beatrice Bofill (Observer)

Survey Operations:

Survey Schedule
The coring crew departed the Southern California Marine Institute (SCMI) at 14:44 UTC aboard the R/V Wm. A. McGaw to conduct supplemental coring operations in Cells LD, LU, and SU. Vibracoring operations were conducted between 15:20 and 00:59 UTC. A total of eight (8) vibracores were collected during this survey. The first station (LDSI05) was the first vibracore sample of the day and was used as a test, which lead to a second core sample (described below). The third vibracore was taken as a test to compare the result of using a core catcher versus not using a core catcher. Sea conditions were moderate with a 2-4 foot swell coming from the South. Winds were variable throughout the day and did not exceed 20 knots. Scattered rain showers were also experienced throughout the survey day.

Cell SU

One vibracore was collected at station SUSI13 in Cell SU (core SUSV1I13-A). This core measured 34 cm in length. The survey then moved to Cell LU.

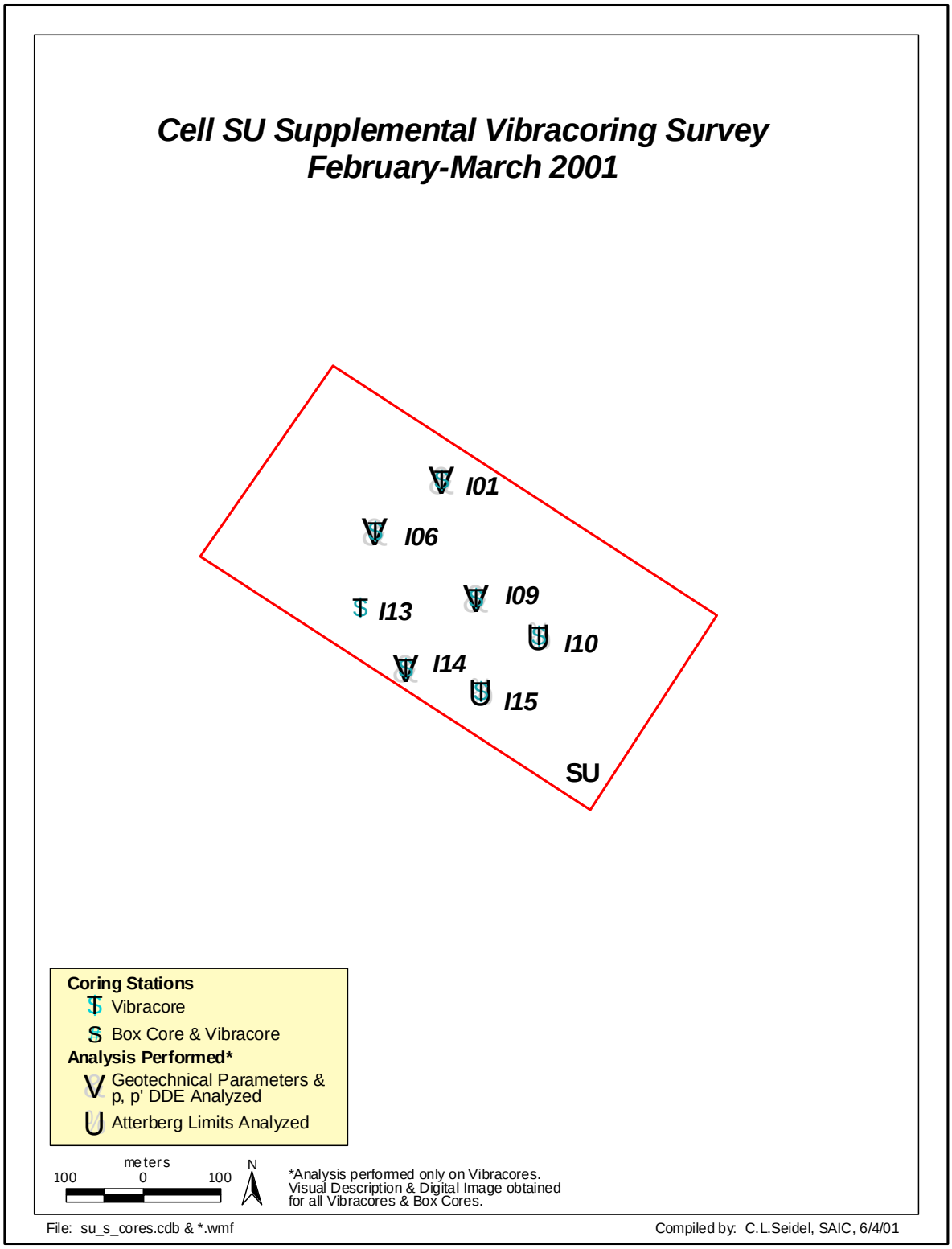
Surveying Equipment:
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:
None.

Custody of Samples:
Pam Walter has custody of the cores.

Custody of Survey Data:
Jason Infantino has custody of navigation data.

Navigation Data Files:
Navlog_022701_MCG_Cores.xls


Cell SU Supplemental Vibracoring Survey
February-March 2001
I01
I06
I09
I13
I10
I14
I15
SU
Coring Stations
Vibracore
Box Core & Vibracore
Analysis Performed*
Geotechnical Parameters & p, p' DDE Analyzed
Atterberg Limits Analyzed
meters
100
0
100
N
*Analysis performed only on Vibracores.
Visual Description & Digital Image obtained
for all Vibracores & Box Cores.
File: su_s_cores.cdb & *.wmf
Compiled by: C.L.Seidel, SAIC, 6/4/01

Survey Date: March 01, 2001
Survey: Supplemental Vibra Coring
Cells: LU, LD, SU
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation),
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams (Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)

Survey Operations:

Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 14:12 UTC to conduct supplemental coring operations in Cells LD, LU and SU. Coring began at 15:42 and concluded at 00:25. A total of 13 vibracores were collected throughout the survey day. Sea conditions were fair with a gentle 1-2' swell out of the south direction. Wind was light early in the day and increased to15 knots coming from the north late afternoon. This was the first coring survey day that held clear skies.

Cell SU

A total of 6 stations were sampled in Cell SU between 18:13 and 23:21, yielding 7 core samples. These stations included inside stations I01, I06, I09, I10, I14 and I15. Two (2) samples each were collected at station I01 and I06. The first sample (replicate A) at station I01 washed out onto the deck upon retrieval of the coring device. The second attempt (replicate B) was successful and produced a core measuring 81 cm in length. The first replicate at Station I06 resulted in an over penetration of the coring device. Station I06 Replicate B resulted in a core measuring 43 cm in length. One replicate core was obtained at the remaining four stations. Station I09 resulted in a core with a length of 48 cm. Sampling at Station I10 produced a core measuring 52 cm. The core obtained at Station I14 measured 75 cm in length and the core collected at Station I15 was 83 cm in length. Following completion of sampling in Cell SU the vessel maneuvered to Cell LD for core sampling.

Surveying Equipment:

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:
None.

Custody of Samples:
Pam Walter has custody of the cores.

Custody of Survey Data:
Jason Infantino has custody of navigation data.

Navigation Data Files:
Navlog_030101_MCG_Cores.xls

CELL SU
SIDESCAN
AND
SUBBOTTOM CRUISES

Cruise Report

Survey Date: **August 10, 2000**
Survey: **Sidescan, LU Post Initial (6Bv), SU Post Initial (8Bv)**
Cell: **LU, SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan leader), Allan Quintal (Deck), Lisa McAuliffe (Navigation)
Vessel: Josh (Captain), Bob Greeno (Mate)

Survey Operations:
Survey Schedule
The sidescan crew departed the Southern California Marine Institute (SCMI) at 14:20 to conduct Post Initial sidescan operations in Cell LU and SU. Survey operations were conducted between 15:35 and 22:34. Eleven survey lines, both along-shore and offshore, were run. After the LU and SU Post Initial lines were complete, the vessel surveyed in the general vicinity of the missing ARESS array. Two possible targets were found. Immediately following the completion of all survey activity, the towfish cable impacted something in the water column, which partially severed the data cable. Following the towfish recovery, the vessel returned to SCMI, arriving at 23:15.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Sidescan Edgetech DF1000 Sidescan Towfish
  ISIS Sidescan Sonar Acquisition Software

Problems Encountered

At the end of the survey, while cabling in, the sidescan towfish hit something in the water column and the cable termination was severed. The termination will have to be sent out for repairs.

Custody of Samples:

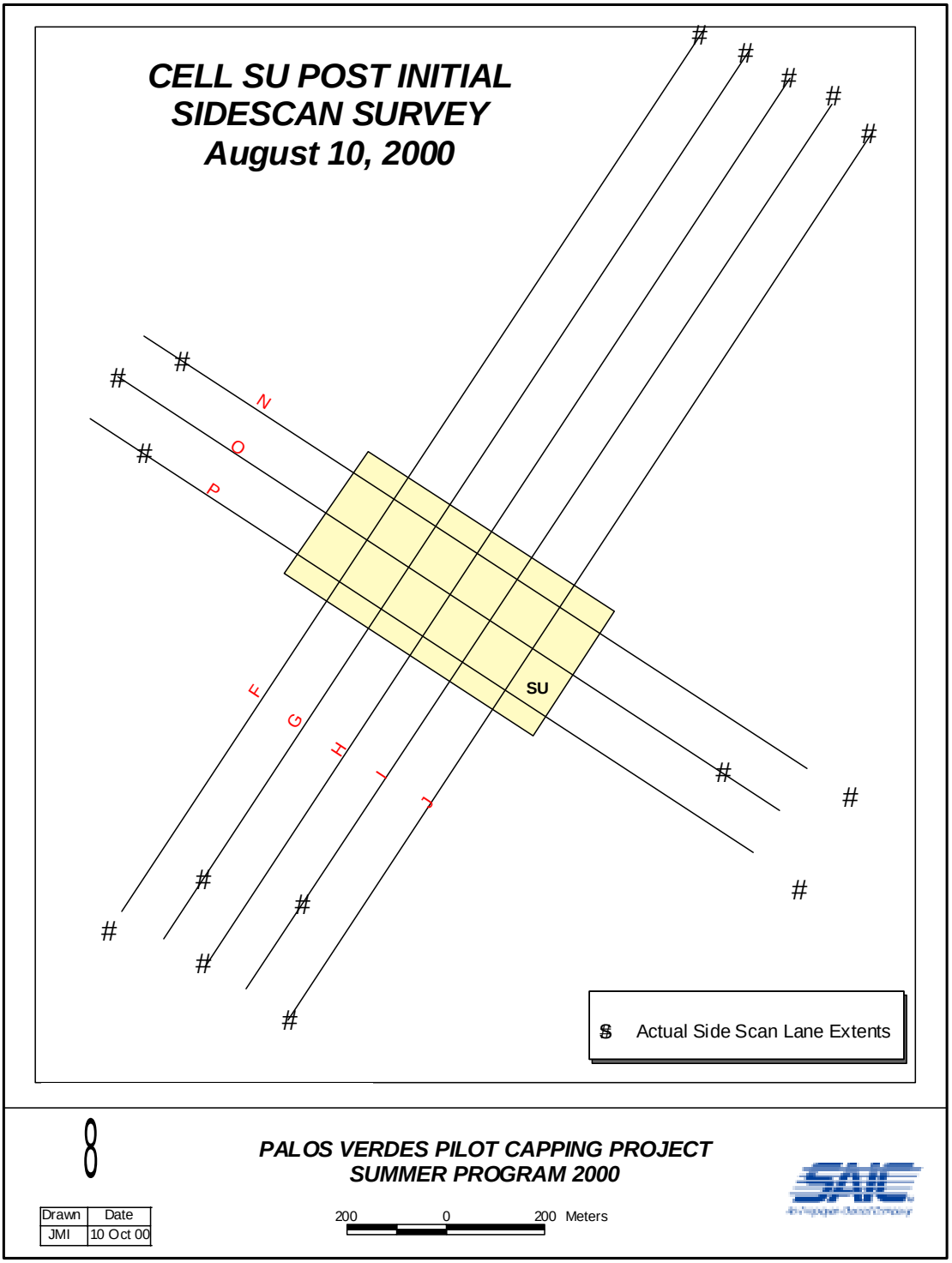
Jason Infantino had custody of the sidescan data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0810.log
Lines_08102000_TN.csv


CELL SU POST INITIAL
SIDESCAN SURVEY
August 10, 2000
N
O
P
F
G
H
I
J
SU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
10 Oct 00
200
0
200
Meters

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **August 19, 2000**
Survey: **LD Post Initial Sidescan (7Bv)**
LU Interim Sidescan (Flex)
SU Interim Sidescan (Flex)
Cell: **LD, LU, SU**
Survey Vessel: **R/V *Sea World***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Sidescan), and Rebecca DeKeyzer (Navigation)
Vessel: Willie McCarthy (Captain), Dennis (Mate)

Survey Operations:
The sidescan crew departed the Southern California Marine Institute (SCMI) at 14:07 to conduct sidescan survey operations for the Cell LD Post Initial Survey, Cell SU Interim survey, and Cell LU Interim survey. The LD survey was completed with three along-shore survey lines and five offshore survey lines. Two of the along-shore lines had to be repeated due to excessive crosstrack error. Three along-shore lines (with two lines repeated) were then run for the Cell LU Interim Flex survey. Three along-shore lines were also run for the Cell SU Interim Flex survey. It was determined that the two flex surveys did not require the full 8-line survey, as the three along-shore lines provided 100% sonar coverage of each cell within the time paid for on the vessel. At the end of these surveys, two additional lines were run to search for the missing ARESS array. No significant target was found during this search survey. Survey operations were conducted between 14:50 and 23:36. Following the cessation of survey operations, the vessel returned to SCMI at 00:17.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Edgetech DF1000 Sidescan Towfish
  ISIS Sidescan Sonar Acquisition Software

Problems Encountered
Excessive cross track error (XTE) was a significant problem for most of the lines run during the survey. Several lines were repeated in an effort to stay within the 15 m XTE guidelines, however due to time constraints, all along-shore lines were run regardless of XTE. Continuing on to the next line instead of repeating lines with excessive XTE provided coverage over all three cells.

Custody of Samples:

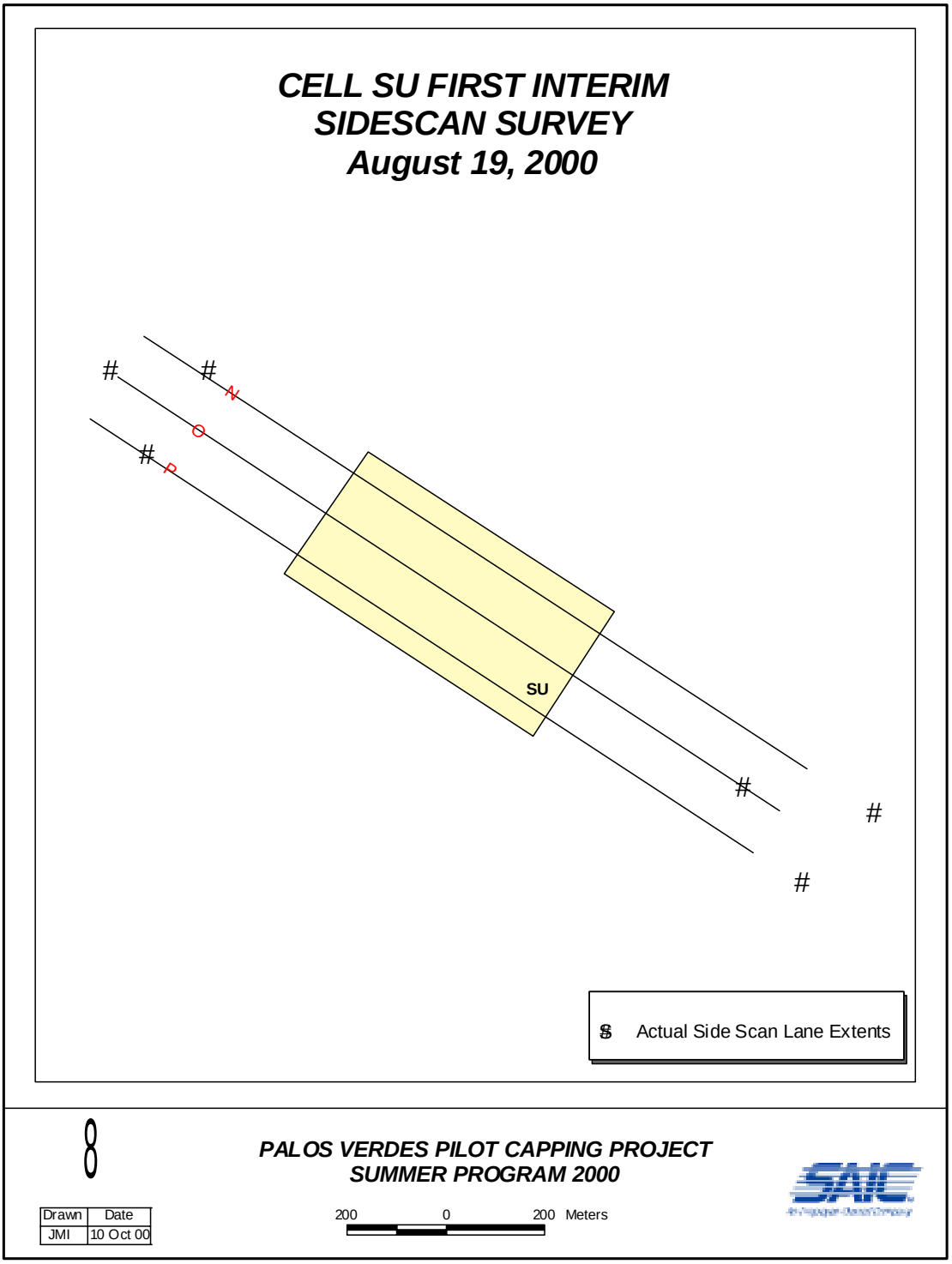
Jason Infantino had custody of the sidescan data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Raw0819.log
Lines_08192000_tn.csv


CELL SU FIRST INTERIM
SIDESCAN SURVEY
August 19, 2000
N
O
P
SU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
10 Oct 00
200
0
200
Meters

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **September 6, 2000**
Survey: **LU Post Cap Sidescan (6Div) and Subbottom (6Dii)**
SU Post Cap Sidescan (8Div) and Subbottom (8Dii)
Cell: **LU & SU**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Subbottom), Rebecca DeKeyzer (Navigation)
Vessel: Jim Critanovich (Captain), Dennis Dunn (Mate), Katherine (last name unknown; Deckhand)

Survey Operations:
Survey Schedule
The sidescan and subbottom crew departed SCMI at 14:19 to conduct the post cap sidescan and subbottom surveys in Cells LU and SU. A total of three along-shore lines were run in each cell for the sidescan surveys. Sidescan operations were conducted between 15:30 and 20:50. A total of three along-shore lines and four offshore lines were run in each cell for the subbottom surveys. A fifth planned subbottom line was begun, but not completed because the vessel had been operating for close to twelve hours and had to return to the dock to comply with Coast Guard regulations. Subbottom operations were conducted between 21:16 and 01:23. The data will be processed on shore. The vessel departed the survey area at 01:24 and arrived at dock at 02:11.

Survey Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Edgetech DF1000 Towfish and deck unit
  Datasonics Chirp II subbottom profiler and deck unit

Problems Encountered
There were significant problems with power and DGPS drop outs during the survey. These problems forced the sidescan and subbottom surveys to be completed separately. Survey operations had to be aborted with one planned subbottom line left to survey due to a twelve-hour day maximum requirement.

None of the offshore sidescan survey lines were run during these surveys. The severe slope angle in the survey area leads to such rapid towfish altitude adjustments that the towfish is unable to adequately track bottom. This results in unacceptably poor data quality. As the along-shore lines provide 100% coverage of each cell, the decision was made to cancel the acquisition of the five offshore lines.

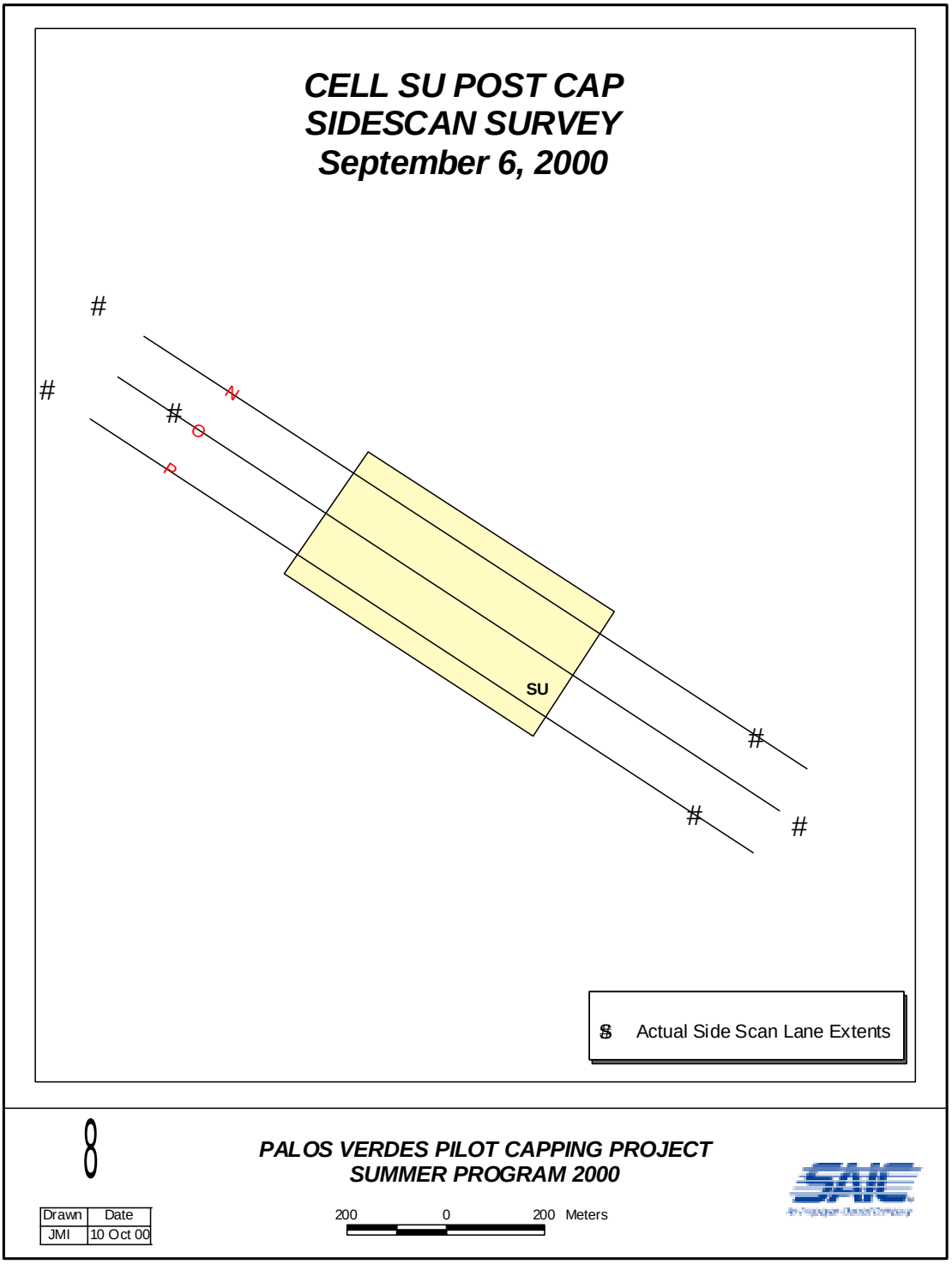
Custody of Samples:

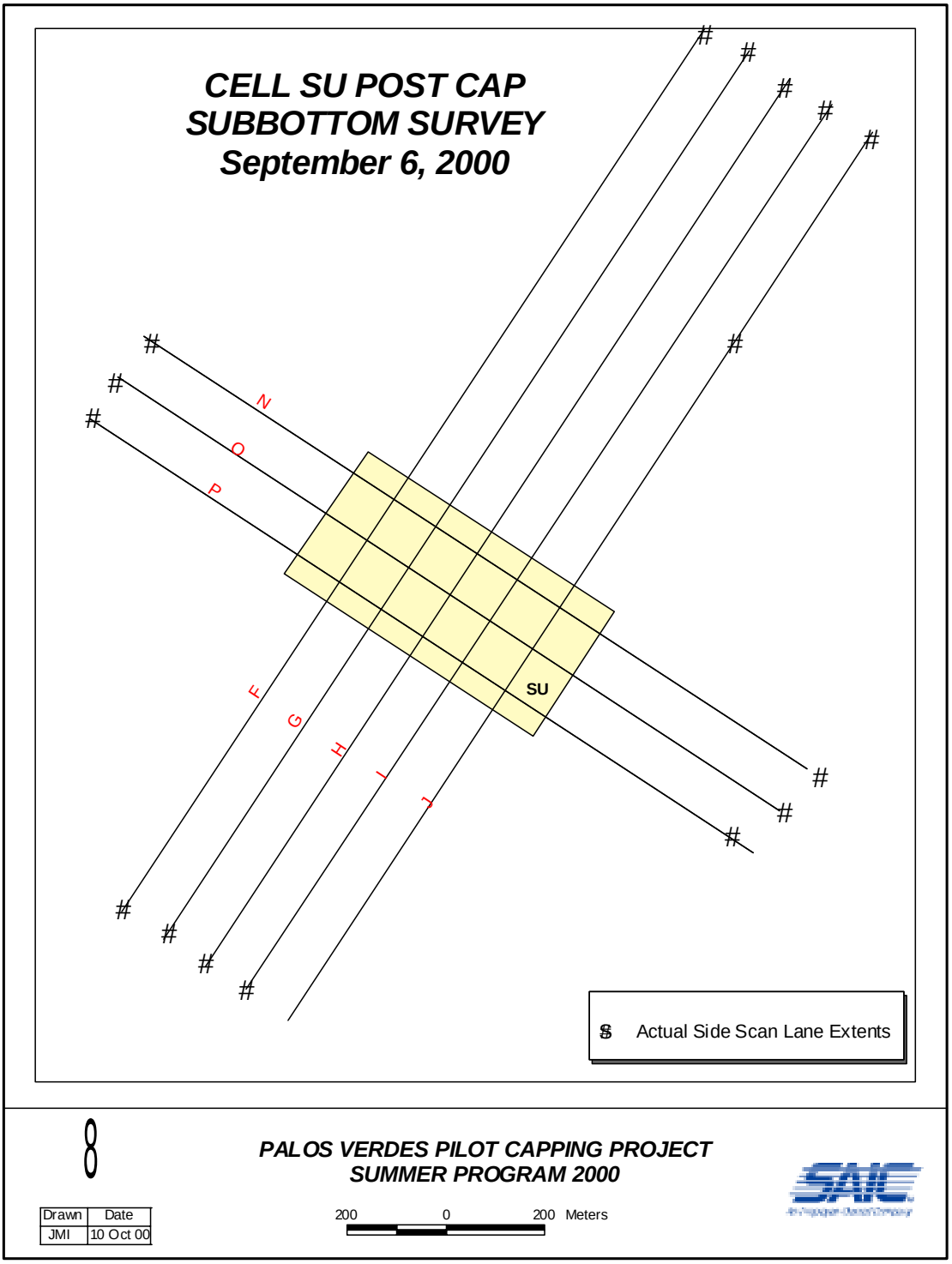
Jason Infantino had custody of the sidescan data and Allan Quintal had custody of the subbottom data upon completion of the cruise.

Custody of Survey Data:
All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

LINES_09072000_YF.csv


CELL SU POST CAP
SIDESCAN SURVEY
September 6, 2000
SU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
10 Oct 00
200
0
200
Meters


CELL SU POST CAP
SUBBOTTOM SURVEY
September 6, 2000
N
O
P
F
G
H
I
J
SU
Actual Side Scan Lane Extents
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
10 Oct 00
200
0
200
Meters

CELL SU
CRUISES ASSOCIATED WITH
MOORED CURRENT/TURBIDITY ARRAYS

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 7, 2000**
Survey: **ARESS Deployment for SU Initial Placement (8Bi)**
Cell: **SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Marc Wakeman (Crew), John Evans (Crew), Jim Singer (Crew), Allan Quintal (Navigation)
Vessel: Josh (Captain), Bob Greeno (Mate)

Survey Operations:
Survey Schedule
The ARESS current array deployment crew departed the Southern California Marine Institute (SCMI) at 15:38 to deploy the first two of five ARESS current arrays in Cell SU at Sites SU180Down and SU127Down. The deployment crew then returned to SCMI at 18:17 to load the remaining three arrays for placement. These arrays were placed in Cell SU at Sites SU75Down, SU75Up, and SU150Up. Upon completion of all deployments the vessel returned to SCMI at 22:00.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: 75MUp
  1 Nortek AS Aquadopp current meter with OBS-3 Suspended Solids and Turbidity Monitor
  1 Acoustic Release

  150MUp
  1 Nortek AS Aquadopp current meter with OBS-3 Suspended Solids and Turbidity Monitor
  1 Acoustic Release

  75MDown
  1 Acoustic Doppler Current Profiler (ADCP)
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

  127MDown
  1 Acoustic Doppler Current Profiler (ADCP)
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

  180MDown
  1 Acoustic Doppler Current Profiler (ADCP)
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

Problems Encountered

None

Custody of Samples:

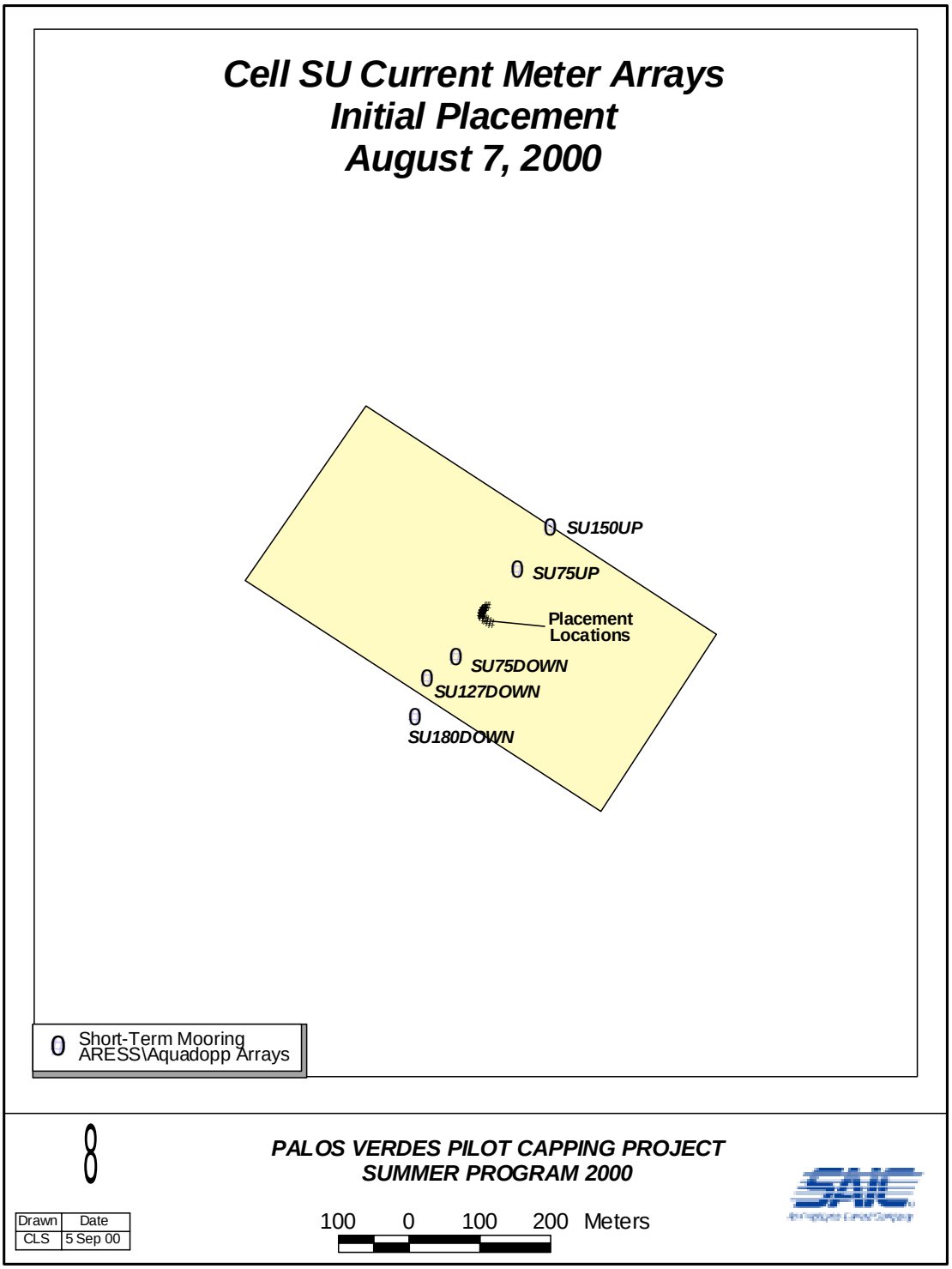
None

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0807.tgt


Cell SU Current Meter Arrays
Initial Placement
August 7, 2000
SU150UP
SU75UP
Placement Locations
SU75DOWN
SU127DOWN
SU180DOWN
Short-Term Mooring ARESS\Aquadopp Arrays
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
5 Sep 00
100 0 100 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: August 9,2000
Survey: ARESS Array Recovery following SU Initial Placement (8Bi)
Survey Vessel: R/V Tuna
(All Times UTC)

Survey Team:
SAIC: Marc Wakeman (ARESS), Jim Singer (Aquadopp), John Evans (Deck ops), Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate (Names Unknown)

Survey Operations:
Survey Schedule
The ARESS current array recovery crew departed the Southern California Marine Institute (SCMI) at 14:08 to retrieve 5 current arrays in Cell SU. Retrieval operations were conducted between 15:07 and 19:19. Four of the five arrays were retrieved with no difficulty. The fifth array did not respond to the acoustic release trigger and was therefore left in place until a grapnel recovery could be arranged. The vessel returned to SCMI at 20:05.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver

- Survey: RECOVERY
  Please refer to the August 7 Cruise Report for descriptions of those instruments recovered.

Problems Encountered

One Aquadopp array site (SU150UP) did not have a surface buoy. The acoustic release was triggered multiple times and from multiple positions around the array deployment position. The buoy never appeared at the surface, and the array was therefore left on the bottom.

Custody of Samples:

Marc Wakeman had custody of the ARESS data and Jim Singer had custody of the Aquadopp data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0809.tgt

CELL SU
CTD & WATER QUALITY CRUISES

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **August 8, 2000**
Survey: **CTD and Water Quality, Initial Placement (8Bii)**
Cell: **SU**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:

SAIC:	Scott McDowell (Leader), Pam Walter (Water Sampling), Ellen Tobey (Navigation), Jason Infantino (Navigation)
USACOE:	Larry Smith (Observer)
SCMI:	Mike Quinn (Captain), Dave Reynoso (Mate), Justin Myer (Deckhand)

Survey Operations:

Survey Schedule:

The CTD and Rosette crew departed the Southern California Marine Institute (SCMI) at 14:09 to conduct CTD and Rosette operations for the Initial Placement in Cell SU. Survey operations were conducted between 14:56 and 21:36. The crew conducted a background study between 14:09-17:39. The placement began at 18:34 and ended at 18:37. The placement survey started at 17:50 and ended at 21:37. The R/V *Tuna* crew released two current drogues into the center of the cap material plume. The green drogue was used to indicate the current at 10 m water depth and the yellow drogue indicated currents 30 m down. During the survey when the CTD unit was on deck the R/V *Sea Watch* located the drogues and took fixes at each drogue's position to establish a drogue trackline.

For this survey, 39 water samples were collected. Thirty-six of the samples were collected near the center of the plume during multiple down casts of the Rosette or following a drogue and within 2 meters of the sea floor. Detailed times of individual water sample collections can be found in the Monitoring Results from the Field Pilot Survey. Twenty-seven samples were collected for TSS analysis and eight samples for p,p' DDE during and after the placement. Three near-bottom background water samples were collected at the planned point of disposal prior to the placement event. The purpose of these samples was to determine the natural background levels of TSS and p,p' DDE in the water column prior to the placement of the cap material. Five background CTD down casts were performed and eight CTD down casts occurred during placement operations. SCMI provided the trained operating technicians for the CTD, Rosette, altimeter, and transmissometer while on board the R/V *Sea Watch*. Upon survey completion the vessel returned to SCMI at 22:25.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Water Quality: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered:

Upon the arrival at survey area SU it appears that only four of the five current mooring buoys were present. All three ARESS buoys downslope are present but one of the two Aquadopp buoys upslope was missing. Upon position checks it appears that the inshore buoy is missing.

After retrieving the green drogue, the crew discovered that the drogue buoy line was tangled on deployment. The drogue was at 10 meters depth instead of 15 meters as planned.

There were electrical problems with salinity and temperature gauges. The manufacturer was called and the problem is believed to be an internal CTD problem. The CTD was brought on deck for maintenance as the Rosette mechanism was clogged with sand that accumulated from the plume suspension.

The navigation equipment had problems with differential. Differential signals intermittently failed when the CTD winch was in operation. The winch drew too much power, causing the differential NavBeacon to fail until the winch was idle.

Custody of Samples:

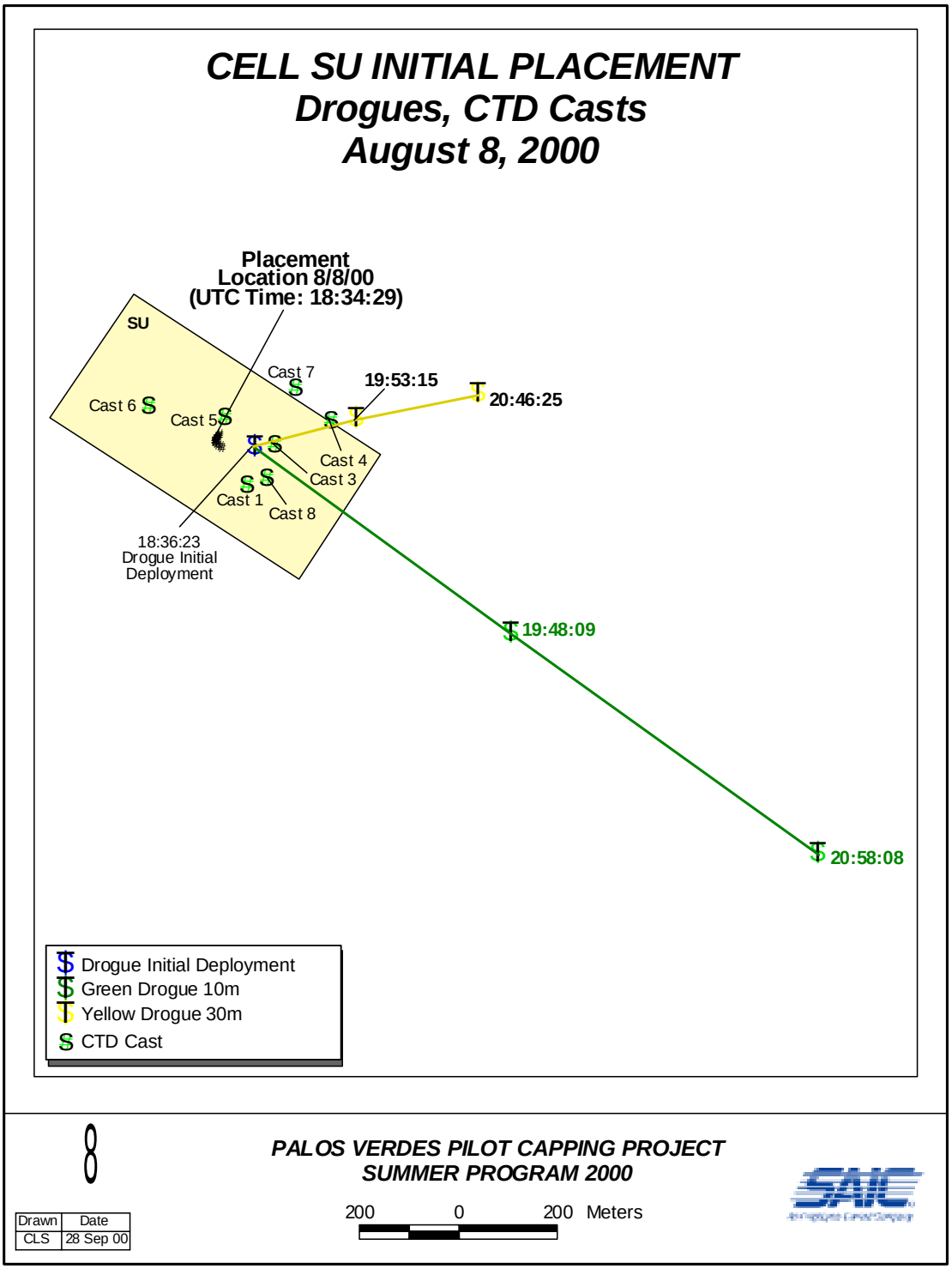
Upon arrival at dock, Pam Walter was given custody of samples.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:

RAW0808.tgt


CELL SU INITIAL PLACEMENT
Drogues, CTD Casts
August 8, 2000
Placement
Location 8/8/00
(UTC Time: 18:34:29)
SU
Cast 7
19:53:15
20:46:25
Cast 6
Cast 5
Cast 4
Cast 3
Cast 1
Cast 8
18:36:23
Drogue Initial
Deployment
19:48:09
20:58:08
Drogue Initial Deployment
Green Drogue 10m
Yellow Drogue 30m
CTD Cast
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
28 Sep 00
200
0
200
Meters

CELL SU
TOWED ADCP CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 8, 2000**
Survey: **ADCP Tow, Initial Placement (8Bii)**
Cell: **SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Rebecca DeKeyzer (Navigation), Lisa McAuliffe (Crew)
COE: Mike Tubman (ADCP)
EPA: Fred Schauffler (Observer)
Vessel: Josh (Captain), Bob Greeno (Mate)

Survey Operations:
Survey Schedule
The ADCP crew departed the Southern California Marine Institute (SCMI) at 13:43 to conduct the Initial Placement ADCP survey in Cell SU. Survey operations were conducted between 14:31 and 20:58. A total of 26 lines were surveyed. Two current drogues were released into the center of the surficial placement plume at approximately 18:36 and were recovered by a separate vessel. Upon completion of all survey activities the vessel returned to SCMI at 21:45.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RDInstruments Broad Band Acoustic Doppler Current Profiler (ADCP)

Problems Encountered

An ARESS buoy line became tangled in the ADCP tow cable on survey line ADCP_SU_ADHOC (Azimuth 33 degrees). No damage was done, and the line was freed quickly.

Custody of Samples:

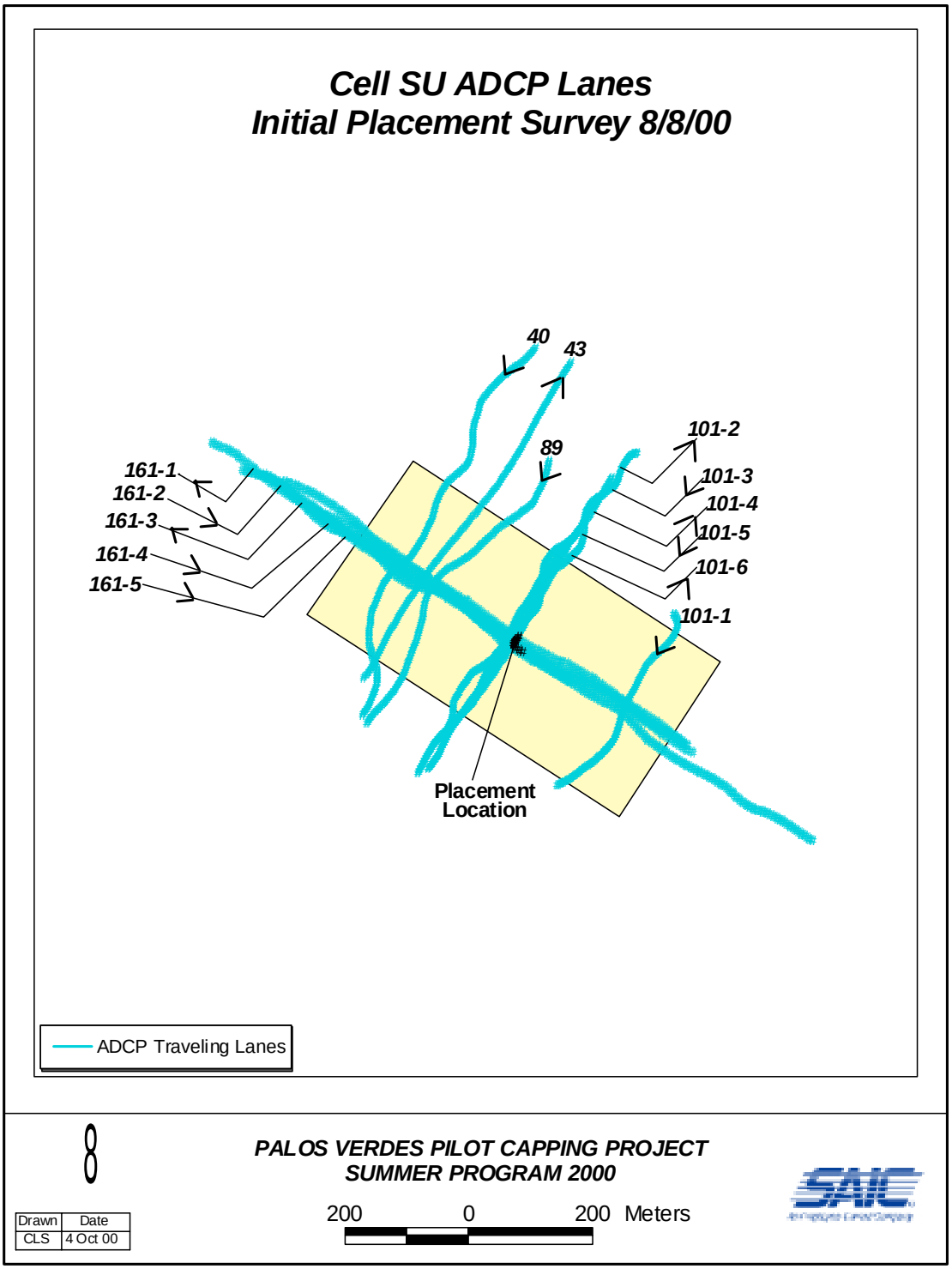
Mike Tubman had custody of the ADCP data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0808.tgt, RAW0808.log
Lines_08082000_TN.csv


Cell SU ADCP Lanes
Initial Placement Survey 8/8/00
40
43
89
101-2
101-3
101-4
101-5
101-6
101-1
161-1
161-2
161-3
161-4
161-5
Placement Location
ADCP Traveling Lanes
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
4 Oct 00
200
0
200
Meters

CELL SU
UNDERWATER VIDEO CRUISES

Palos Verdes Pilot Capping Monitoring Program

Cruise Report

Survey Date: **August 8, 2000**
Survey: **Video Initial Placement (2ii)**
Cell: **SU**
Survey Vessel: **R/V *Bottom Scratcher***
(All Times UTC)

Survey Team:
SAIC: Allan Quintal (Video, Navigation), Greg Tufts (Deck Ops), John Evans (Deck Ops), Vicki Frank (Deck Ops)
SCMI: Greg Elliot (Captain), Gerry Smith (Mate)

Survey Operations:

Survey Schedule

The video crew departed the Southern California Marine Institute (SCMI) at 15:05 to conduct video operations in and around cell SU during the initial placement. Survey operations were conducted between 16:15 and 19:55. Data were collected for 9 minutes at a site centered between Current Array Sites 75Up and 75Down. The R/V *Bottom Scratcher* then moved to an offshore site and waited for the placement event to occur. The placement occurred at approximately 18:34, but no plume was seen in the areas surveyed. At 19:32, the vessel moved to the center of the cell to complete one profile cast. The depth of the video camera at the beginning of the placement was approximately 225 feet. The depth of deployment at the center of Cell SU was approximately 205 feet. Upon completion of survey activities, the vessel departed the survey area and returned to dock, arriving at SCMI at 20:47.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Outland CON3000 Video camera console
  Outland UWC-160 Underwater Camera

Problems Encountered

Surface currents and wind posed significant operational hurdles. The video cable became tangled in the cage, requiring camera recovery for detangling. Minimum vessel speed was too fast to leave camera submerged while transiting. Although the vessel was on station at the planned time, the placement was late and the vessel had drifted off station when the event actually occurred. The video camera cable was visible in several minutes of video record.

Custody of Samples:

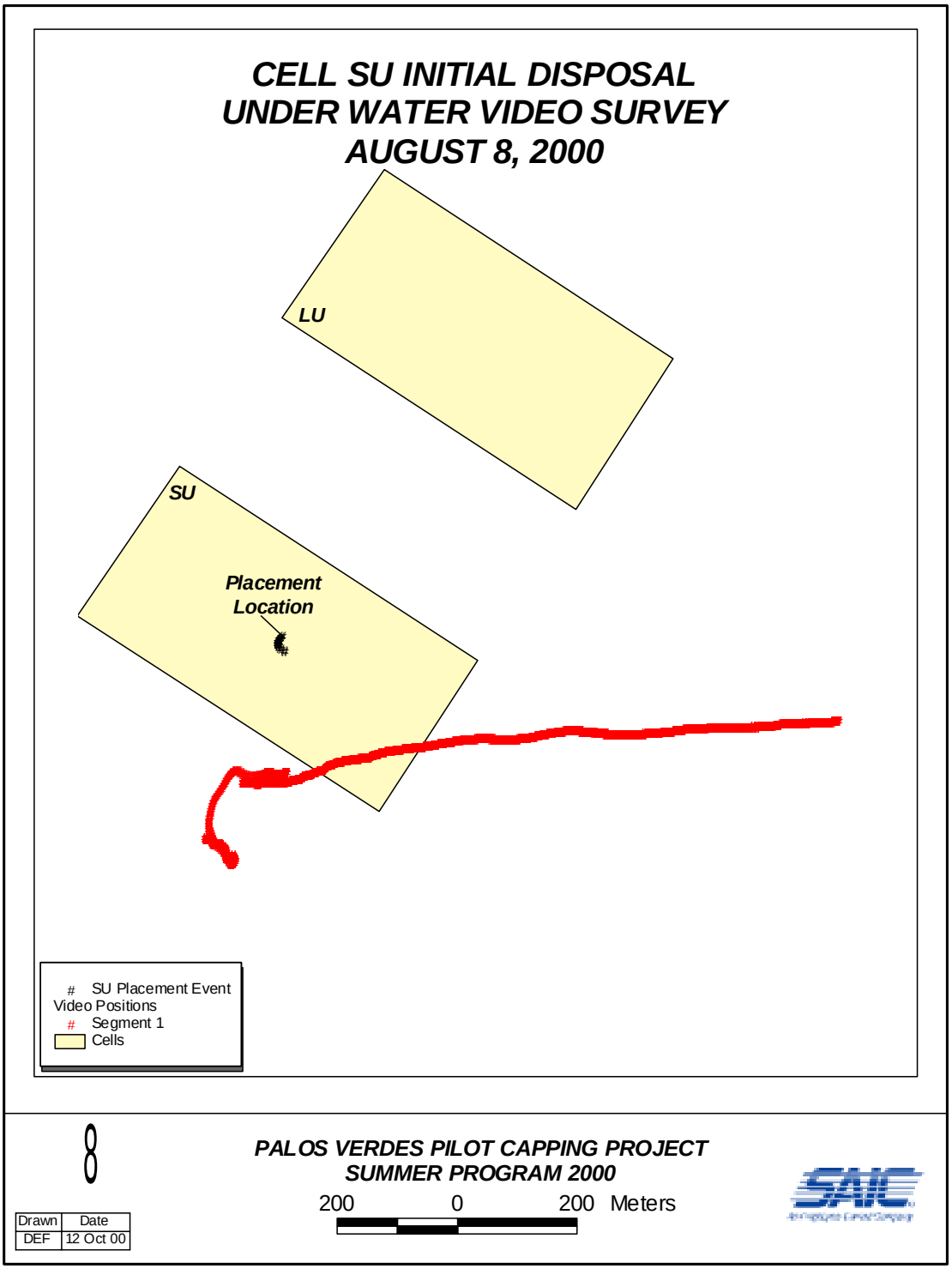
Allan Quintal had custody of videotapes upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Pv080200.txt
Lines_08082000_BS.csv


CELL SU INITIAL DISPOSAL
UNDER WATER VIDEO SURVEY
AUGUST 8, 2000
LU
SU
Placement
Location
SU Placement Event
Video Positions
Segment 1
Cells
8
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
DEF
12 Oct 00

CELL SU
ADISS MONITORING
OF
HOPPER DREDGE OPERATIONS

Survey Dates: **August 8, 2000 – August 21, 2000**
Survey: **ADISS Hopper Dredge Position Tracking**
Cell: **SU**
Survey Vessel: **Dredge Sugar Island**
(All Times UTC)

Survey Team:
SAIC: David Fischman, Marc Wakeman, Steve Pace, Mike Mueller

Survey Operations:
Survey Schedule
The NATCO dredge Sugar Island was outfitted with an Automated Disposal Surveillance System box. This box recorded vessel position and draft for each placement throughout the Pilot Capping project. The system defined the precise location of each placement by recording the changes in draft that occur as the dredge released the capping material. Position information was downloaded following the completion of each survey type, i.e. following the initial placement, after the first interim placements were complete, etc. The dates on which various placements were made in Cell SU are listed below.

Initial:	08/08/00
2 –5:	08/18/00 – 08/19/00
6 – 21:	08/25/00 – 08/27/00

Surveying Equipment

- Survey: ADISS Box
  Data Card (records raw position data)

  DGPS & GPS Antennae

  Toshiba Satellite computer
  AdissPLAY® – Database program

Problems Encountered

None

Custody of Samples:

None

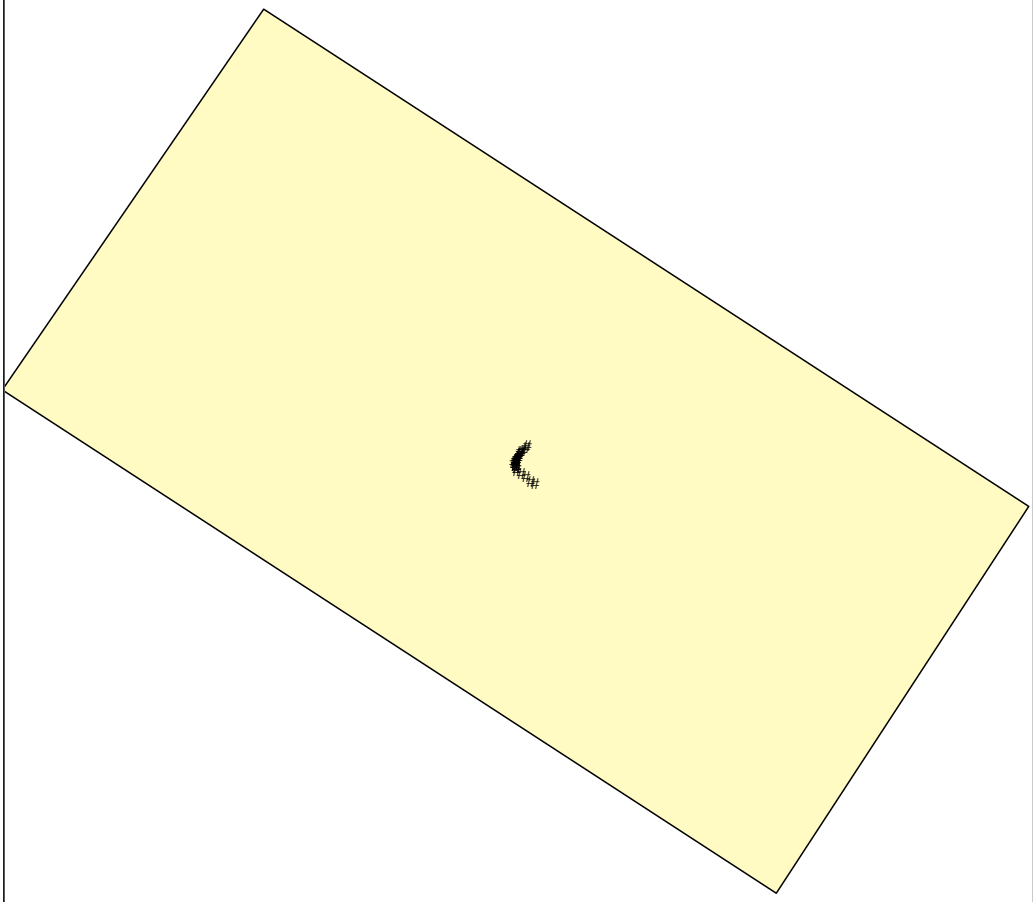
Custody of Survey Data:

David Fischman had custody of the ADISS data following each download and upon final completion of all survey operation on the Palos Verdes shelf.

Navigation Data Files:

None

CELL SU PLACEMENT POSITIONS
August 8, 2000



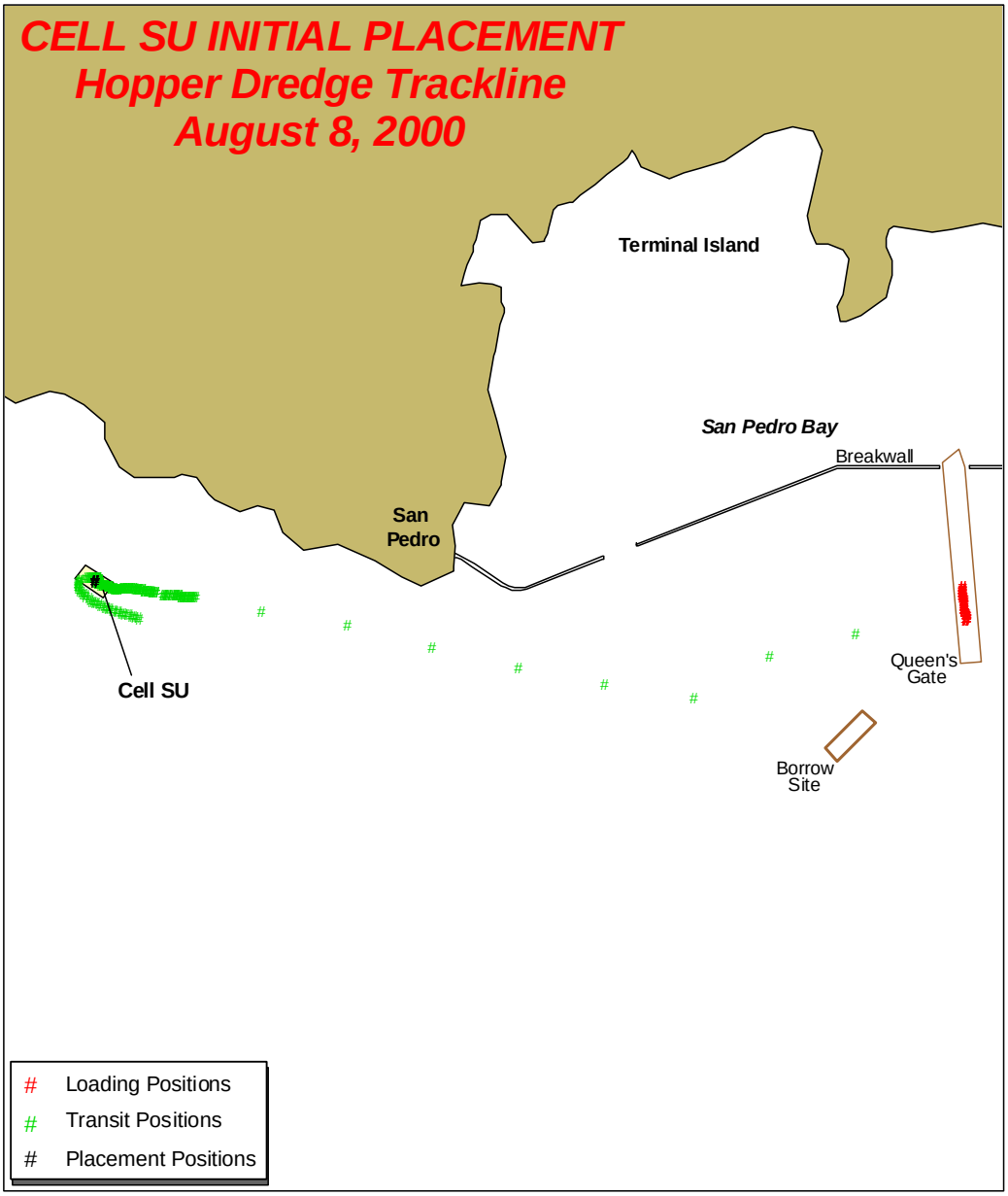
Placement 1
Start: 18:34:29
end: 18:37:39

8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
CLS	16 Aug 00

100 0 100 Meters



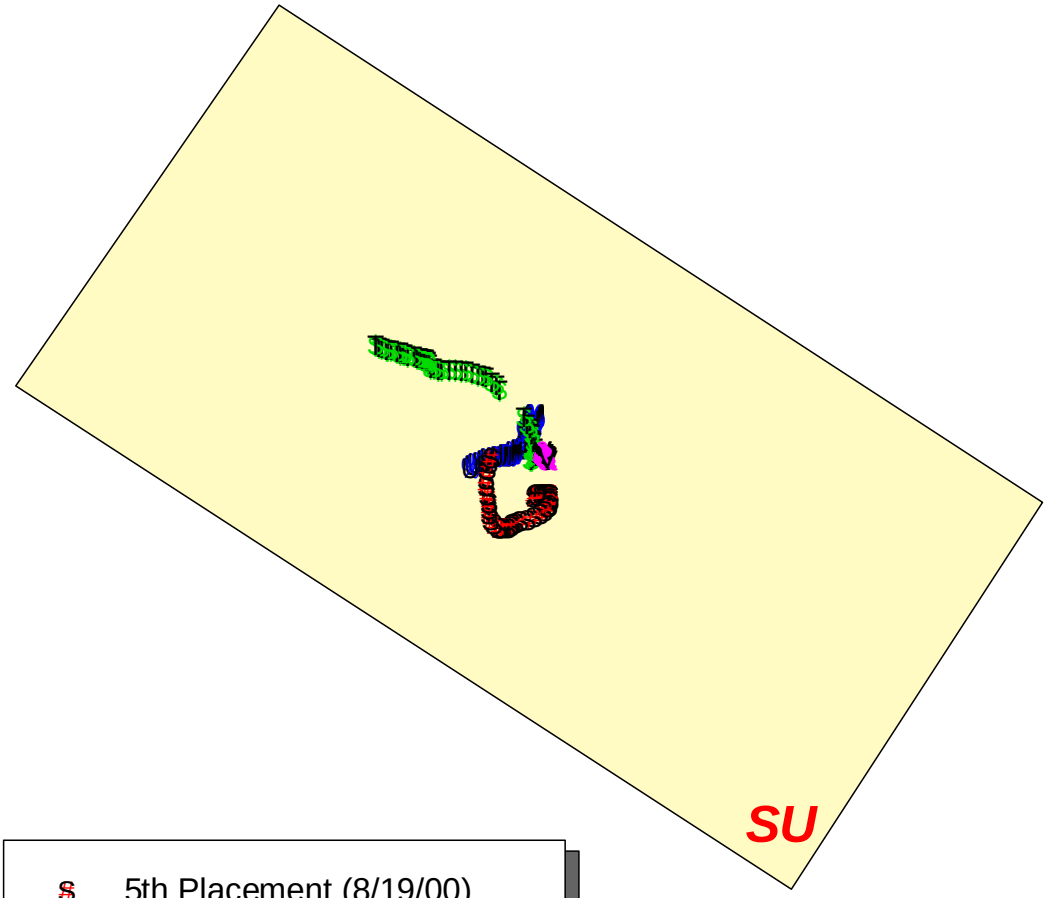
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
CLS	26 Aug 00

2 0 2 4 Kilometers

CELL SU PLACEMENT POSITIONS
2 Through 5



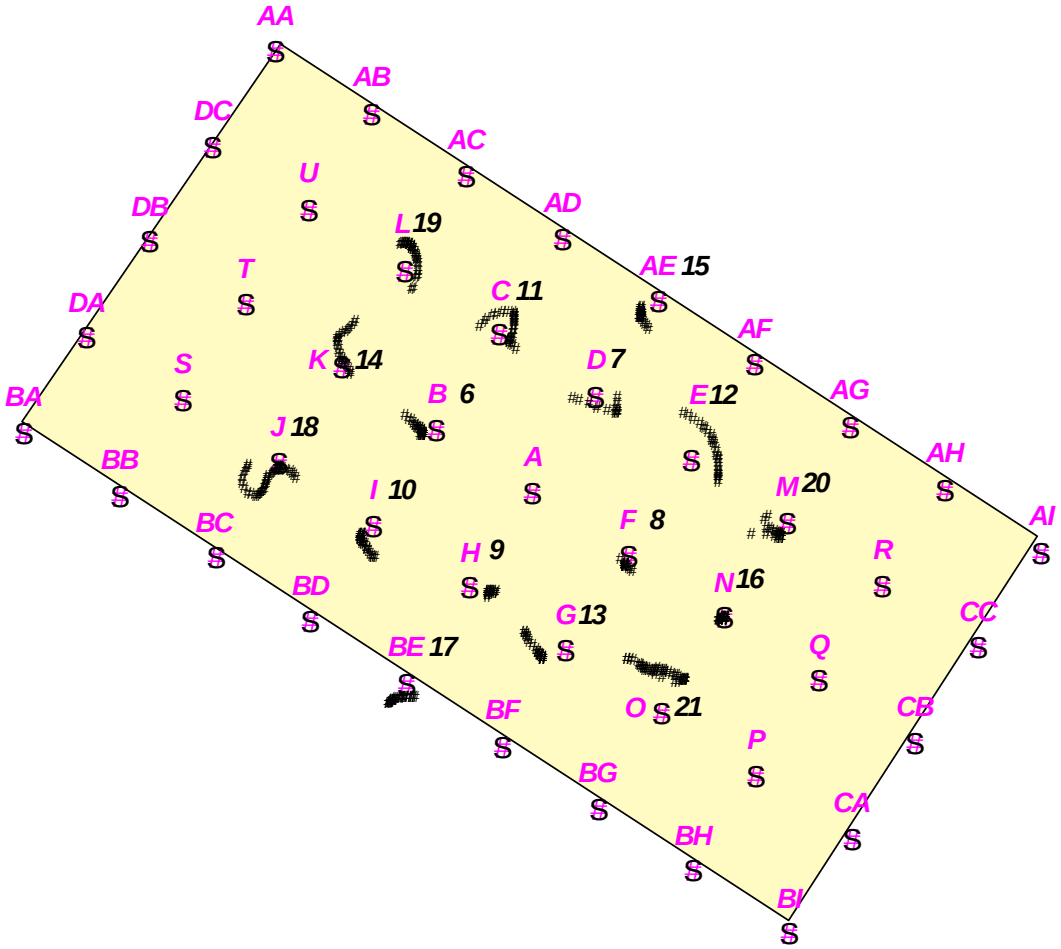
- 5th Placement (8/19/00)
- 4th Placement (8/18/00)
- 3rd Placement (8/18/00)
- 2nd Placement (8/18/00)

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

100 0 100 Meters

Drawn	Date
DEF	11 Oct 00

Cell SU Placements 6 - 21



Actual Placement Positions
Target Placement Positions

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

100 0 100 Meters

Drawn	Date
CLS	28 Aug 00

APPENDIX C
CELL LD

Palos Verdes Cruise Report Reference Table
Appendix C – Cell LD

Cell	DataType	Survey Sequence	Fredette Task No.	Survey Type	Survey Date	Cruise Report Page No.	Graphic(s) Page No.
LD	SPC/PVC	Baseline	7A	Primary[1]	08/14/00	C2	C3
LD	SPC/PVC	Post Initial	7Biii	Primary	08/18/00	C4	C5
LD	SPC/PVC	Post Initial	7Biii	Primary	08/24/00	C6	C7
LD	SPC/PVC	Post Cap	7Di	Primary	08/30/00	C8	C9
LD	SPC/PVC	Post Pump Out	Flex 2A[3]	Flex 2	09/09/00	C10	C11
LD	SPC/PVC	Post Cap		Supp.	02/24/01	C12	C14
LD	Cores	Post Initial	7Biv	Primary	08/17/00	C16	C17
LD	Cores	Post Pump Out	Flex 2A	Flex 2	09/15/00	C18	C19
LD	Cores	Post Cap		Supp.	02/27/01	C20	C22
LD	Cores	Post Cap		Supp.	02/28/01	C23	C22
LD	Cores	Post Cap		Supp.	03/01/01	C24	C22
LD	Sidescan	Post Initial	7Bv	Primary	08/19/00	C26	C27
LD	Sidescan	Post Cap	7Dii	Primary	08/30/00	C28	C29
LD	Current Arrays	Initial Placement	7Bi	Primary	08/14/00	C31	C33
LD	Current Arrays & TRBM	Initial Recovery	7Bi, 14	Primary	08/16/00	C34	No Graphic
LD	CTD & Water Quality, Drogues	Initial Placement	7Bii	Primary	08/15/00	C36	C38
LD	Surface Plume Transport	Kelp Study #1	11i	Primary	08/28/00	C39	C40
LD	Towed ADCP	Initial Placement	7Bii	Primary	08/15/00	C42	C43
LD	Video	Initial Placement	2iv	Primary	08/15/00	C45	C46
LD	Video	Interim	Flex 1[2]	Primary	08/22/00	C47	C48
LD	ADISS	Pilot Capping Monitoring	3	Primary	08/15/00 - 09/08/00	C50	C51-69

1. Primary surveys were contracted in SoW v. 4.1, Tasks 2, 3, 6-8, and 11.
2. Flex 1 surveys were contracted in SoW v. 4.1, Task 5.
3. Flex 2 surveys were contracted in Contract Modification 1, Tasks A, B, and C.

CELL LD
SPC/PVC CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 14, 2000**
Survey: **SPC and PVC, Baseline (7A)**
Cell: **LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:

SAIC:	Greg Tufts (PVC), Jason Infantino (SPC), Ray Valente (Deck), Lisa McAuliffe (Navigation)
SCMI:	Ken Kivett (Captain), Brian Tufts (Mate), David Renoso (Mate)
USACOE:	Joe Ryan

Survey Operations:

Survey Schedule

The R/V *Sea Watch* departed SCMI at approximately 21:20 for the Cell LD Baseline Sediment Profile Camera and Plan View Camera surveys. The crew had to change an oil filter for the starboard engine en route, which lead to a slightly longer transit. The vessel arrived on site at 22:13 and proceeded through the first three sites without any problems. During the third repetition at Site LDBI09, the SPC counter stopped advancing. The camera was pulled on deck and the counter reset. Following the reset, the counter worked normally for the remainder of the survey. One of the sites, LDBO07, was planned for the same location that ARESS array LD1_D250 had been deployed in this morning. The SPC/PVC samples were taken slightly seaward of the planned site to avoid damaging the array. Hypack, the navigation system, crashed once. This was apparently due to a program overload. A total of 25 sites (I01 – I15, O01 – O10) were visited, with a minimum of three images collected at each site. The vessel completed survey operations at 02:08 and returned to SCMI at approximately 02:55.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

The counter on the SPC stopped advancing at Site LDBI09. After it was reset, the counter worked normally for the rest of the survey.

Custody of Samples:

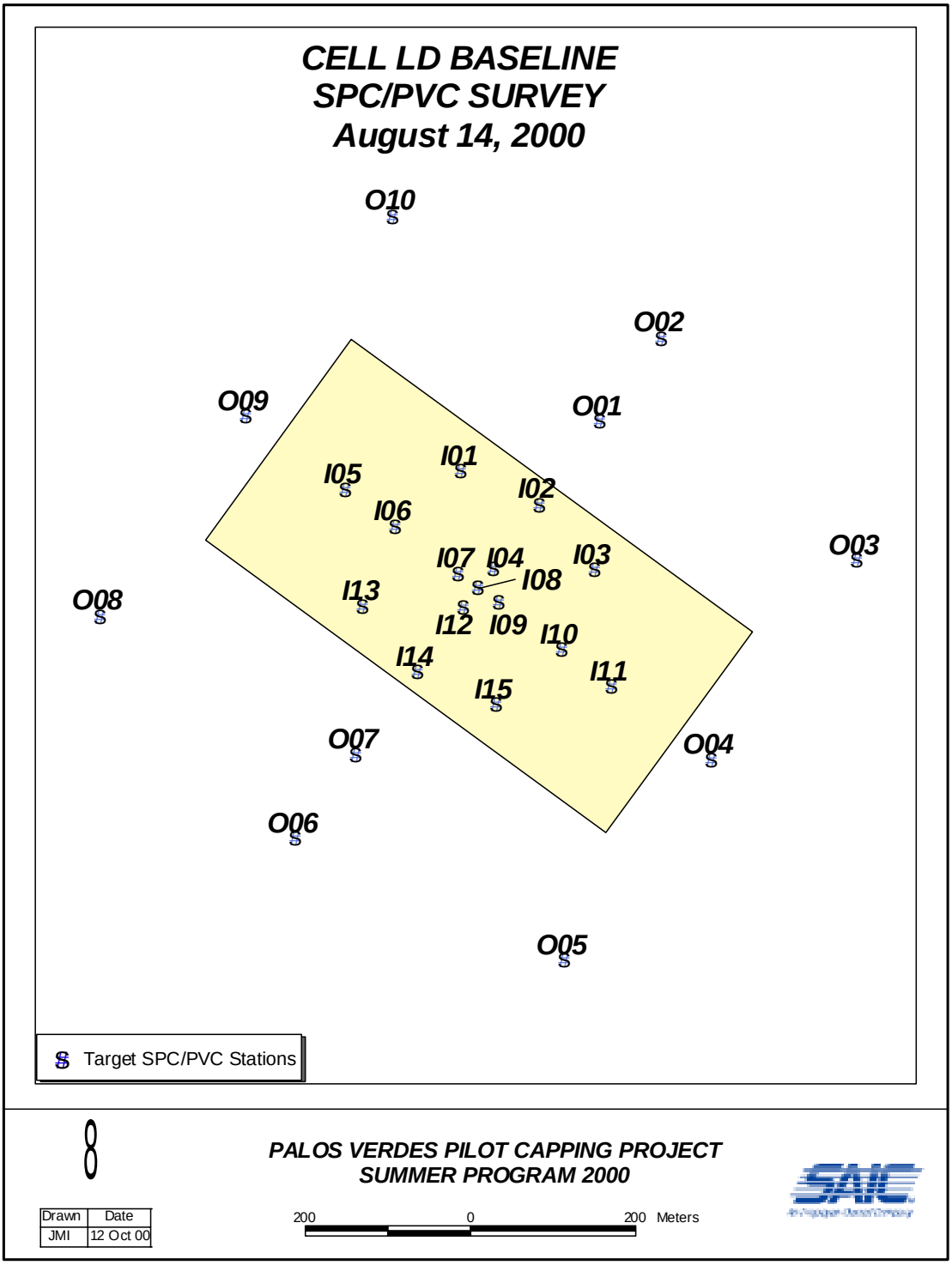
Greg Tufts and Ray Valente had custody of samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08142000_SW_LUB.csv
Points_08152000_SW_LUB.csv


CELL LD BASELINE
SPC/PVC SURVEY
August 14, 2000
O10
O02
O09
O01
I01
I05
I02
I06
O03
I07
I04
I03
I08
O08
I13
I12
I09
I10
I14
I11
I15
O07
O04
O06
O05
Target SPC/PVC Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
12 Oct 00
200
0
200
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 18, 2000**
Survey: **SPC and PVC, LU First Interim (6Ciiia), LD Post Initial (7Biii)**
Cell: **LU, LD**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation), Allan Quintal (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 13:15 and departed from SCMI at approximately 13:30. The crew was scheduled to complete the Cell LU Interim Survey (6 sites, 1 re-survey site) and the Cell LD Post-Initial Placement survey (35 sites).

The vessel arrived at the Cell LU at 14:07. After the second repetition on the first site, I08, the pinger did not go off. The camera was pulled to the deck and reset. The site was sampled successfully and the rest of the LU survey (I01 – I03, I05, I16, I17) was completed with no further difficulties. The vessel moved to Cell LD at approximately 15:35. At the 21st site, the pinger did not go off. The camera was pulled to the surface, reset, and completed the rest of the survey with no trouble. The vessel completed the 35 LD sites (I01 – I15, I20, I21, O01- O13, O15 – O19, O21, and O22) by 22:10. A minimum of three replicates were completed at each site in both cells, with two sites requiring additional repetitions. Upon completion of survey activities, the vessel returned to the dock at SCMI, arriving at 23:00.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
The camera pinger did not go off twice, once in each cell. It had to be pulled to the surface and reset each time.

Custody of Samples:

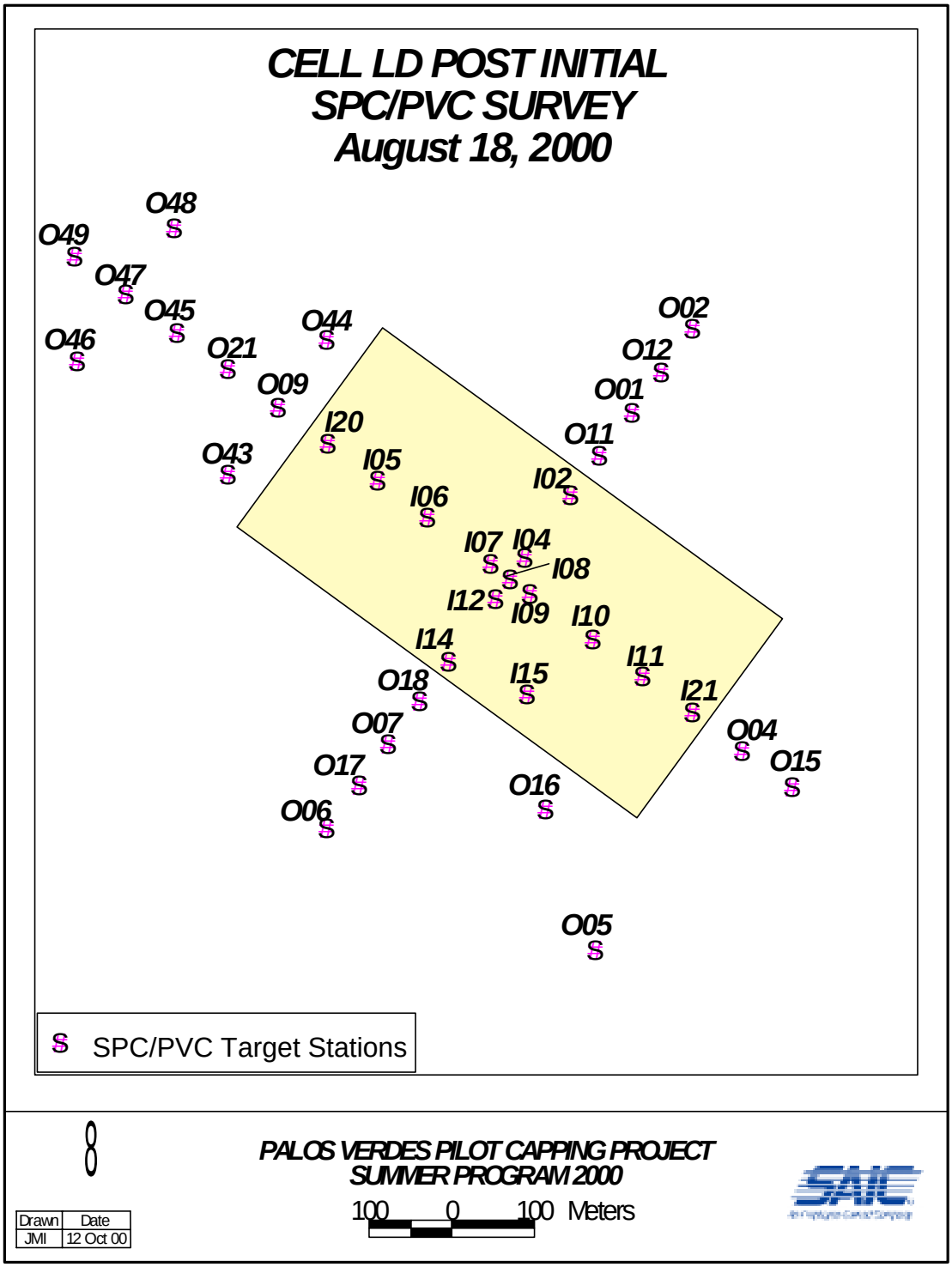
Greg Tufts and Jason Infantino had custody of samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08182000_TN_LUI_LDH


CELL LD POST INITIAL
SPC/PVC SURVEY
August 18, 2000
O48
O49
O47
O45
O46
O44
O21
O09
O43
I20
I05
I06
I07
I04
I08
I12
I09
I10
I14
I15
I11
I21
O18
O07
O17
O06
O16
O04
O15
O02
O12
O01
O11
I02
O05
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 Meters
Drawn
Date
JMI
12 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 24, 2000**
Survey: **SPC and PVC, SU Interim (8Ciiia), LD Post Initial Makeups (7Biii)**
Cell: **SU, LD**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation), Rebecca DeKeyzer (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 13:30 and departed from SCMI approximately 13:48. The crew was scheduled to complete the Cell SU Interim Survey (6 sites) and the Cell LD Post-Initial Placement survey makeups (9 sites).

The vessel arrived at the Cell SU at 14:35. The six sites in Cell SU were completed by 15:45 with no difficulties and no extra repetitions necessary (II02, II13-II15, II18, and II19). The R/V *Tuna* then moved to Cell LD to complete the Post Initial survey (HI01, HI03, HI13, HO03, HO08, HO10, HO13, HO19, and HO22). These nine sites were completed in 1.5 hours. J. Infantino contacted Chris Seidel via cellphone and positions for seven additional LD Post Initial sites were relayed to the survey crew. These seven sites were outside the boundaries of the cell and are intended to aid in the footprint definition from the spreading placement (HO43-HO49). The extra survey was completed at 18:46 and the vessel returned to SCMI at 19:45.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
None

Custody of Samples:

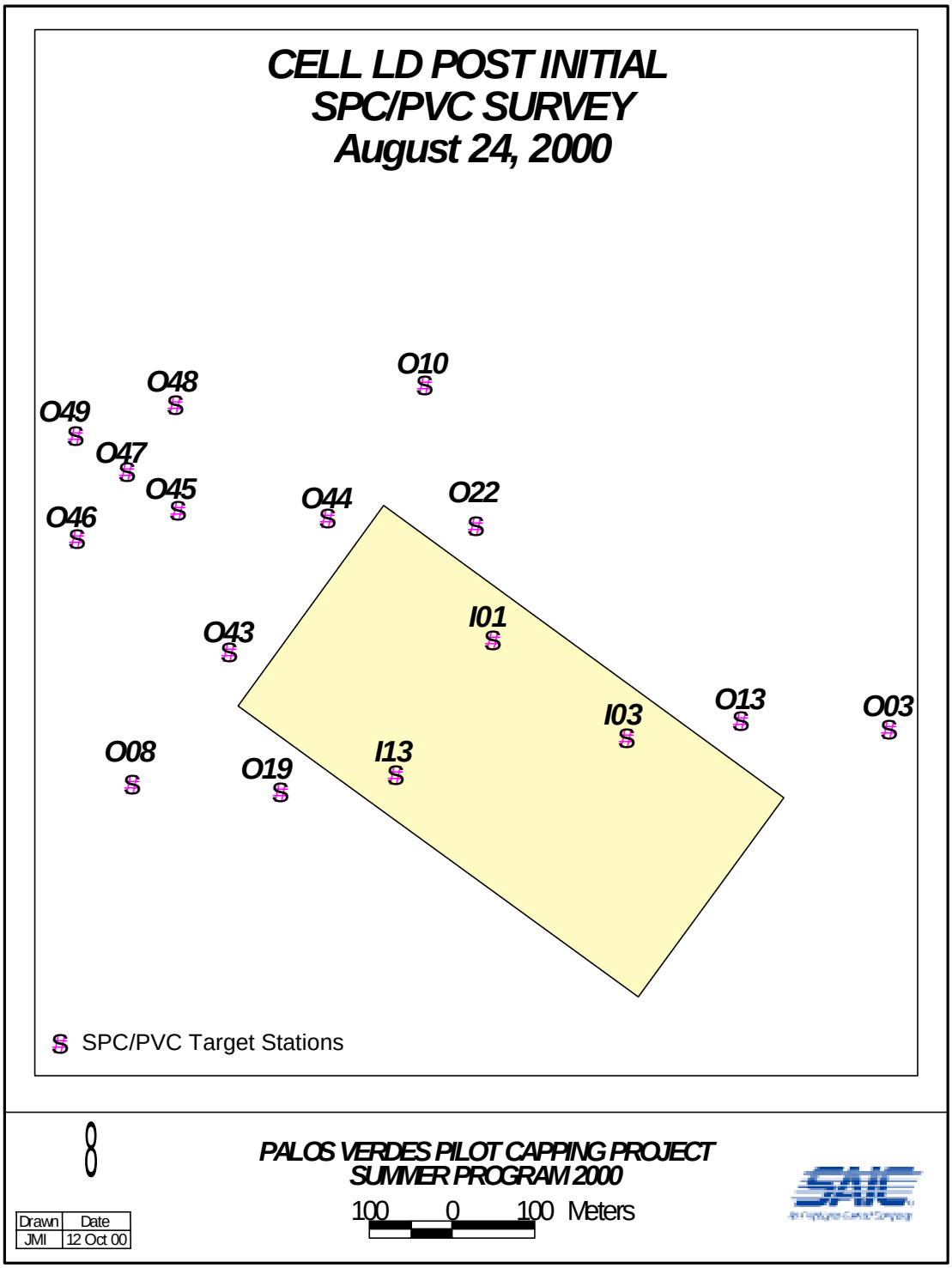
Greg Tufts and Jason Infantino had custody of the samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08242000_TN_SUI_LDH


CELL LD POST INITIAL
SPC/PVC SURVEY
August 24, 2000
O10
O48
O49
O47
O45
O46
O44
O22
I01
O43
O13
O03
I03
O08
I13
O19
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 Meters
Drawn
Date
JMI
12 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 30, 2000**
Survey: **SPC and PVC, Post Cap (7Di)**
Cell: **LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Ray Valente (SPC), Greg Tufts (PVC), and Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate, Deckhand (names unknown)

Survey Operations:
Survey Schedule
The SPC/PVC crew departed the Southern California Marine Institute (SCMI) at 13:17 to conduct the Cell LD Post Cap SPC/PVC Survey. Survey operations were conducted between 14:15 and 19:59. A total of 44 sites (I01 – I15, I20, I21, O01 – O13, O15 – O19, O21, O22, O43 – O49) were surveyed. Upon completion of the survey, the vessel returned to SCMI at 20:24.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

The survey portion of Hypack crashed after site LDCO11C. The navigation data for replicates LDCO11A and LDCO11B were lost. However, the positions for those two replicates were well with in the 10 m radius. Thus, the position for replicate LDCO11C may be used.

Custody of Samples:

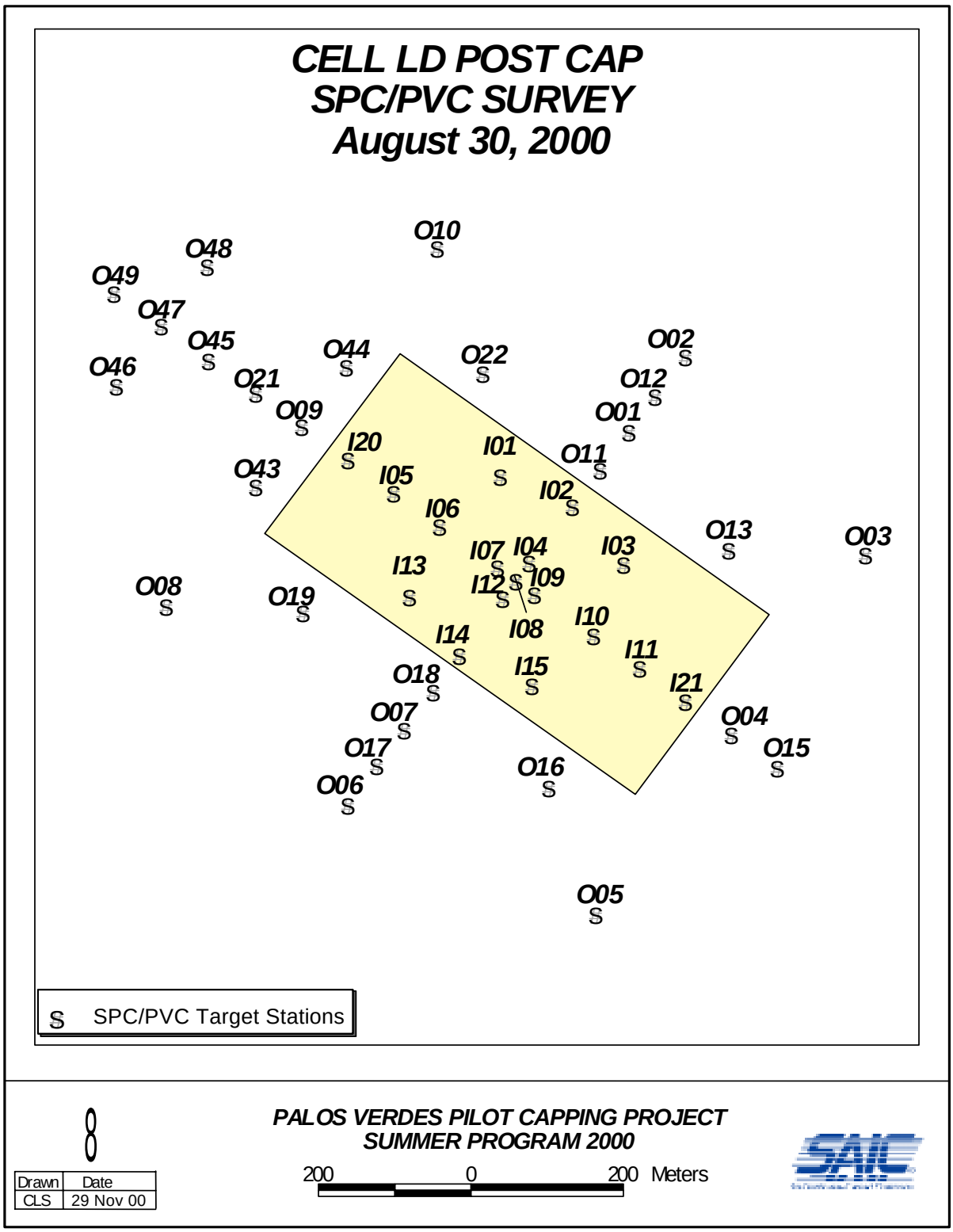
Greg Tufts had custody of the samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW08030.tgt
Points_08302000_sw.csv


CELL LD POST CAP
SPC/PVC SURVEY
August 30, 2000
O10
O48
O49
O47
O45
O44
O22
O02
O46
O21
O12
O09
O01
I20
I01
O11
O43
I05
I02
I06
O13
O03
I07
I04
I03
I13
I12
I09
O08
O19
I10
I08
I14
I11
I15
O18
I21
O07
O04
O17
O15
O16
O06
O05
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
CLS
29 Nov 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 9, 2000**
Survey: **SPC/PVC, LD Post Pump Out (Flex), LC Post Pump Out (Flex)**
Cells: **LD, LC**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation)
Vessel: Ken Kivett (Captain), Dennis Mahaffy (Mate), Shoshanna Grevenwald (Deckhand)
Survey Operations:
Survey Schedule
The R/V *Sea Watch* departed SCMI at 14:57 for the Cell LD Post Pump Out SPC/PVC survey. Nineteen sites (I01 – I15, I20, I21, O01, O07) were completed with no interruptions or equipment difficulties. Eighteen sites were also completed for Cell LC Post Pump Out survey (I46 – I63). Thirty-eight sites were surveyed for the two cells. The R/V *Sea Watch* completed survey operations at 19:53 and returned to SCMI. The vessel arrived at dock at 20:42.

Survey Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35-mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered

None

Custody of Samples:

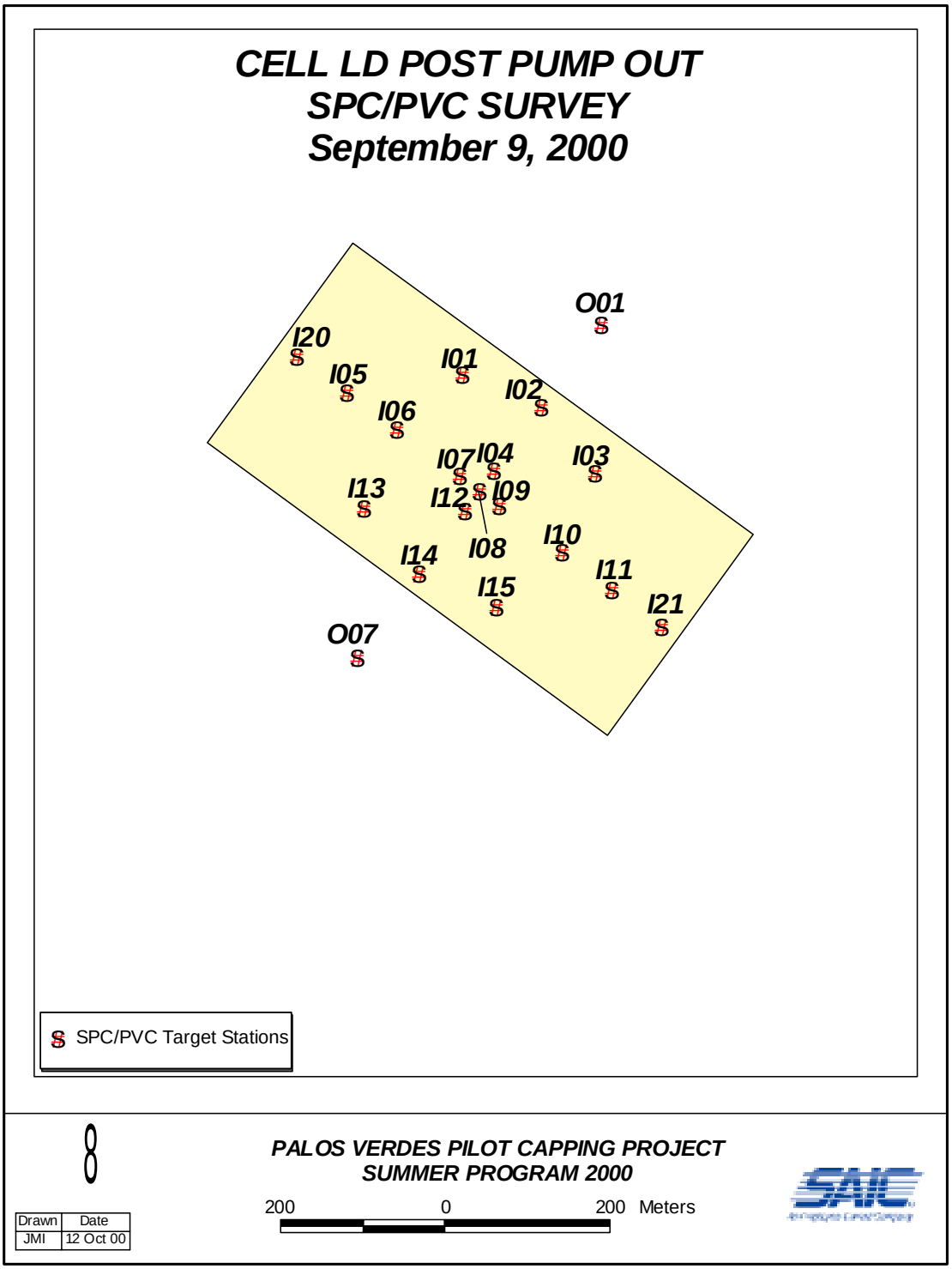
Greg Tufts had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0909.tgt
Points_09092000_SW.csv


CELL LD POST PUMP OUT
SPC/PVC SURVEY
September 9, 2000
O01
I20
I01
I05
I02
I06
I07
I04
I03
I13
I12
I09
I10
I08
I14
I11
I15
I21
O07
SPC/PVC Target Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
12 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 24, 2001
Survey: Supplemental SPC and PVC
Survey Vessel: R/V Sea Watch
(All Times UTC)

Survey Team:
SAIC: Greg Tufts (PVC), Jason Infantino (SPC/Navigation)
SCMI: Mike Quinn (Captain), Shoshana Grunwald (Mate), David Renoso (Mate)
Army Corp of Engineers: Joe Ryan (Deck)

Survey Operations:
Survey Schedule

The R/V Sea Watch departed SCMI at approximately 1433 UTC for the Supplemental Sediment Profile Camera (SPC) and Plan View Camera (PVC) survey. The purpose of the survey was to collect SPC and PVC images at primary, secondary and tertiary stations, respectively, within Cells LD, LU and SU. The vessel arrived at Cell LD at 1515 and maneuvered to begin sampling at Station LDSIO5. A total of 22 stations were occupied for this survey.

A total of 5 primary stations were sampled in and near Cells LD, LU and SU, respectively. Four replicates were taken at each of the 5 stations to ensure that at least 3 analyzable images were acquired at each station. Upon completion of the 5 primary stations, the survey team occupied 17 of the planned 19 secondary stations. Stations LUSO 06 and 07 were not sampled due to adverse weather conditions (see Problems Encountered below). Three replicates were taken at 13 of the 17 stations. Four replicates were taken at station SUSO 13 due to a potential "pullouts" of the SPC/PVC equipment due to boat heave during deployment. Two replicates were taken at Stations LUSO 05, 08 and 74. The secondary stations required only one analyzable image to be collected. The tertiary stations were not sampled due to the adverse weather conditions that are described below.

At 1705 the SPC/PVC system was secured on deck and the film with images from the 5 primary stations and 5 of the secondary stations was developed at sea by SAIC personnel. Following development, the film was examined to confirm that each of the five primary stations had a minimum of three analyzable replicate images. It was determined that all of the primary stations met this requirement. The developing process was completed at approximately 1815 and the field survey resumed to acquire images at the remaining secondary stations.

At 1827 survey operations resumed at secondary station LUSO19. The remaining secondary stations were surveyed until 1938 when the SPC camera required a film change. The camera was secured on deck and the decision to head back to SCMI was made due to the persistent, unfavorable, sea conditions. Upon return to SCMI the second roll of film was developed and analyzed by SAIC personnel. The SPC/PVC equipment was demobilized, packed and processed for shipment back to SAIC immediately following the film development.

On February 23, 2000 the DGPS navigation system used during the SPC/PVC survey (see Survey Equipment below) was calibrated from a known, geo-referenced, point at the Great Lakes Dredge and Dock facility located near SCMI. This was the same facility and point used to calibrate the navigation equipment that was used throughout the Summer 2000 surveys. Navigational test data was collected for approximately 30 minutes to assess the system's navigational accuracy. This calibration showed that the system was accurate to within 1 to 3 meters of the calibration point.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- SPC/PVC

Problems Encountered

Sea conditions were unfavorable for SPC/PVC sampling but a concerted effort was made by the entire survey team to conduct survey operations. There was a constant bi-directional 6-8 foot ground swell accompanied by a 25+ knot wind-chop coming from the Northeast. This mixture of wind derived waves and opposing swell made for an unstable sea state and survey vessel platform. Maneuvering to stations and maintaining vessel position was very difficult. These conditions also made the deployment and retrieval of the SPC/PVC equipment challenging. Weather was the only unfavorable variable that was encountered during the survey operation.

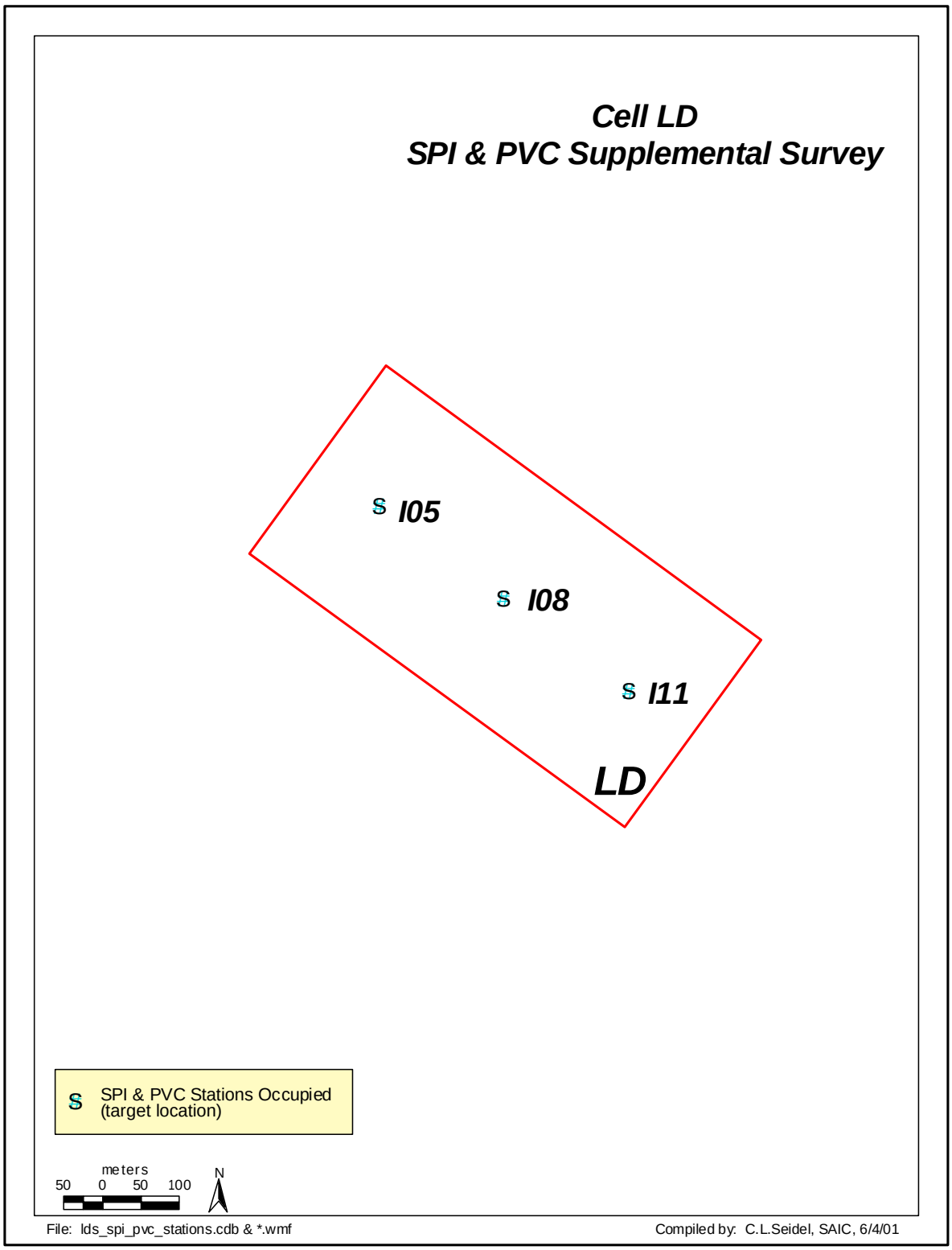
Custody of Samples:

Greg Tufts has custody of the developed film.

Custody of Survey Data:

N/A

Navigation Data Files:
Navlog_022401_SW.xls


Cell LD
SPI & PVC Supplemental Survey
I05
I08
I11
LD
SPI & PVC Stations Occupied (target location)
meters
50 0 50 100
N
File: lds_spi_pvc_stations.cdb & *.wmf
Compiled by: C.L.Seidel, SAIC, 6/4/01

CELL LD
SEDIMENT CORING CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 17, 2000**
Survey: **Coring, LU First Interim (6Civa); LD Post Initial (7Biv)**
Cell: **LU, LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Leader), Vicki Frank (Coring), David Fischman (Coring), and Rebecca DeKeyzer (Navigation)
SCMI: Captain, Mate, and Deckhand

Survey Operations:
Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 17:00 to conduct coring operations in Cell LU for the First Interim survey (Sites 11 – 15), and in Cell LD (16-20) for the Post Initial Spreading Placement survey. Coring operations were conducted between 18:00 and 21:07. Five sites were surveyed for each cell. Eight cores were recovered at Cell LU, as Sites 11, 12 and 15 required a second core to obtain acceptable levels of penetration. A total of 5 cores were collected at Cell LD, one at each site. Following the completion of coring operations, the vessel returned to SCMI, arriving at the dock at 22:04.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Gravity Core

Problems Encountered

None

Custody of Samples:

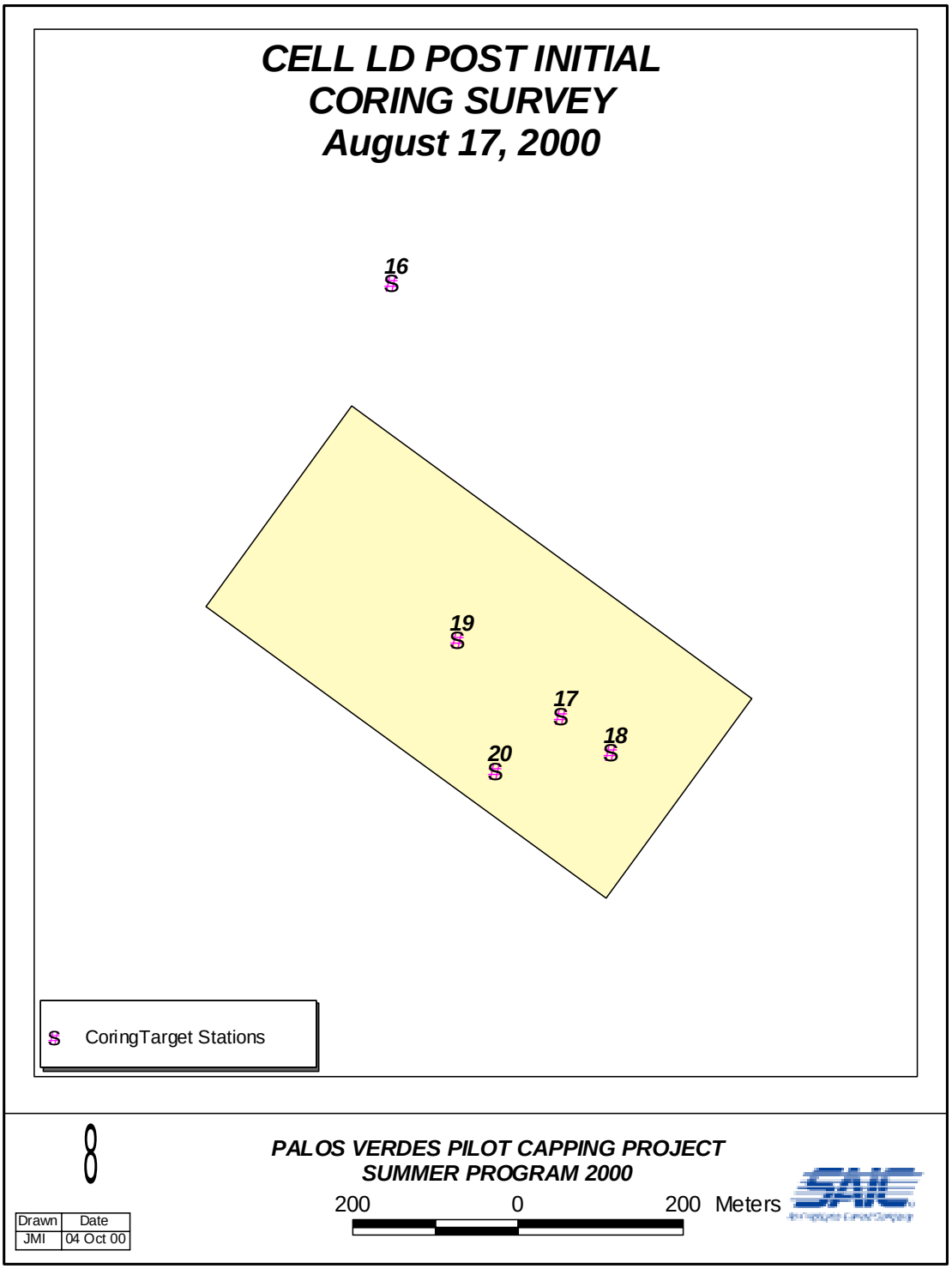
Upon arrival at dock, Pam Walter was given custody of the cores.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

CORING_0817.tgt
Point_08172000_sw.csv


CELL LD POST INITIAL
CORING SURVEY
August 17, 2000
16
19
17
18
20
CoringTarget Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
04 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 15, 2000**
Survey: **Coring, LU Post Post Cap (Flex), LC and LD Post Pump Out (Flex)**
Cell: **LU, LC, LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Coring), Dave Fischman (Coring), Edward Basmadjian (Coring), Lisa McAuliffe (Navigation)
SCMI: Ken Kevitt (Captain), Kerin Wiesenbaker (Deckhand), David Renoso (Mate)

Survey Operations:
Survey Schedule
The coring crew arrived at the R/V *Sea Watch* at 13:35 and departed dock at 14:00. They were scheduled to complete the LU Post Post Cap survey, comprised of five sites, 60 - 64. Two Post Pump Out sites were also scheduled, one each in LC and LD. The *Sea Watch* went to Cell LU first, where they completed the first site (62) with no difficulty. Site 63, located in the center of the cell, had less than 20 cm of penetration for the first two repetitions. Due to the limited number of core liners on board, the crew moved on to the remaining three sites (60, 61, &64). Following the completion of Site 64, the vessel moved to Cell LC to take one core in the center of the cell (65), and then to Cell LD to take one core, also in the center of the cell (66). Following those two sites, the *Sea Watch* returned to the center of LU (Site 63) and took two additional cores. The fourth core, 63D, was over 47cm in length. A total of ten cores were collected, eight in Cell LU, one each in LC and LD. The R/V *Sea Watch* returned to SCMI upon completion of survey activity, arriving at dock at 18:10.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity corer

Problems Encountered
None

Custody of Samples:

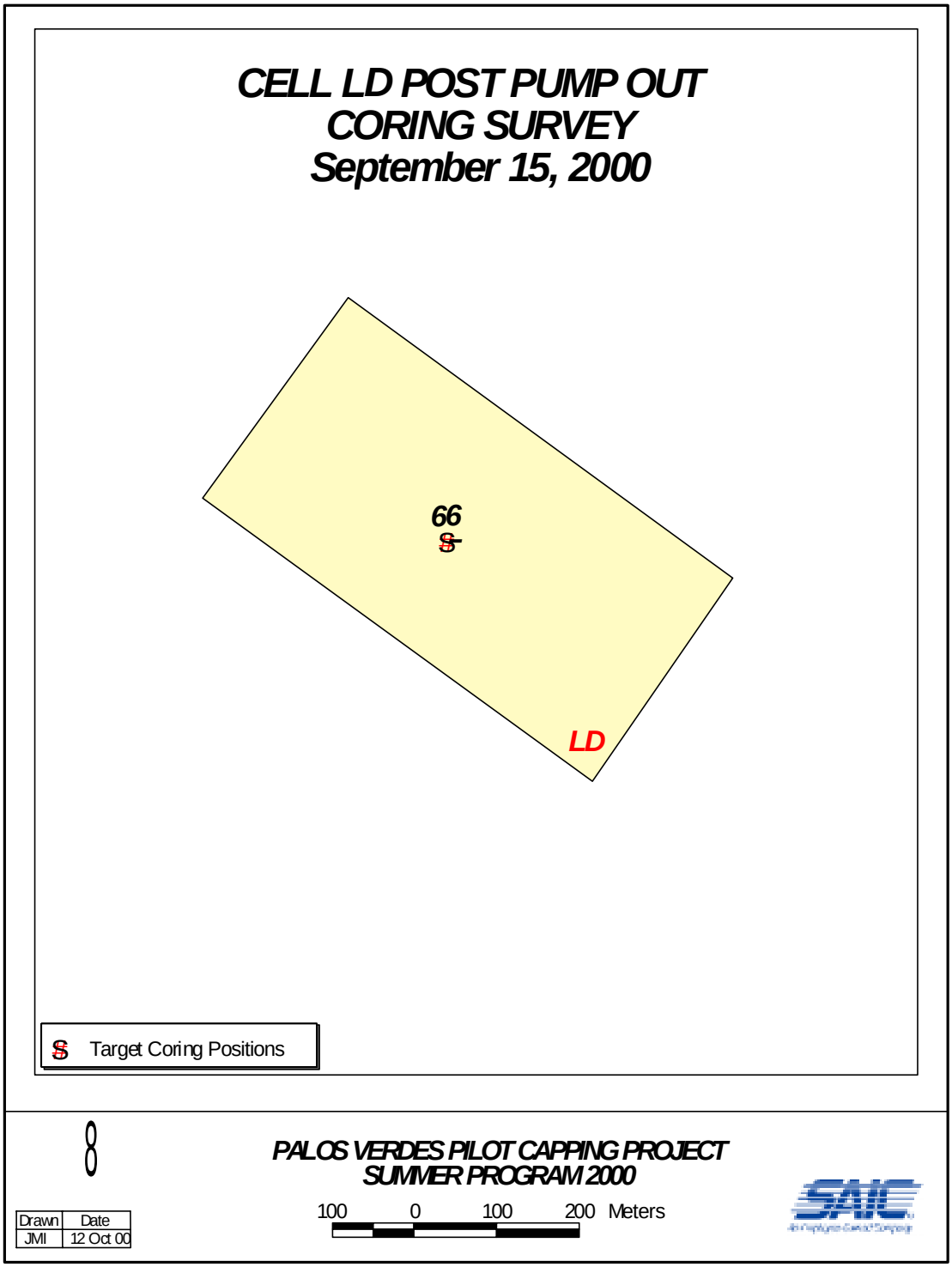
Pam Walter was given custody of the core samples upon the vessel's arrival at dock.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Raw0915.tgt
Points_09152000_SW_cores.csv


CELL LD POST PUMP OUT
CORING SURVEY
September 15, 2000
66
LD
Target Coring Positions
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
100 0 100 200 Meters
Drawn
Date
JMI
12 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 27, 2001
Survey: Supplemental Vibra Coring and Box Coring
Cells: LU, LD, SU
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation), Pam Walter (Observer), Kate Montgomery (Observer)
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams(Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)
ACOE:	Larry Smith (Observer), Beatrice Bofill (Observer)

Survey Operations:

Survey Schedule

The coring crew departed the Southern California Marine Institute (SCMI) at 14:44 UTC aboard the R/V Wm. A. McGaw to conduct supplemental coring operations in Cells LD, LU, and SU. Vibracoring operations were conducted between 15:20 and 00:59 UTC. A total of eight (8) vibracores were collected during this survey. The first station (LDSI05) was the first vibracore sample of the day and was used as a test, which lead to a second core sample (described below). The third vibracore was taken as a test to compare the result of using a core catcher versus not using a core catcher. Sea conditions were moderate with a 2-4 foot swell coming from the South. Winds were variable throughout the day and did not exceed 20 knots. Scattered rain showers were also experienced throughout the survey day.

Cell LD

Two (2) stations were surveyed in Cell LD with a total of 5 vibracores collected. The first vibracore was taken at station LDSI05 (replicate A) and was 122 cm long. A second vibracore (LDSV1I05-B) was taken at station LDSI05 and measured 58 cm in length. Two vibracores were also collected at station LDSI08. The first vibracore (LDSV1I08-A) measured 85.5 cm in length. After initial review of LDSV1I08-A, a second vibracore, LDSV1I08-B, was collected and measured 89 cm. Following the completion of coring in Cell LD, the R/V McGaw transited to Cell SU. A third vibracore (replicate C) was acquired at station LDSI05 after survey operations were completed in Cell LU (described in Cell LU below). This core was a test-core and was performed to see if the core liner could retain the sample sediment and prevent the "drag-down" of the cap material as seen in the cores taken during the Summer 2000 survey.

Surveying Equipment:

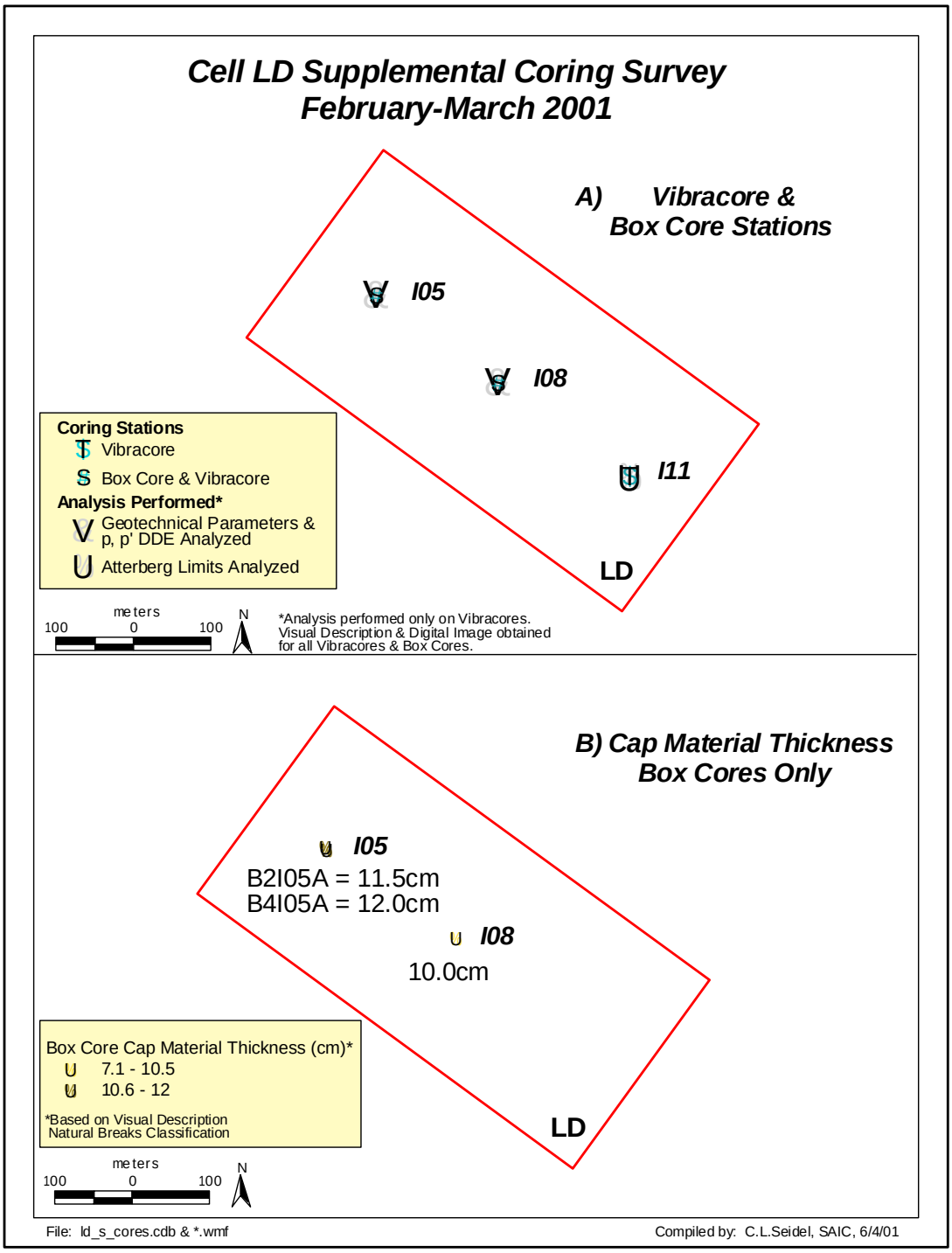
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:
None.

Custody of Samples:
Pam Walter has custody of the cores.

Custody of Survey Data:
Jason Infantino has custody of navigation data.

Navigation Data Files:
Navlog_022701_MCG_Cores.xls


Cell LD Supplemental Coring Survey
February-March 2001
A) Vibracore & Box Core Stations
I05
I08
I11
LD
Coring Stations
Vibracore
Box Core & Vibracore
Analysis Performed*
Geotechnical Parameters & p, p' DDE Analyzed
Atterberg Limits Analyzed
meters
100
0
100
N
*Analysis performed only on Vibracores.
Visual Description & Digital Image obtained
for all Vibracores & Box Cores.
B) Cap Material Thickness
Box Cores Only
I05
B2I05A = 11.5cm
B4I05A = 12.0cm
I08
10.0cm
LD
Box Core Cap Material Thickness (cm)*
7.1 - 10.5
10.6 - 12
*Based on Visual Description
Natural Breaks Classification
meters
100
0
100
N
File: ld_s_cores.cdb & *.wmf
Compiled by: C.L.Seidel, SAIC, 6/4/01

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: February 28, 2001
Survey: Supplemental Vibra Coring and Box Coring
Cells: LU, LD
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation),
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams (Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)
ACOE:	Larry Smith (Observer)

Survey Operations:

Survey Schedule
The coring crew departed the Southern California Marine Institute (SCMI) aboard the R/V Wm. A. McGaw at 14:30 UTC to conduct supplemental coring operations in Cells LD and LU. Coring operations were conducted between 14:30 and 01:59. Two (2) box core stations were surveyed in Cell LD. A total of six box-coring deployments were made to accomplish this task. The coring team was onsite and in operation between 15:15 and 01:07. In summary a total of ten vibra cores were collected and one box core for later analysis. Sea conditions were fair with a gentle 1-2' swell out of the southerly direction. Wind was light through out the day not exceeding 10 knots with scattered rain showers.

Cell LD
Four (4) box-coring attempts were made at station LDSBI05. Recovery from the final attempt (LDSB2I05-D) yielded a 14 cm sample. The vessel then moved to the next station LDSBI08. At this station the box coring technique was unable to successfully retain a core sample. At 17:02 it was decided to abort the box-coring operations and switch to vibracoring for the remainder of the survey day. After the deck was refitted for vibracore operations, the vessel transited to Cell LU to resume vibracore sampling operations.

Surveying Equipment:
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:
None.

Custody of Samples:
Pam Walter has custody of the cores.

Custody of Survey Data:
Jason Infantino has custody of navigation data.

Navigation Data Files:
Navlog_022801_MCG_Cores.xls

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: March 01, 2001
Survey: Supplemental Vibra Coring
Cells: LU, LD, SU
Survey Vessel: R/V Wm.A.McGAW
(All Times UTC)

Survey Team:

SAIC:	John Evans (Leader), Ed Basmadjian, (Deck), Vicki Frank (Deck), Jason Infantino (Navigation),
McGAW:	Terrence Shinn (Captain), Fred Kalman (Engineer), Jeff Gilliams (Mate), Barbara Ross Doitcher (Cook)
TEG:	Mark Mertz (Vibra Core), Annick Tardif (Vibra Core)

Survey Operations:

Survey Schedule
The Coring crew departed the Southern California Marine Institute (SCMI) at 14:12 UTC to conduct supplemental coring operations in Cells LD, LU and SU. Coring began at 15:42 and concluded at 00:25. A total of 13 vibracores were collected throughout the survey day. Sea conditions were fair with a gentle 1-2' swell out of the south direction. Wind was light early in the day and increased to15 knots coming from the north late afternoon. This was the first coring survey day that held clear skies.

Cell LD

Two stations (I05 and I08) were sampled in cell LD between 23:57 and 00:25. One (1) core was collected at Station I05 and measured 80 cm long. The core collected at I08 measured 53 cm but was determined to be of marginal acceptance. Therefore, Station I08 may be re-sampled at a later date.

Surveying Equipment:

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
- Survey TEG Electric Vibra-Core
  Box Core

Problems Encountered:
None.

Custody of Samples:
Pam Walter has custody of the cores.

Custody of Survey Data:
Jason Infantino has custody of navigation data.

Navigation Data Files:
Navlog_030101_MCG_Cores.xls

CELL LD
SIDESCAN
AND
SUBBOTTOM CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 19, 2000**
Survey: **LD Post Initial Sidescan (7Bv)**
LU Interim Sidescan (Flex)
SU Interim Sidescan (Flex)
Cell: **LD, LU, SU**
Survey Vessel: **R/V *Sea World***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Sidescan), and Rebecca DeKeyzer (Navigation)
Vessel: Willie McCarthy (Captain), Dennis (Mate)

Survey Operations:
The sidescan crew departed the Southern California Marine Institute (SCMI) at 14:07 to conduct sidescan survey operations for the Cell LD Post Initial Survey, Cell SU Interim survey, and Cell LU Interim survey. The LD survey was completed with three along-shore survey lines and five offshore survey lines. Two of the along-shore lines had to be repeated due to excessive crosstrack error. Three along-shore lines (with two lines repeated) were then run for the Cell LU Interim Flex survey. Three along-shore lines were also run for the Cell SU Interim Flex survey. It was determined that the two flex surveys did not require the full 8-line survey, as the three along-shore lines provided 100% sonar coverage of each cell within the time paid for on the vessel. At the end of these surveys, two additional lines were run to search for the missing ARESS array. No significant target was found during this search survey. Survey operations were conducted between 14:50 and 23:36. Following the cessation of survey operations, the vessel returned to SCMI at 00:17.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Edgetech DF1000 Sidescan Towfish
  ISIS Sidescan Sonar Acquisition Software

Problems Encountered
Excessive cross track error (XTE) was a significant problem for most of the lines run during the survey. Several lines were repeated in an effort to stay within the 15 m XTE guidelines, however due to time constraints, all along-shore lines were run regardless of XTE. Continuing on to the next line instead of repeating lines with excessive XTE provided coverage over all three cells.

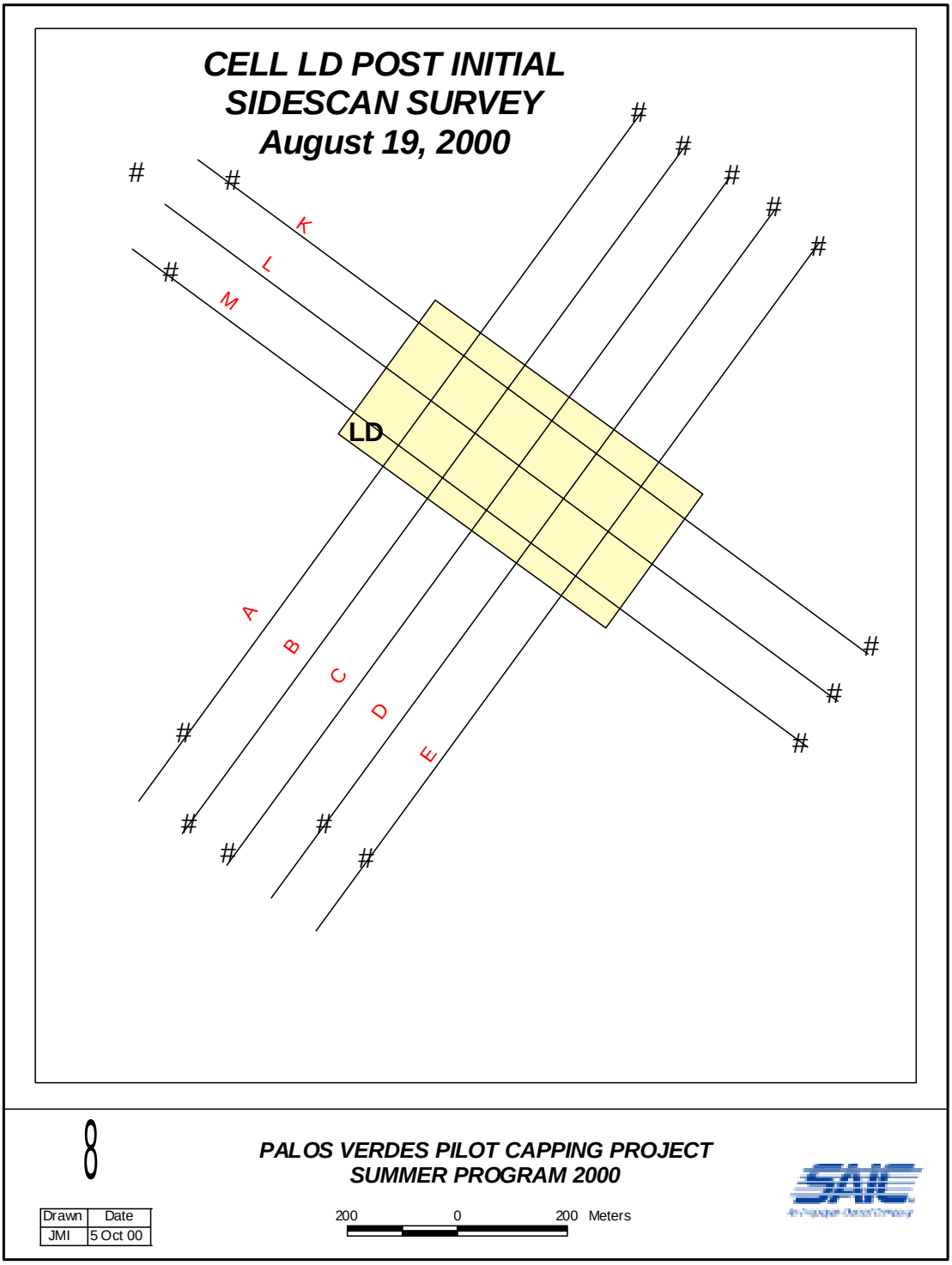
Custody of Samples:

Jason Infantino had custody of the sidescan data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:
Raw0819.log
Lines_08192000_tn.csv


CELL LD POST INITIAL
SIDESCAN SURVEY
August 19, 2000
K
L
M
LD
A
B
C
D
E
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
5 Oct 00
200
0
200
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 30, 2000**
Survey: **Sidescan, Post Cap (7Dii)**
Cell: **LD**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (Sidescan), Allan Quintal (Deck), and Lisa McAuliffe (Navigation)
Vessel: Jim Critanovich (Captain), Dennis Dunn (Mate), Kathleen Snow (Deckhand)
USACOE: Mamie Brouwer (Observer)

Survey Operations:
The sidescan crew departed the Southern California Marine Institute (SCMI) at 15:15 to conduct sidescan survey operations for the Cell LD Post Cap survey. The survey was completed with three along-shore survey lines and five offshore survey lines. Survey operations were conducted between 16:15 and 18:45. Following the completion of survey operations, the vessel returned to SCMI, arriving at dock at 19:50.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Edgetech DF1000 Sidescan Towfish
  ISIS Sidescan Sonar Acquisition Software

Problems Encountered
None

Custody of Samples:

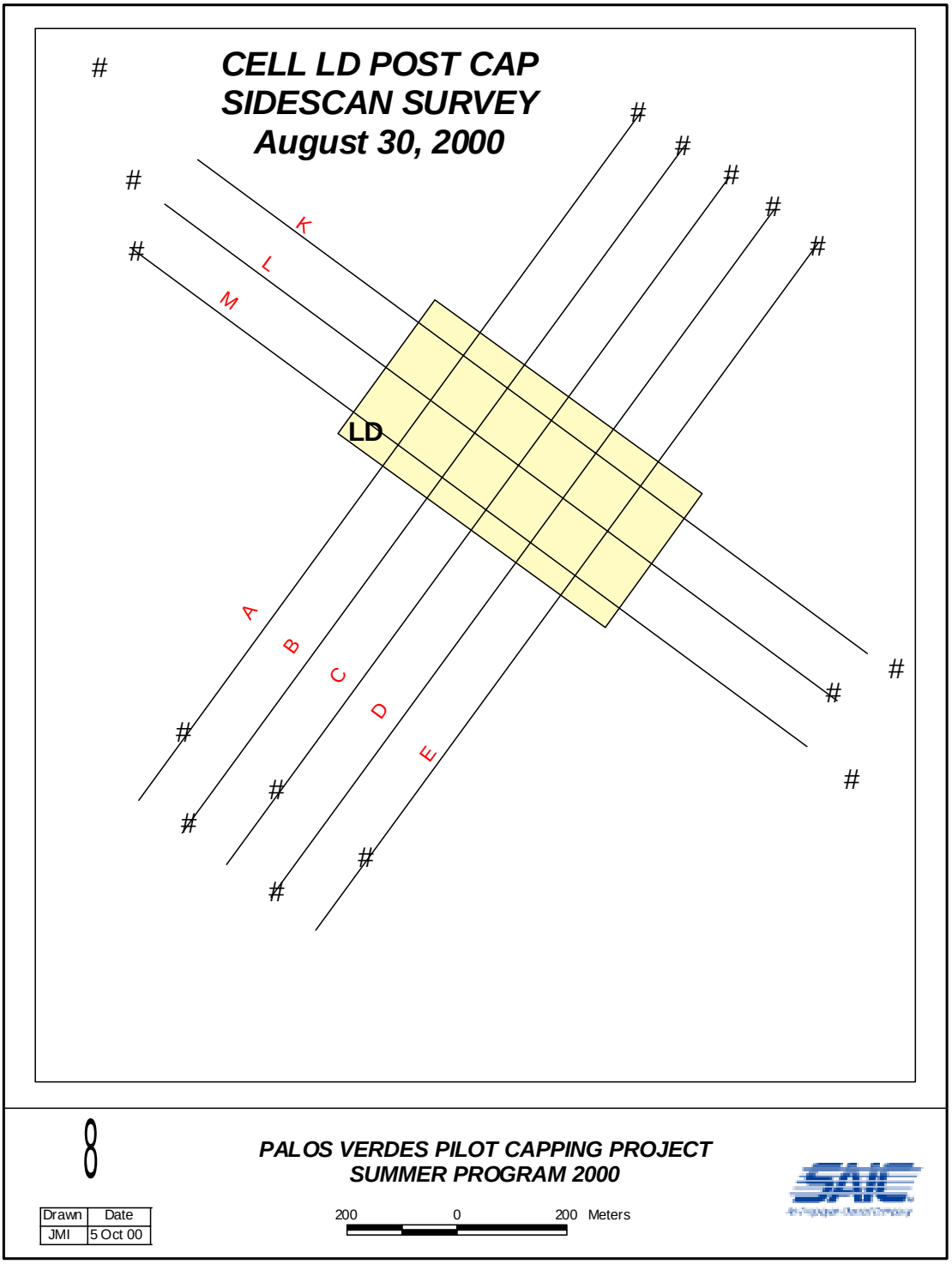
Jason Infantino had custody of the sidescan data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Raw0830.tgt
Lines_08302000_yf.csv


CELL LD POST CAP
SIDESCAN SURVEY
August 30, 2000
LD
A
B
C
D
E
K
L
M
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
5 Oct 00
200
0
200
Meters

CELL LD
CRUISES ASSOCIATED WITH
MOORED CURRENT AND TURBIDITY ARRAYS

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 14, 2000**
Survey: **ARESS Array Recovery, LU Placements 2 - 5 (6Ci)**
ARESS Array Deployment, LD Initial Placement (7Bi)
Cell: **LU, LD**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Marc Wakeman (ARESS), Scott McDowell (Deck), Jim Singer (Aquadopp, ADCP) Allan Quintal (Navigation)
Vessel: Josh (Captain), Steve Warth (Mate)

Survey Operations:
Survey Schedule
The ARESS array deployment crew departed the Southern California Marine Institute (SCMI) at 14:15 to recover four arrays from Cell LU and redeploy two of the recovered arrays in Cell LD. Recovery and deployment operations for the two arrays were conducted between 15:08 and 18:47. The vessel returned to SCMI at 19:35 with the other two arrays recovered from Cell LU. Data were recovered from both arrays and all instruments were subjected to pre-deployment tests. The ARESS crew departed the Southern California Marine Institute (SCMI) at 23:15 to deploy one array each at station LD1_D75 and station LD1_U75 in Cell LD. Deployment operations were conducted between 00:01 and 00:38. The vessel returned to SCMI at 01:23.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RECOVERY FROM CELL LU
  Please refer to August 11 Cruise Report for descriptions of those instruments recovered.

  DEPLOYMENT IN CELL LD
  75MUp
  1 Nortek AS Aquadopp current meter with OBS-3 Suspended Solids and Turbidity Monitor
  1 Acoustic Release

  75MDown
  1 Acoustic Doppler Current Profiler (ADCP)
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

  150MDown
  1 ARESS array with 1 current sensor and 2 Seapoint turbidity sensors
  1 Acoustic Release

  250MDown
  1 ARESS array with 2 current sensors and 2 Seapoint turbidity sensors
  1 Acoustic Release

Problems Encountered

At 18:01 the marker buoy for site LD1_D150 hung briefly on the rudder. *Tuna* personnel untangled the line. No movement of ARESS array was evident.

Custody of Samples:

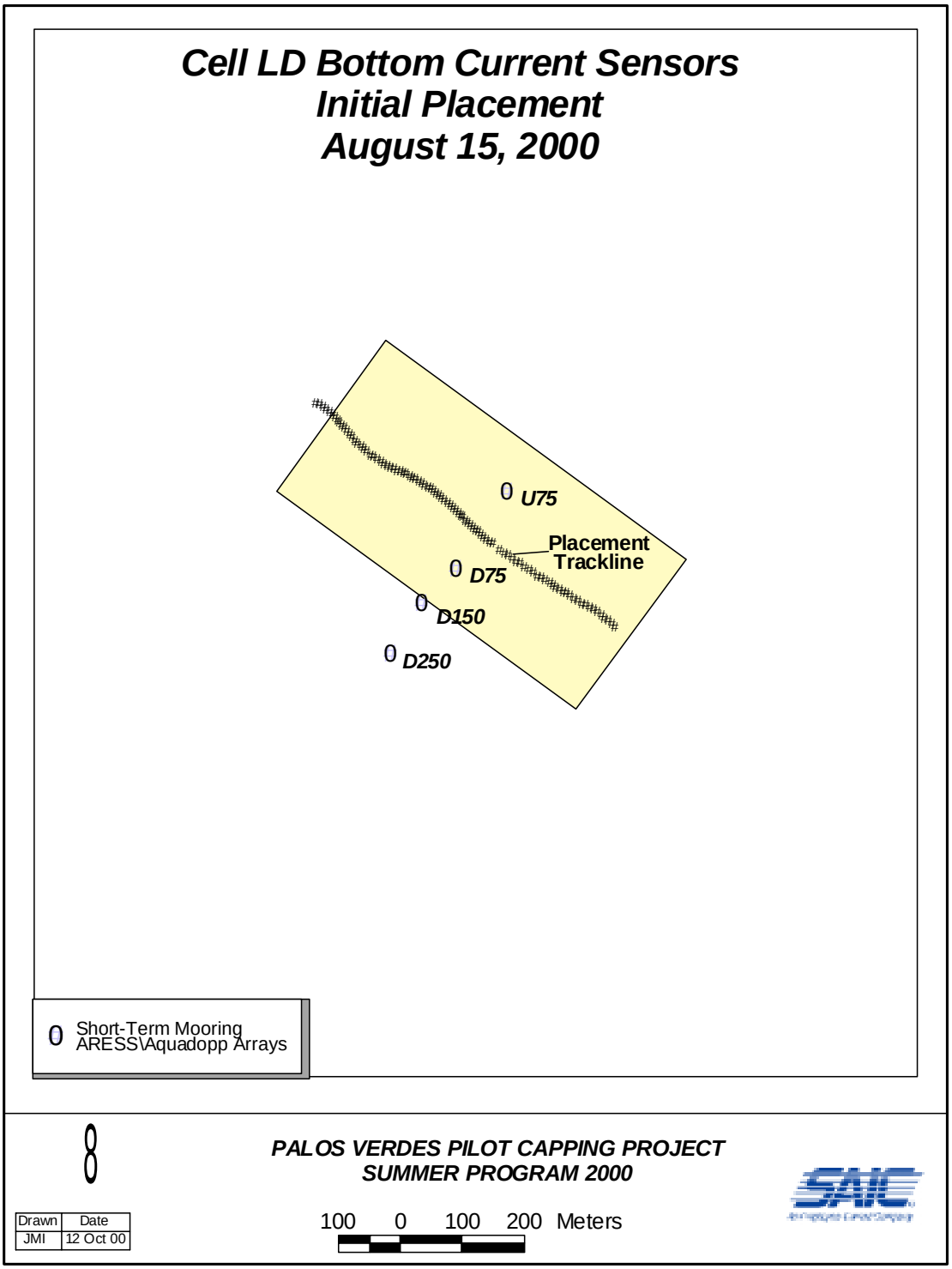
Marc Wakeman had custody of the ARESS data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0814.tgt, RAW0814B.tgt
Points_08142000_tn.csv


Cell LD Bottom Current Sensors
Initial Placement
August 15, 2000
U75
Placement Trackline
D75
D150
D250
Short-Term Mooring ARESS\Aquadopp Arrays
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
12 Oct 00
100 0 100 200 Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 16, 2000**
Survey: **ARESS Recovery following LD Initial Placement (7Bi)**
LU and SU, TRBM Recovery
Cell: **LD, LU, SU**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Jim Singer (Current Arrays,TRBM), John Evans (Current Arrays), Lisa McAuliffe (Navigation), Allan Quintal (Deck)
Vessel: Bob Greeno (Captain), Steven Warth (Mate)

Survey Operations:
Survey Schedule
The R/V *Tuna* departed SCMI at 14:12 to recover four ARESS Current Arrays from Cell LD and the TRBM from its location SE of Cells LU and SU. The first array recovered was LD1_U75. As it was brought on board, the buoy line became fouled with the rudder and the starboard prop. Once the array was secure on deck, the line was untangled. The vessel then moved to location LD1_D75, where a second ARESS array was recovered. The third array was recovered from station LD1_D150, and the R/V *Tuna* returned to SCMI. The three recovered arrays were unloaded and Allan Quintal joined the crew to assist in the TRBM recovery. The vessel returned to Cell LD, where the LD1_D250 array was retrieved. The vessel then moved SW to the TRBM location. J. Singer sent the release command, but the instrument did not surface. After repeated attempts to activate the acoustic release, J. Singer and J. Evans decided to tow for the drop weight line. The line was caught properly on the first attempt and the instrument recovered. As the TRBM was brought to the surface, it was in the upside down position. The release triggers had activated at the first signal, but had not sent the instrument to the surface, indicating that the instrument may have been upside down for an indeterminate length of time during this deployment. Following the TRBM recovery, the vessel returned to SCMI, arriving at 20:15.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RECOVERY
  Please refer to the August 3rd and August 14th Cruise Reports for descriptions of the instruments recovered.

Problems Encountered
The buoy line for the first array recovered wrapped around the rudder and the starboard prop. Also, the TRBM appears to have been resting upside down on the bottom at the time of recovery. It is unknown whether or not it rested in that orientation for the duration of its deployment.

Custody of Samples:

Jim Singer had custody of the data upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:
Points_08162000_TN

CELL LD
CTD & WATER QUALITY CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 15, 2000**
Survey: **CTD and Rosette, Initial Placement (7Bii)**
Cell: **LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Scott McDowell (Leader), Pam Walter (Water Sampling), Ellen Tobey (Navigation)
SCMI Vessel: Ken Kivett (Captain), Justin Meyer (Mate), Dave Reynose (Mate)
SCMI CTD: Ximena Hernandez, Reni Schimoeller
USACOE: Tom Fredette

Survey Operations:
Survey Schedule
The CTD and Rosette crew departed the Southern California Marine Institute (SCMI) at 16:24 to conduct CTD and Rosette operations for the Cell LD Initial Placement. Survey operations were conducted between 16:24 and 22:22. A background study was conducted between 17:11 and 18:46. Three near-bottom background water and CTD samples were collected at the planned point of disposal prior to the placement event. The purpose of these samples was to determine the natural background levels of TSS and p,p' DDE in the water column prior to the placement of the cap material. The placement occurred between 19:15 and 19:25. The placement survey started at 19:06 and ended at 22:20. For this survey, 37 water samples were collected. Thirty-four of the samples were collected near the centroid of the plume during multiple down casts of the Rosette or following a drogue and within 2 meters of the sea floor. Detailed times of individual water sample collections can be found in the Monitoring Results from the Field Pilot Survey. Thirty-four samples were taken for TSS and nine samples were taken for p,p' DDE. Seven CTD down casts were conducted during the placement survey. Whenever the CTD unit was on deck, the *Sea Watch* located the current drogues, moved to their locations and took fixes. These fixes will establish a drogue trackline for the green drogue (15m) and the yellow drogue (30m). Following the completion of survey operations, the vessel returned to SCMI, arriving at 23:05.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered
Differential signal was lost when the CTD winch was in operation. The Rosette would jam and not fire at times. Also at 20:26 the unit may have touched bottom. This effects the sensors and gives bad readings.

Custody of Samples:

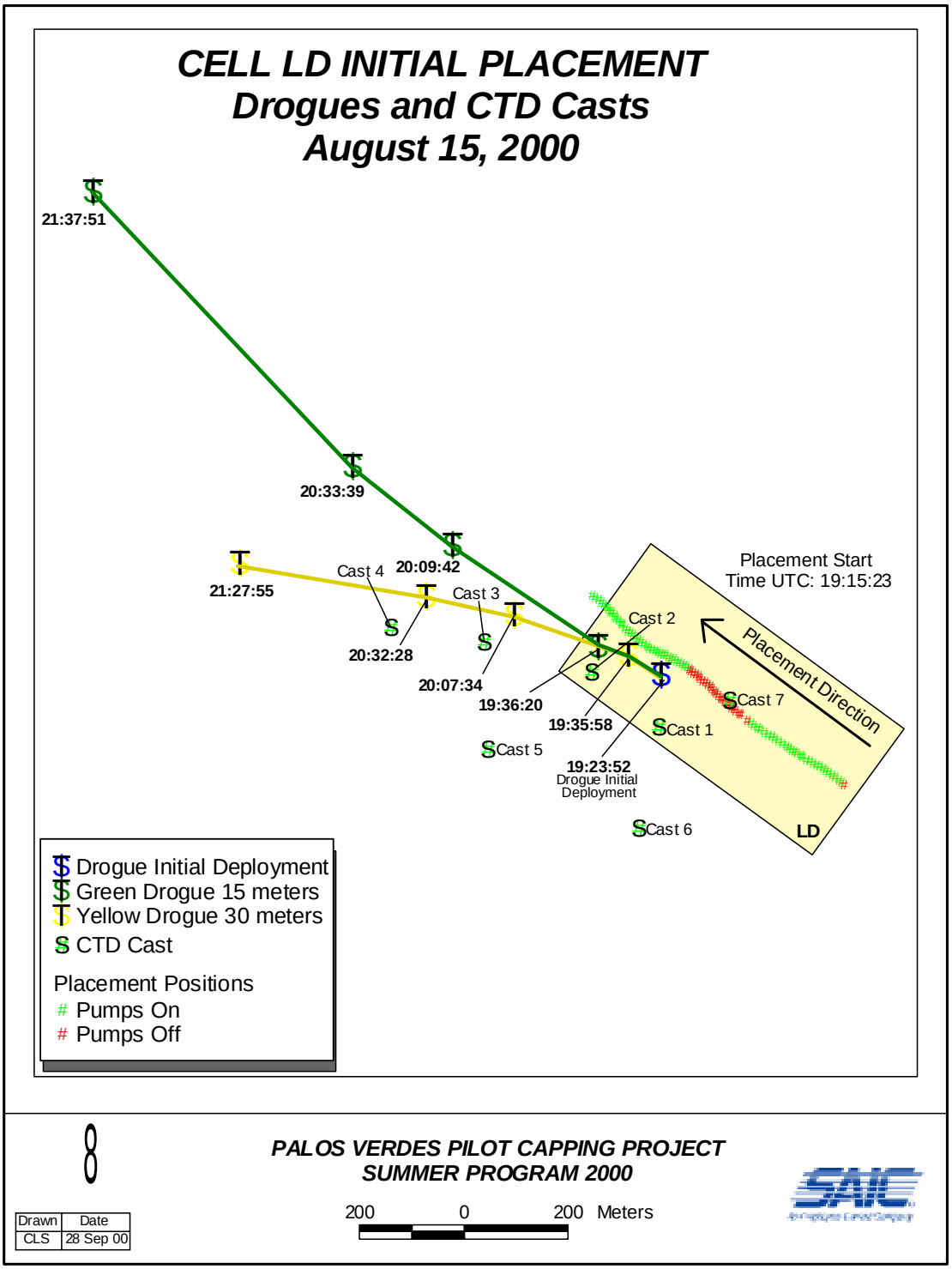
Upon arrival at dock, Pam Walter was given custody of the samples.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:

Raw0815.tgt
Point_08152000_sw.csv


CELL LD INITIAL PLACEMENT
Drogues and CTD Casts
August 15, 2000
21:37:51
20:33:39
20:09:42
21:27:55
Cast 4
Cast 3
20:32:28
20:07:34
19:36:20
19:35:58
19:23:52
Drogue Initial Deployment
Cast 5
Cast 6
Cast 1
Cast 7
Cast 2
Placement Start
Time UTC: 19:15:23
Placement Direction
LD
Drogue Initial Deployment
Green Drogue 15 meters
Yellow Drogue 30 meters
CTD Cast
Placement Positions
Pumps On
Pumps Off
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
CLS
28 Sep 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 28, 2000**
Survey: **CTD and Rosette, Surface Plume Transport #1 (Flex)**
Cell: **LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Scott McDowell (Leader), Rebecca Dekeyzer (Water Sampling), Ellen Tobey (Navigation)
SCMI Vessel: Mike Quinn (Captain), Dennis McHuffy (Mate), Justin Meyer (Deckhand)
SCMI CTD: Ximena Hernandez, Reni Schimoeller
USACOE: Mamie Brouwer

Survey Operations:
Survey Schedule
The CTD and Rosette crew departed the Southern California Marine Institute (SCMI) at 18:00 to conduct CTD and Rosette operations for the first Flex Kelp Study in Cell LD prior to and after the placement. Survey operations were conducted between 20:42 and 23:42. The survey started by first conducting a background study, which occurred between 20:42 and 21:29. The placement occurred at 22:03. The placement survey started at 22:07 and ended at 23:52. For this survey, 16 water samples were collected after the placement. No background water samples were collected prior to the placement. Five CTD down casts were taking during the background survey and seven CTD down casts during the placement survey. The vessel also moved to the location of the two current drogues whenever the CTD rosette was on deck. The blue drogue indicated surface currents and the yellow drogue indicated currents 10 m down. Position fixes were taken at these drogue locations to establish drogue tracklines.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered
None

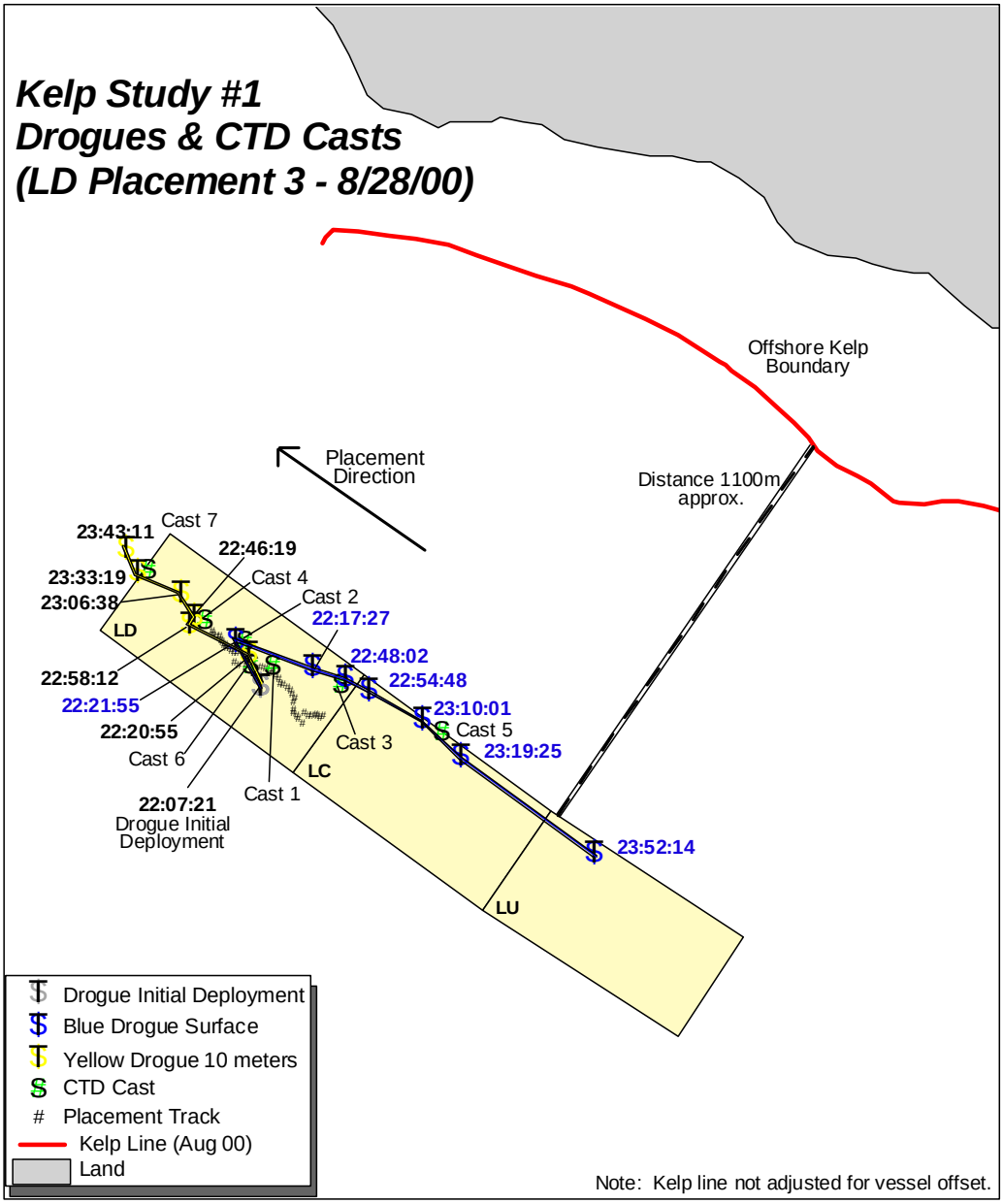
Custody of Samples:
Upon arrival at dock, Pam Walter was given custody of the samples.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:

Raw0828.tgt



PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
CLS	5 Oct 00

500 0 500 Meters

CELL LD
TOWED ADCP CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 15, 2000**
Survey: **ADCP Tow Initial Placement (7Bii)**
Cell: **LD**
Survey Vessel: **R/V *Tuna***
(All Times UTC)

Survey Team:
SAIC: Rebecca DeKeyzer (Navigation)
COE: Mike Tubman (ADCP)
SCMI: Captain, Mate

Survey Operations:
Survey Schedule
The ADCP crew departed the Southern California Marine Institute (SCMI) at 15:45 to conduct ADCP operations in Cell LD for the Initial Spreading Placement. Survey operations were conducted between 16:43 and 22:23. A total of 26 lines and two ~15 minute vertical current profiling sites were surveyed[6]. A 30 m drogue and a 15m drogue were also deployed into the center of the starting-point plume. Following the completion of survey operations, the vessel returned to SCMI, arriving at 23:18.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: RDInstruments Broad Band Acoustic Doppler Current Profiler (ADCP)

Problems Encountered

None

Custody of Samples:

Mike Tubman had custody of ADCP data upon completion of the cruise.

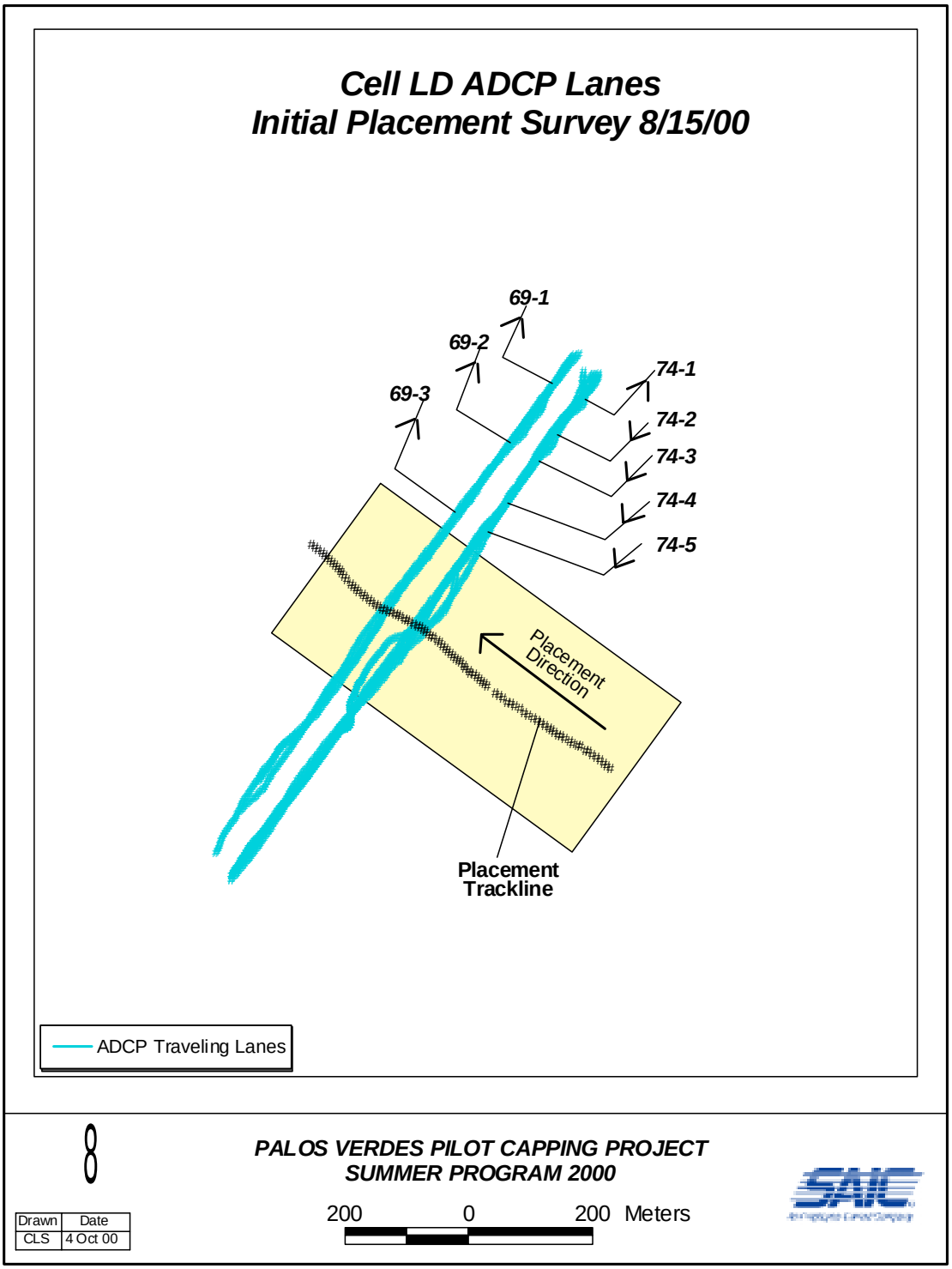
Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0815.tgt, RAW0815.log
Lines_08152000_tn.csv

[6] Mike Tubman processed eight of the 26 lines in the days following the survey. These eight processed lines are shown on the following graphic.


Cell LD ADCP Lanes
Initial Placement Survey 8/15/00
69-1
69-2
69-3
74-1
74-2
74-3
74-4
74-5
Placement Direction
Placement Trackline
ADCP Traveling Lanes
8
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
4 Oct 00
200
0
200
Meters

CELL LD
UNDERWATER VIDEO CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 15, 2000**
Survey: **Video, LD Initial Placement (2iv)**
Cell: **LD**
Survey Vessel: **R/V *Sea World***
(All Times UTC)

Survey Team:
SAIC: Allan Quintal (Video), Greg Tufts (Video), Vicki Frank (Deck), Lisa McAuliffe (Navigation)
Vessel: Willie McCarthy (Captain), Dennis (Mate)

Survey Operations:
Survey Schedule
The R/V *Sea World* UCLA departed dock at 1620 UTC. The vessel arrived on site at 17:10 and anchored. The vessel did not drift as expected, so it was necessary to re-anchor. The placement occurred at approximately 19:15. Video contact with the plume occurred at 19:23:50. The R/V *Sea World* remained on site for 26 minutes, then moved to Cell LU. At Cell LU, the vessel drifted SW to NE across the center of the cell to help establish the boundaries of the most recent placement events in that cell. Following the completion of that drift, the vessel moved to Cell LD to drift SW to NE drift across the cell's center point. This was done and the vessel moved ~150 m SE of the original LD begin-drift point to repeat the drift and more accurately define the boundaries of the morning's placement. The currents and winds had changed slightly, however, and the vessel drifted only across the SE corner of the cell. Following the completion of survey operations, the vessel returned to SCMI, arriving at 23:40.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Outland CON3000 Video Camera Console
  Outland UWC-160 Underwater Camera

Problems Encountered

None

Custody of Samples:

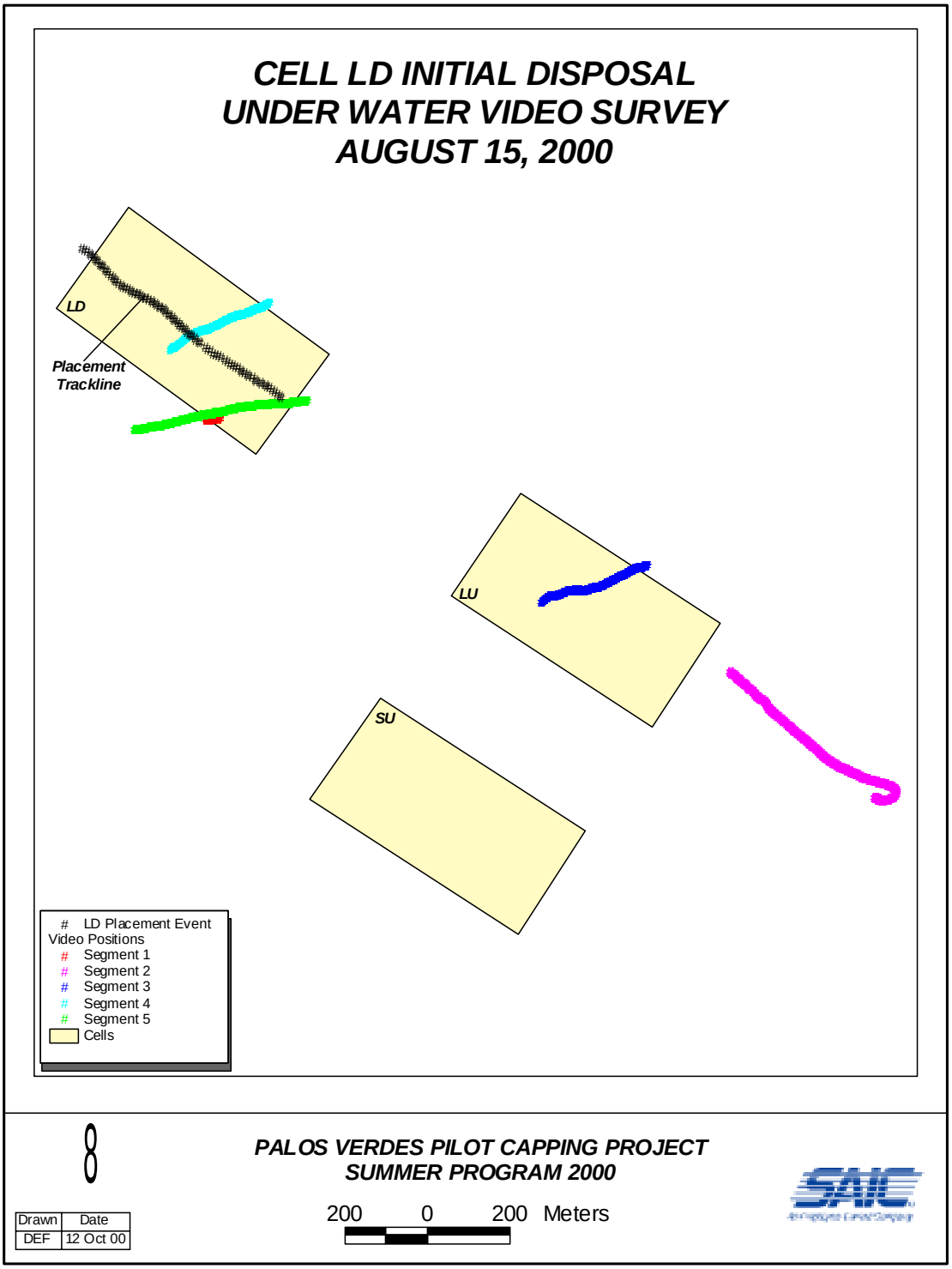
Allan Quintal had custody of the videotape upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Points_08152000_SEAWORLD
Lines_08152000_SeaWorld_Video


CELL LD INITIAL DISPOSAL
UNDER WATER VIDEO SURVEY
AUGUST 15, 2000
LD
Placement
Trackline
LU
SU
LD Placement Event
Video Positions
Segment 1
Segment 2
Segment 3
Segment 4
Segment 5
Cells
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200 0 200 Meters
Drawn
Date
DEF
12 Oct 00

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **August 22, 2000**
Survey: **Video, LU Placement #8/#9 (2iii[7]), LD Interim (Flex)**
Cells: **LU, LD**
Survey Vessel: **R/V *Sea World***
(All Times UTC)

Survey Team:
SAIC: Allan Quintal (Leader), Pam Walter (Deck Operations), and Rebecca DeKeyzer (Navigation).
Vessel: Willie McCarthy (Captain), Dennis (Mate)

Survey Operations:
Survey Schedule
The Video crew departed the Southern California Marine Institute (SCMI) at 14:09 to conduct video survey operations in Cell LU and Cell LD. They were scheduled to monitor the plume of Placements 8 and 9 in Cell LU, collecting video data from the beginning of the disposal until the plume was no long visible. The vessel arrived on station at 15:21 and waited until the dredge arrived at approximately 16:48. The first placement occurred at approximately 16:54. Eight down casts and one drift line were taken through the first plume. The vessel then moved to Cell LD to run one drift line across the cell. The *Sea World* returned to Cell LU for the second disposal event at 19:15. The disposal occurred at 20:10 and 21 down casts were taken. Survey operations were conducted between 15:27 and 21:01. Following completion of survey activities, the vessel returned to SCMI at 21:52.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software
- Survey: Outland CON3000 Video Camera Console
  Outland UWC-160 Underwater Camera

Problems Encountered

No problems were encountered.

Custody of Samples:

Allan Quintal has custody of the video data.

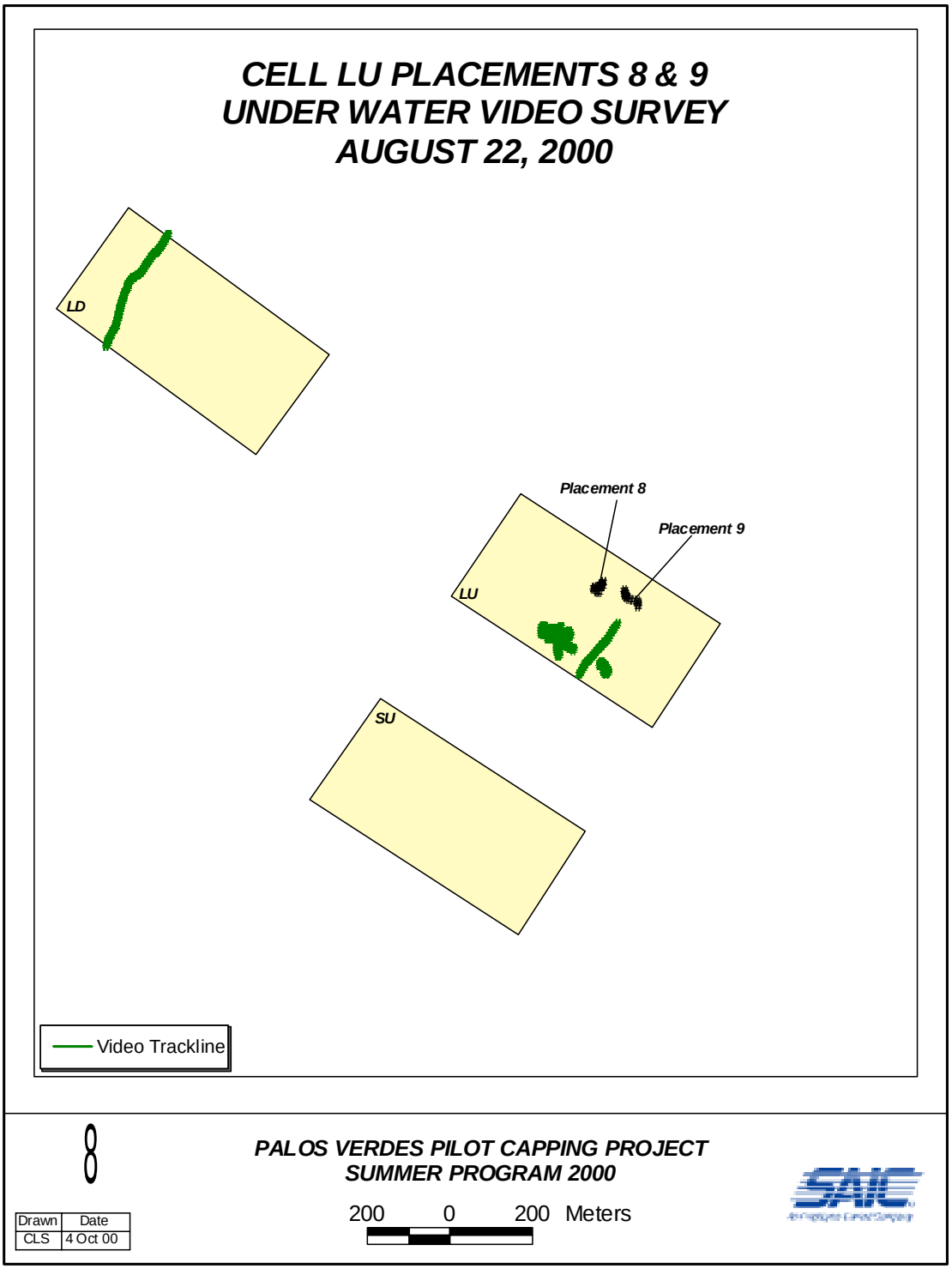
Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0822.tgt and RAW0822.log
Lines_08222000_SeaWorld.csv

[7] SAIC was obligated to provide video monitoring of the 4th and 5th placements in Cell LU, however no vessel was available at that time. Therefore, as soon as a vessel became available, an Interim video survey was run during the 8th and 9th placements.


CELL LU PLACEMENTS 8 & 9
UNDER WATER VIDEO SURVEY
AUGUST 22, 2000
LD
Placement 8
Placement 9
LU
SU
Video Trackline
8
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
CLS
4 Oct 00
200
0
200
Meters

CELL LD
ADISS MONITORING
OF
HOPPER DREDGE OPERATIONS

Survey Dates: **August 15, 2000 – September 8, 2000**
Survey: **ADISS Hopper Dredge Position Tracking**
Cell: **LD**
Survey Vessel: **Dredge Sugar Island**
(All Times UTC)

Survey Team:
SAIC: David Fischman, Marc Wakeman

Survey Operations:
Survey Schedule
The NATCO dredge Sugar Island was outfitted with an Automated Disposal Surveillance System, or ADISS, Box. This box recorded vessel position and draft for each placement throughout the Pilot Capping project. The system defined the precise location of each placement by recording the changes in draft that occur as the dredge released the capping material. Position information was downloaded following the completion of each survey type, i.e., following the initial placement, after pump out placement, etc. The dates on which various placements were made in Cell LD are listed below.

Initial:	08/15/00
2 – 9:	08/28/00 – 08/30/00
Pump Out:	09/08/00

Surveying Equipment

- Survey: ADISS Box
  Data Card (records raw position data)

  DGPS & GPS Antennae

  Toshiba Satellite computer
  AdissPLAY® – Database program

Problems Encountered

None

Custody of Samples:

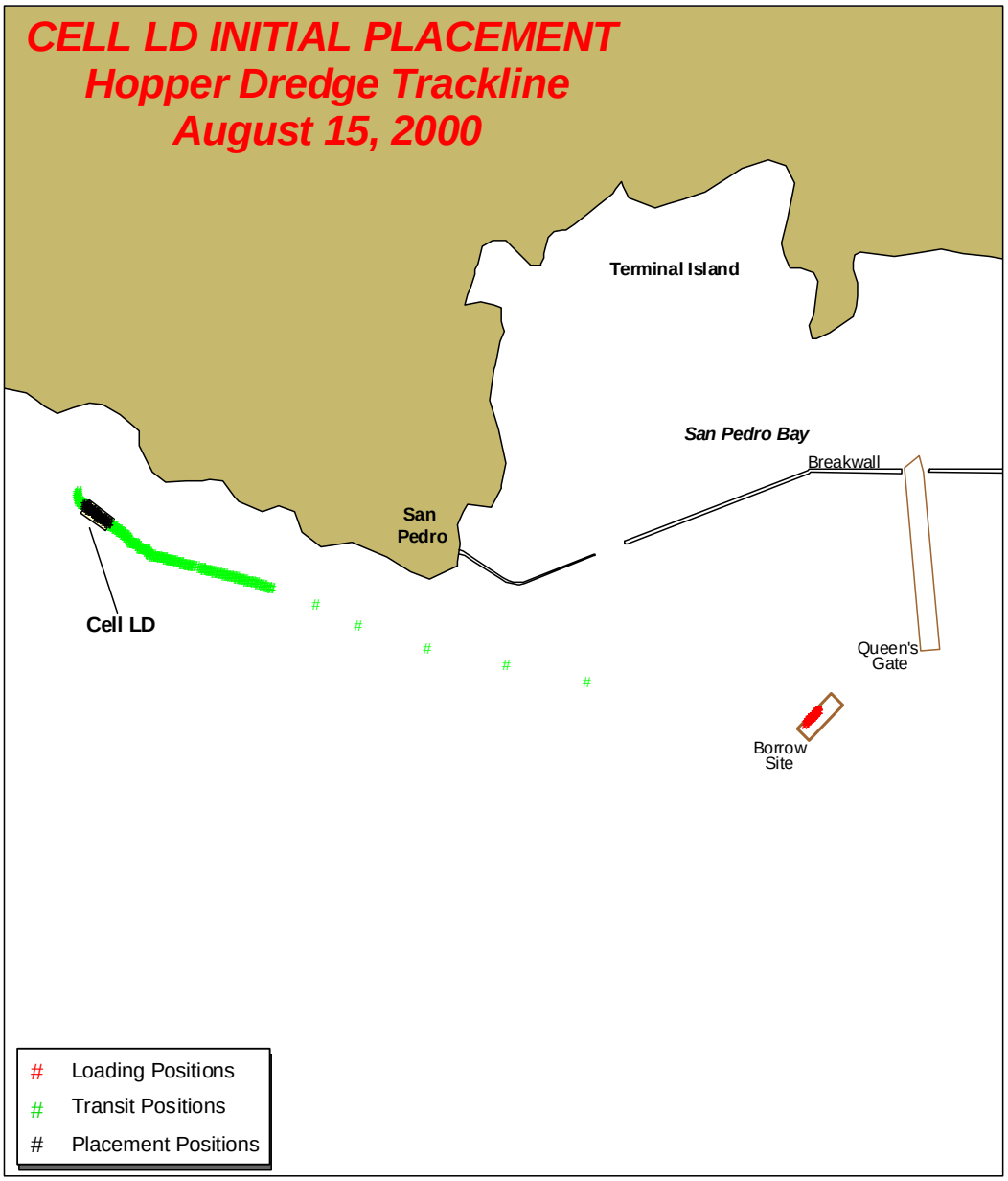
None

Custody of Survey Data:

David Fischman had custody of the ADISS data following each download and upon final completion of all survey operations on the Palos Verdes shelf.

Navigation Data Files:

None



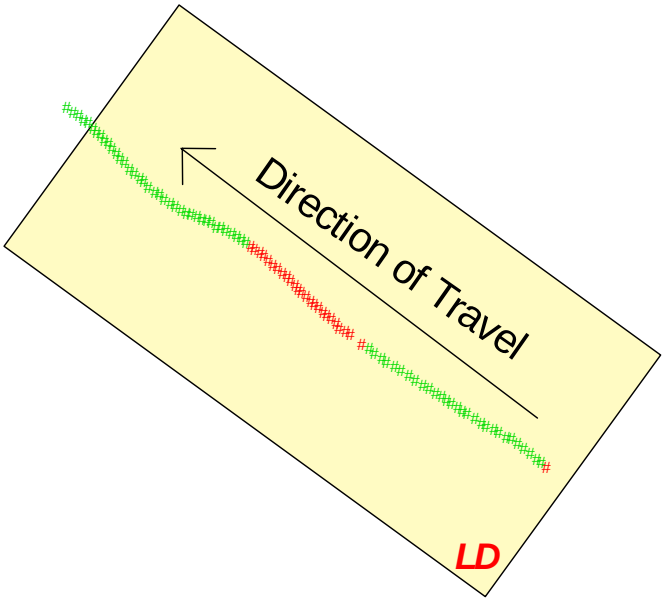
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

Drawn	Date
DEF	4 Oct 00

Initial Placement Event Cell LD
August 15, 2000



UTC Time of Placement
Start: 19:15:23
End: 19:25:30

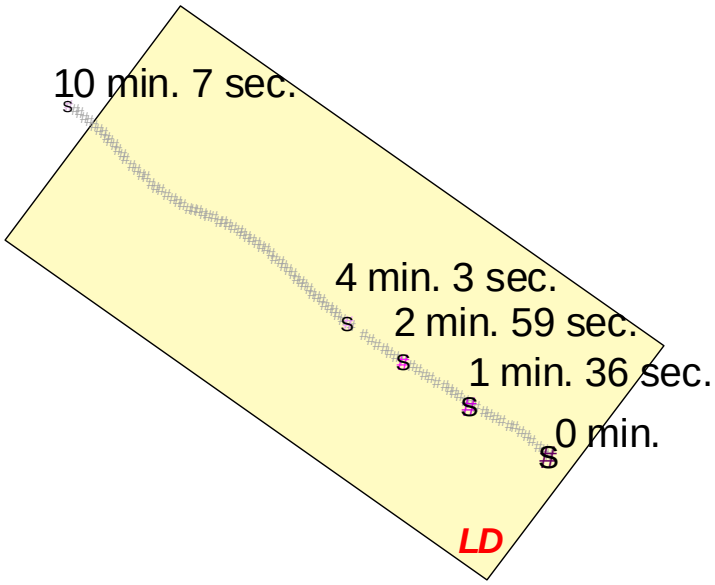
Pums On
Pumps Off

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
CLS	16 Aug 00

100 0 100 Meters

Initial Placement Event Cell LD
August 15, 2000



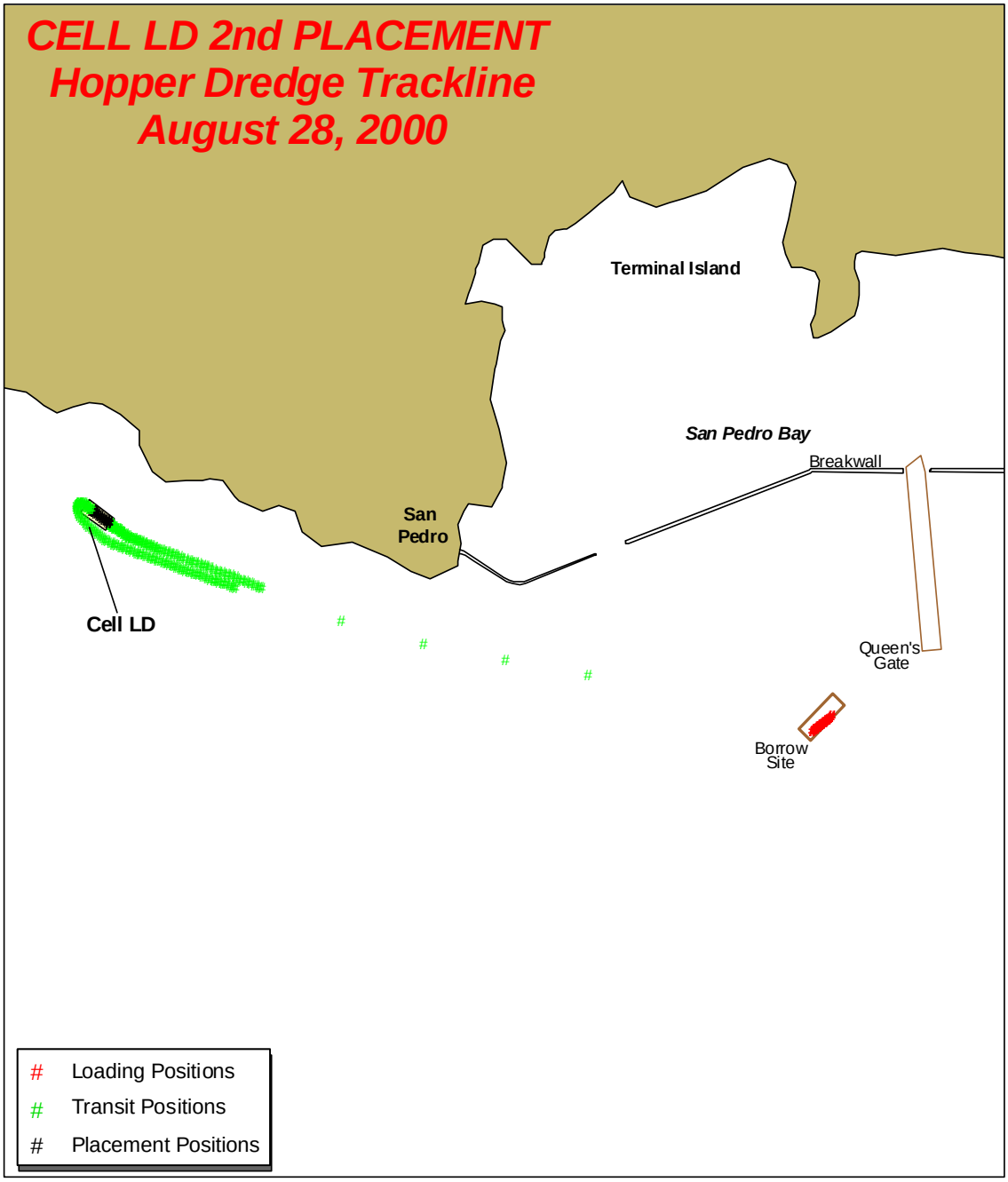
UTC Time of Placement
Start: 19:15:23
End: 19:25:30

Percent of Load Remaining in Hopper
- 100%
- 77%
- 50%
- 27%
- 0%
- # Placement Track Line

PALOS VERDES CAPPING PROJECT

100 0 100 Meters

Drawn	Date
CLS	29 Nov 00



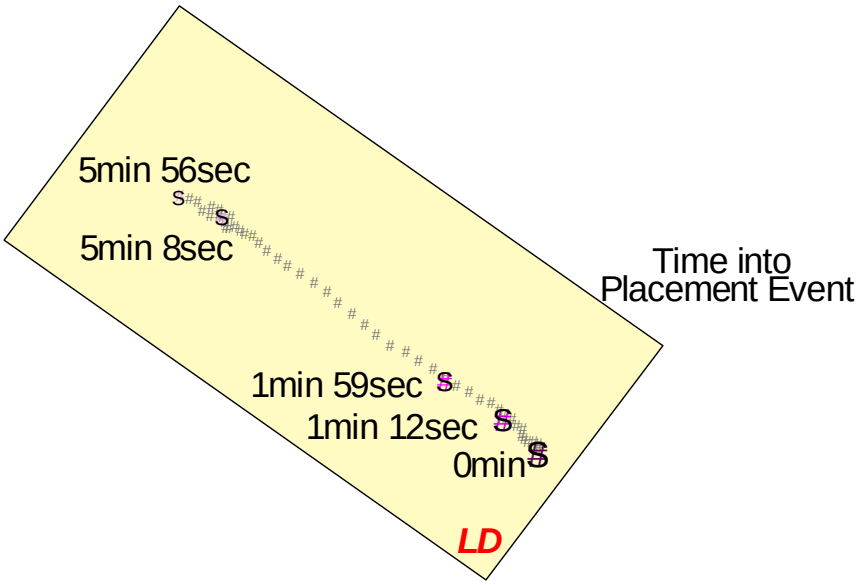
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

Drawn	Date
DEF	4 Oct 00

2nd Placement Event Cell LD
August 28, 2000



UTC Time of Placement
Start: 17:45:40
End: 17:51:36

Percent of Load Remaining in Hopper

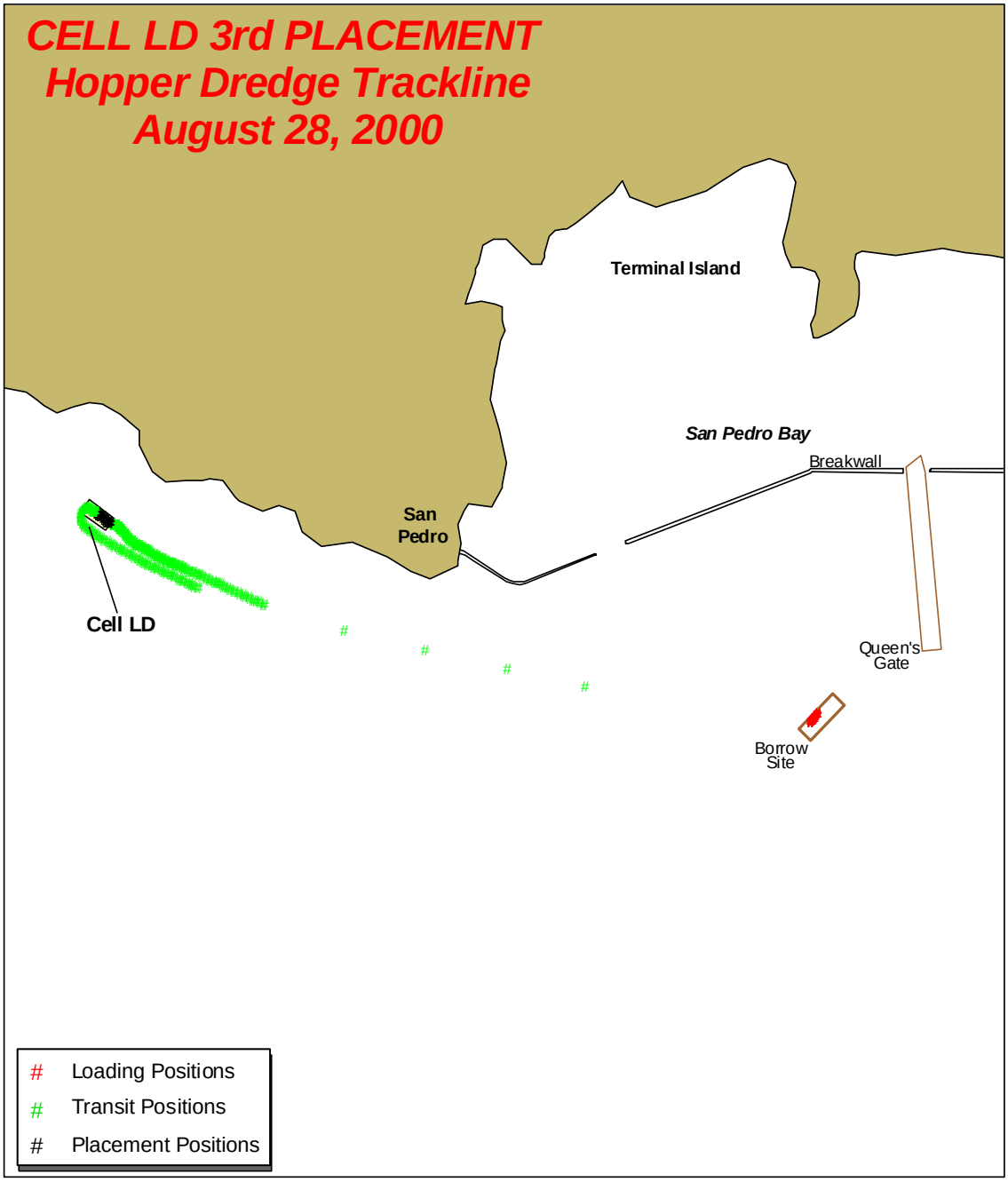
- 100%
- 77%
- 50%
- 27%
- 0%
- # Placement Track Line

Note: Pumps on for entire placement

PALOS VERDES CAPPING PROJECT

Drawn	Date
CLS	29 Nov 00

100 0 100 Meters



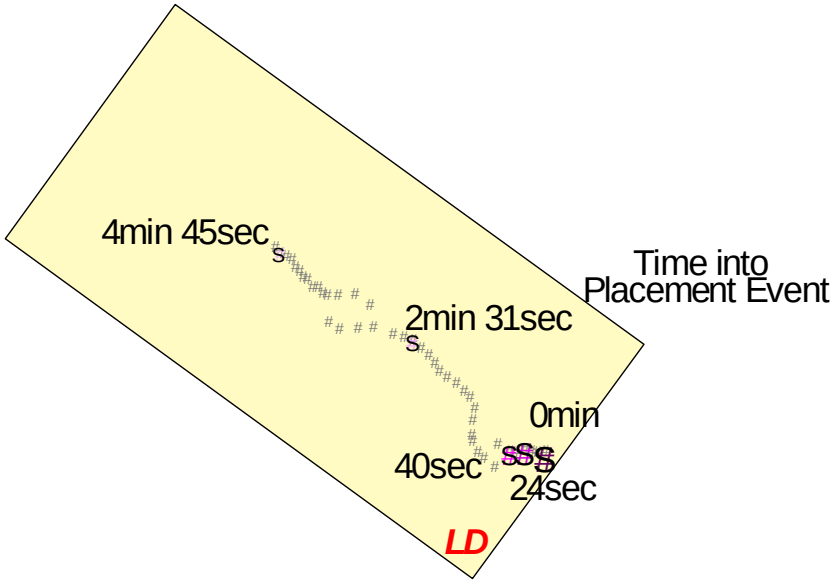
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

Drawn	Date
DEF	4 Oct 00

3rd Placement Event Cell LD
August 28, 2000

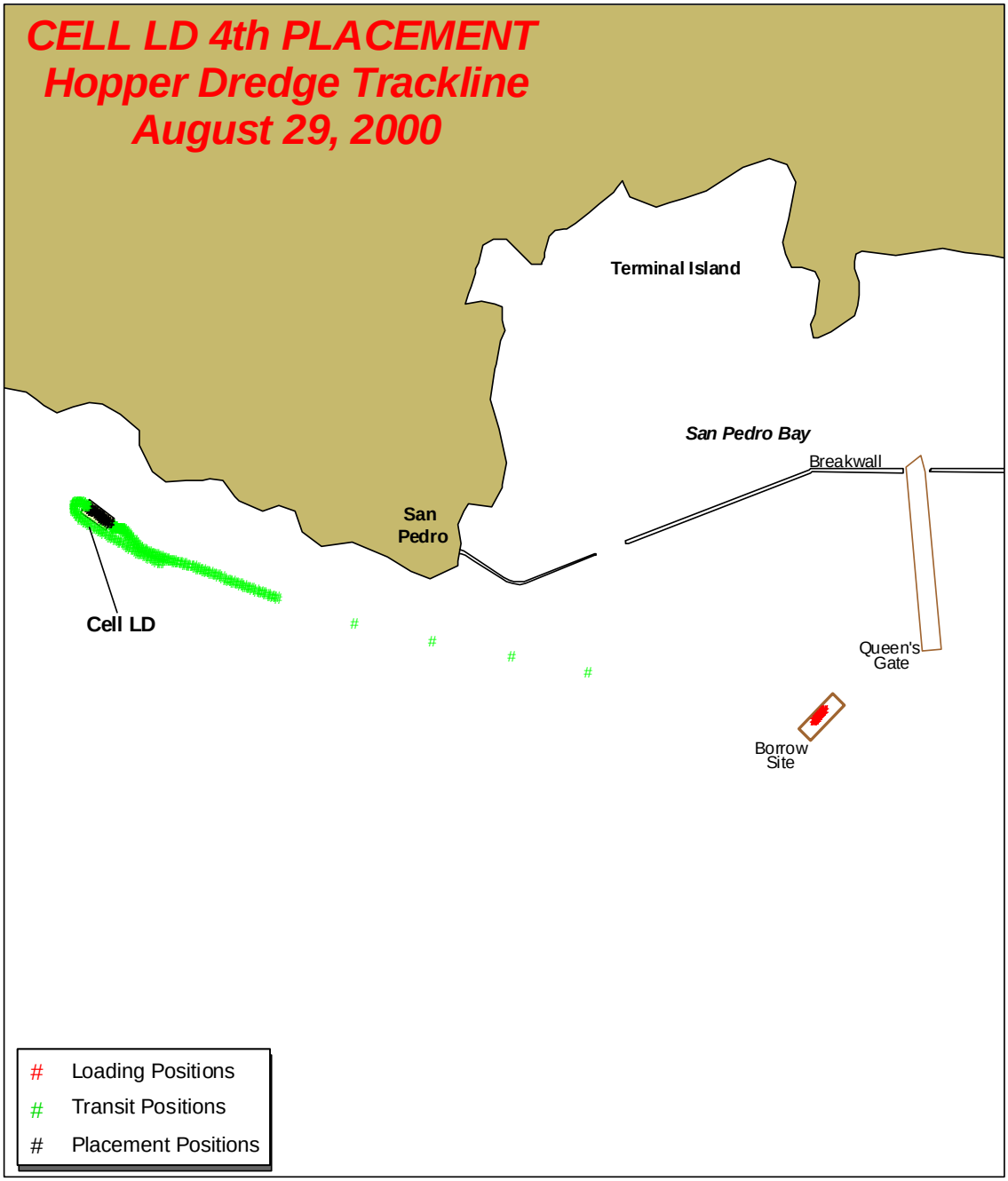


UTC Time of Placement
Start: 22:03:10
End: 22:07:55
Percent of Load Remaining in Hopper
s 100%
s 77%
s 50%
s 27%
s 0%
Placement Track Line
Note: Pumps on for entire placement

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
DEF	29 Nov 00

100 0 100 Meters



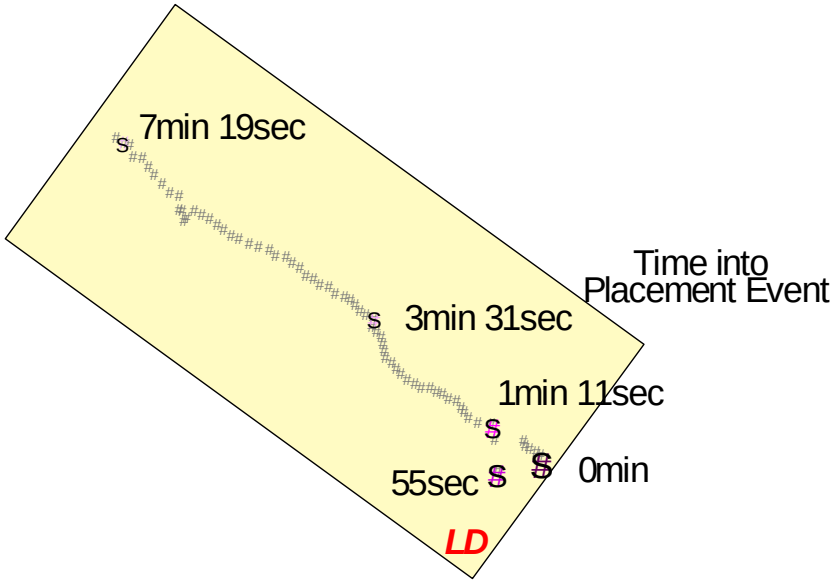
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

Drawn	Date
DEF	4 Oct 00

4th Placement Event Cell LD
August 29, 2000

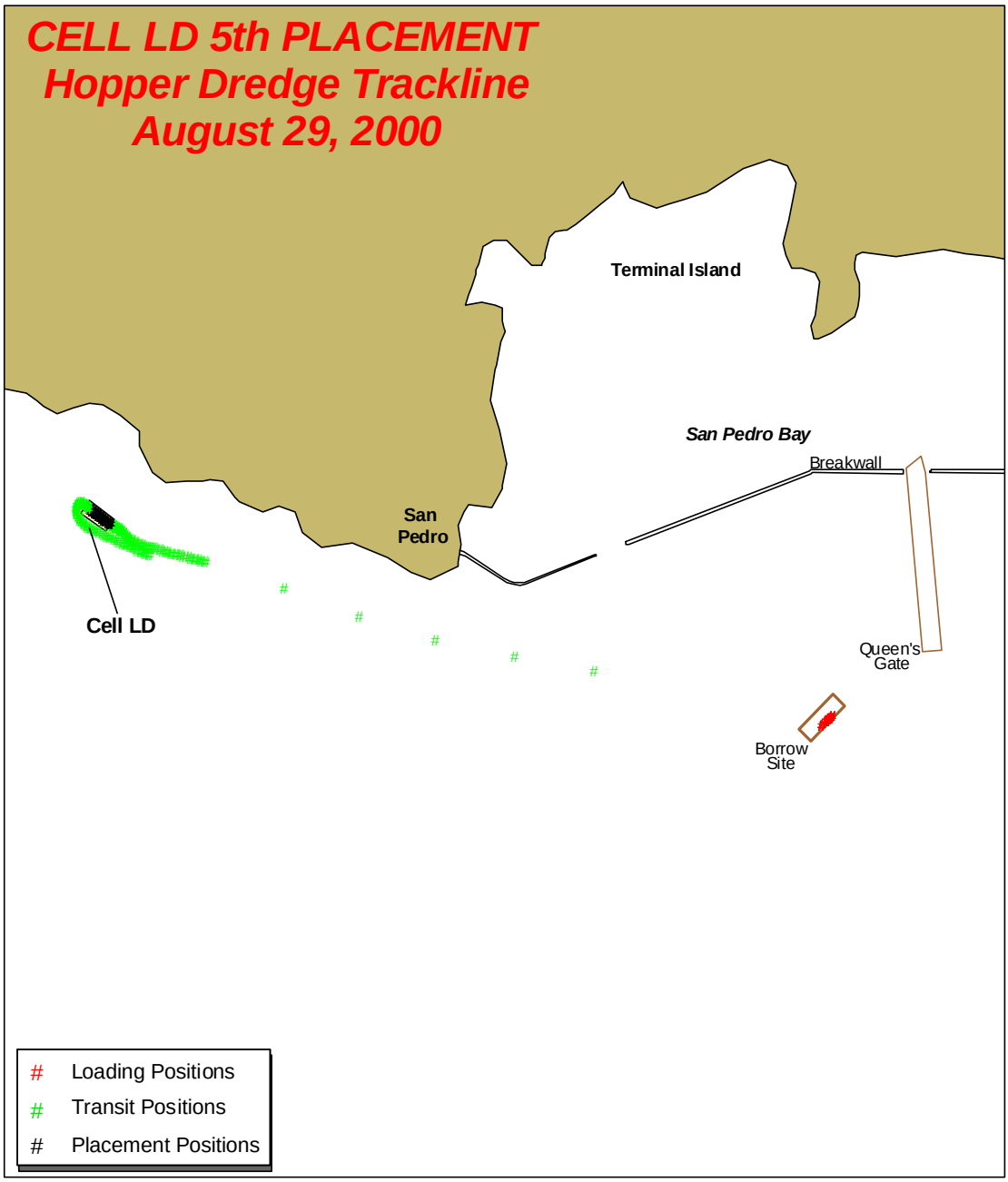


UTC Time of Placement
Start: 0:43:47
End: 0:51:06
Percent of Load Remaining in Hopper
100%
77%
50%
27%
0%
Placement Track Line
Note: Pumps on for entire placement

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
DEF	29 Nov 00

100 0 100 Meters



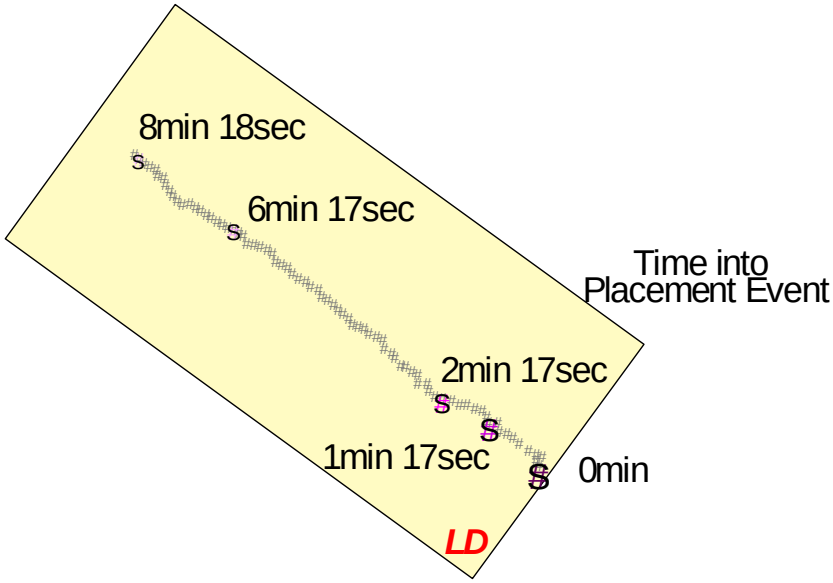
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
DEF	4 Oct 00

2000 0 2000 4000 Meters

5th Placement Event Cell LD
August 29, 2000

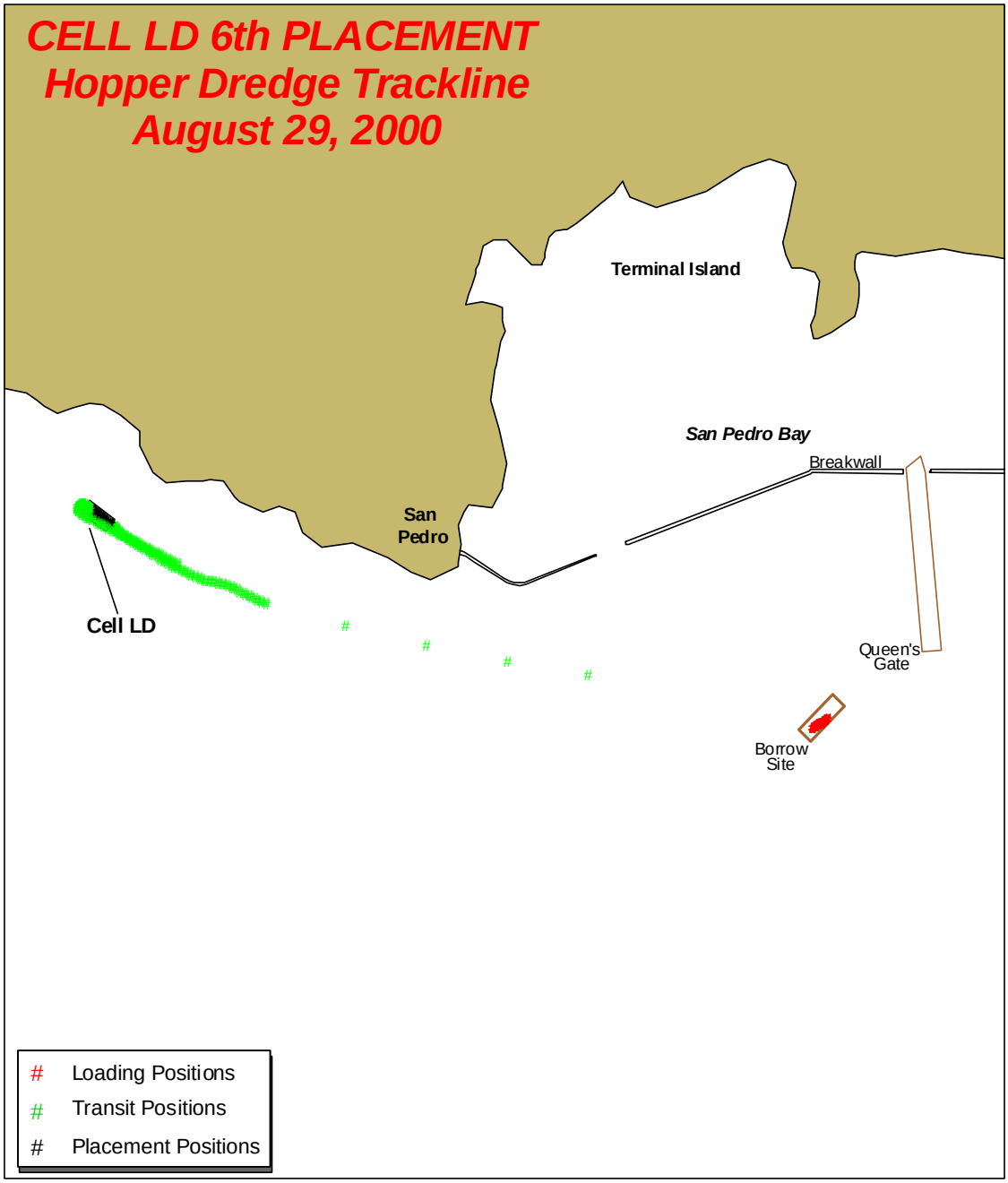


UTC Time of Placement
Start: 3:14:12
End: 3:22:30
Percent of Load Remaining in Hopper
S 100%
S 77%
S 50%
S 27%
S 0%
Placement Track Line
Note: Pumps on for entire placement

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
DEF	29 Nov 00

100 0 100 Meters



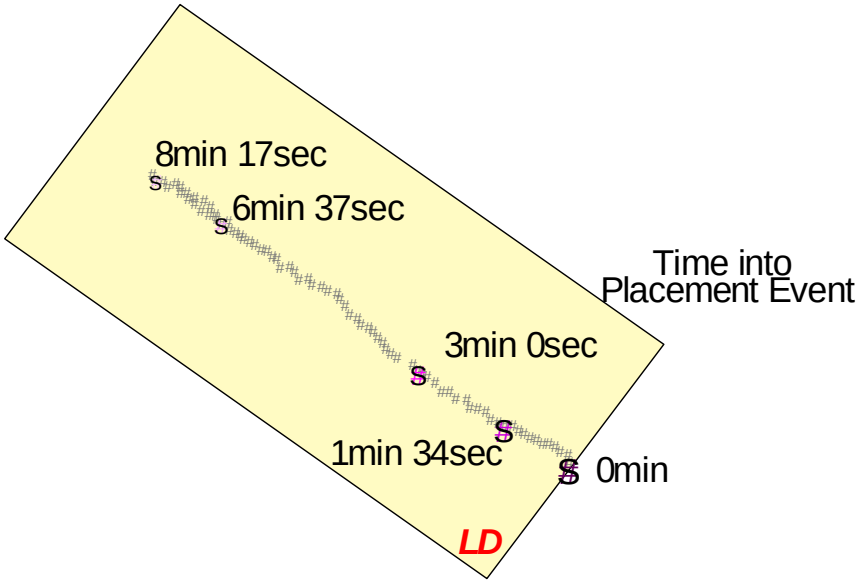
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

Drawn	Date
DEF	4 Oct 00

6th Placement Event Cell LD
August 29, 2000



UTC Time of Placement
Start: 5:38:36
End: 5:46:53

Percent of Load Remaining in Hopper

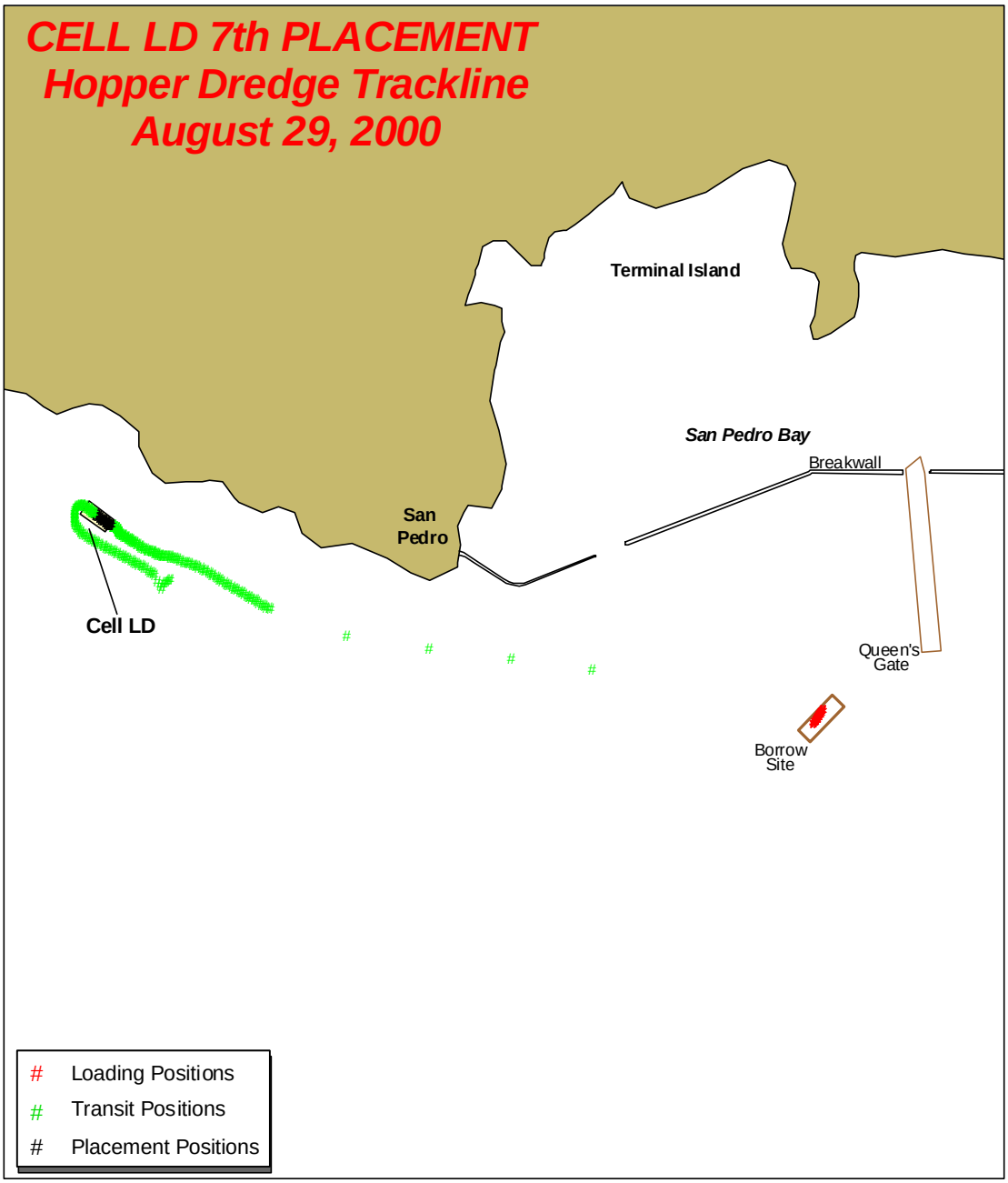
- S 100%
- S 77%
- S 50%
- S 27%
- S 0%
- # Placement Track Line

Note: Pumps on for entire placement

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

100 0 100 Meters

Drawn	Date
DEF	29 Nov 00



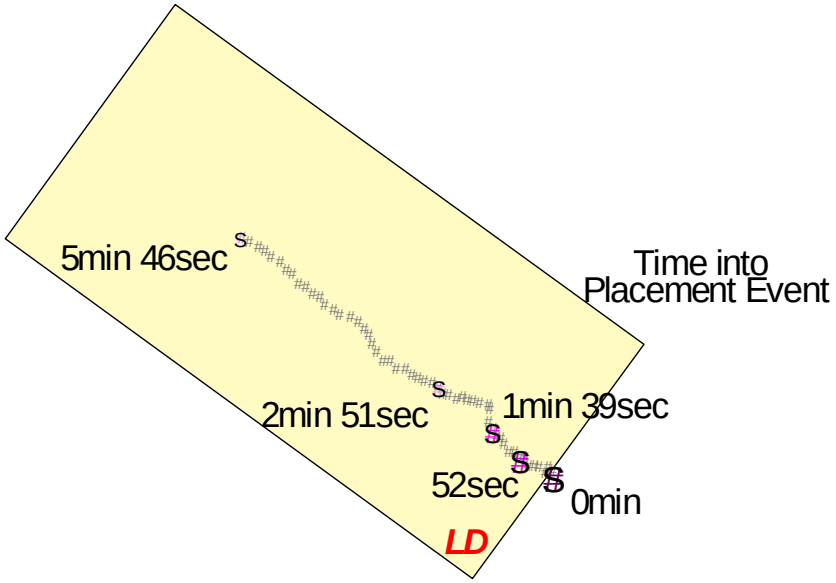
8

Drawn	Date
DEF	4 Oct 00

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

7th Placement Event Cell LD
August 29, 2000

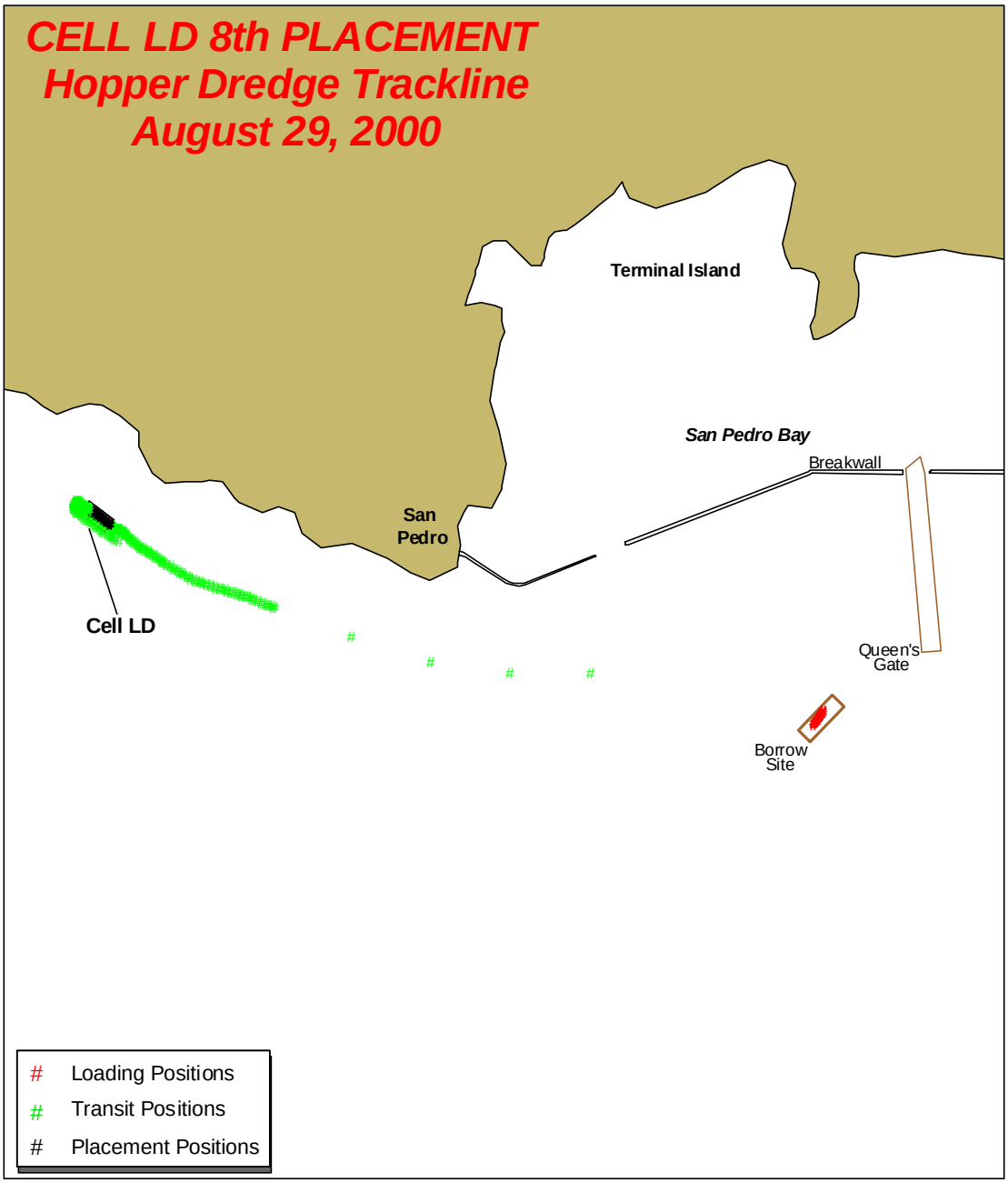


UTC Time of Placement
Start: 8:09:20
End: 8:15:06
Percent of Load Remaining in Hopper
S 100%
S 77%
S 50%
S 27%
S 0%
Placement Track Line
Note: Pumps on for entire placement

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

100 0 100 Meters

Drawn	Date
DEF	29 Nov 00



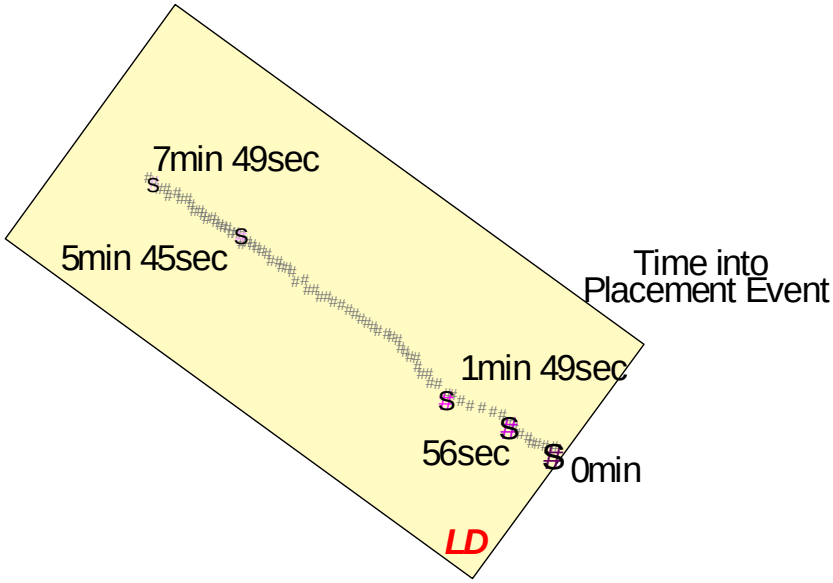
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

Drawn	Date
DEF	4 Oct 00

8th Placement Event Cell LD
August 29, 2000



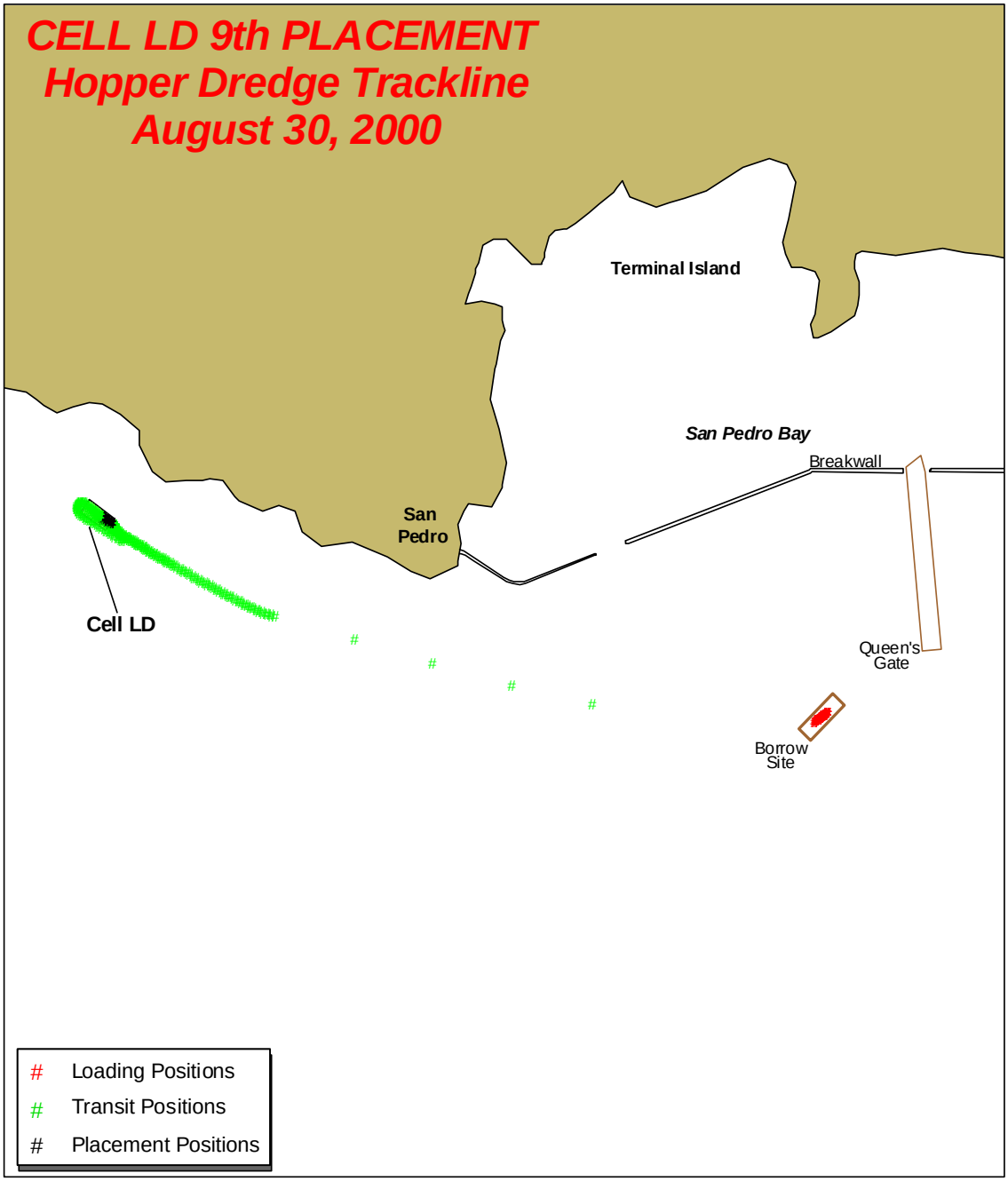
UTC Time of Placement
Start: 10:44:55
End: 10:52:44
Percent of Load Remaining in Hopper
S 100%
S 77%
S 50%
S 27%
S 0%
Placement Track Line
Note: Pumps on for entire placement

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

8

Drawn	Date
DEF	29 Nov 00

100 0 100 Meters



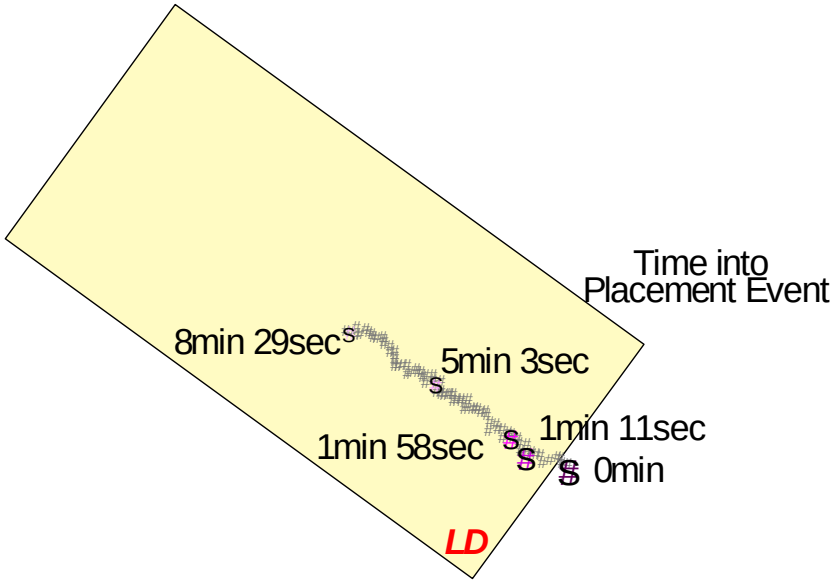
8

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

2000 0 2000 4000 Meters

Drawn	Date
DEF	4 Oct 00

9th Placement Event Cell LD
August 30, 2000



UTC Time of Placement
Start: 10:28:49
End: 10:37:18
Percent of Load Remaining in Hopper
100%
77%
50%
27%
0%
Placement Track Line
Note: Pumps on for entire placement

PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
DEF	29 Nov 00

100 0 100 Meters

APPENDIX D
CELL LC

Palos Verdes Cruise Report Reference Table
Appendix D – Cell LC

Cell	Data Type	Survey Sequence	Fredette Task No.	Survey Type	Survey Date	Cruise Report Page No.	Graphic Page No.
LC	SPC/PVC	Baseline	Flex 2A[1]	Flex 2	09/07/00	D2	D3
LC	SPC/PVC	Post Pump Out	Flex 2A	Flex 2	09/09/00	D4	D5
LC	Cores	Post Pump Out	Flex 2A	Flex 2	09/15/00	D7	D8
LC	CTD & Water Quality, Drogues	Pump Out	Flex 2A	Flex 2	09/08/00	D10	D12
LC	ADISS	Pilot Monitoring Program	3	Primary	09/08/00	D14	D15-16

1. Flex 2 surveys were contracted in Contract Modification 1, Tasks A, B, and C.

CELL LC
SPC/PVC CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 7, 2000**
Survey: **SPC and PVC, LU Post Cap (6Di), LC Baseline (Flex)**
Cell: **LU, LC**
Survey Vessel: **R/V *Yellowfin***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation)
SCMI: Jim Critanovich (Captain), Dennis Dunn (Mate) and Katherine (last name unknown; Deckhand)

Survey Operations:
Survey Schedule
The survey crew arrived at the vessel at approximately 13:35 and departed from SCMI at approximately 14:18. The crew was scheduled to complete the Cell LU Post Cap Survey (22 sites) and the Cell LC Baseline Survey (18 sites). The vessel arrived at the Cell LU at 15:05. The twenty-two sites in LU (I01, I03, O06, I13, I15 – I19, I43 – I45, O03, O08, O10, O13, O19, O22, and O42, O50 – O52) were completed by 19:40 with only minor difficulties. Occasionally, the pinger did not trigger. After the first roll of film was taken out, the camera would not advance. The camera head was determined to be the problem and Head 5 was put onto the frame. Following the head change, there were no further problems. Following the completion of the LU Post Cap survey, the *Yellowfin* moved to Cell LC to run the baseline survey. The LC Baseline survey (Sites I46 – I63) was complete at 22:02 with no difficulties. Three replicates were taken at each site in both cells. The vessel departed the survey area upon completion of survey activities, and the R/V *Yellowfin* returned to dock at 22:54.

Surveying Equipment

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered
Had to switch Head 5 for Head 2 – camera motor winder was malfunctioning.

Custody of Samples:

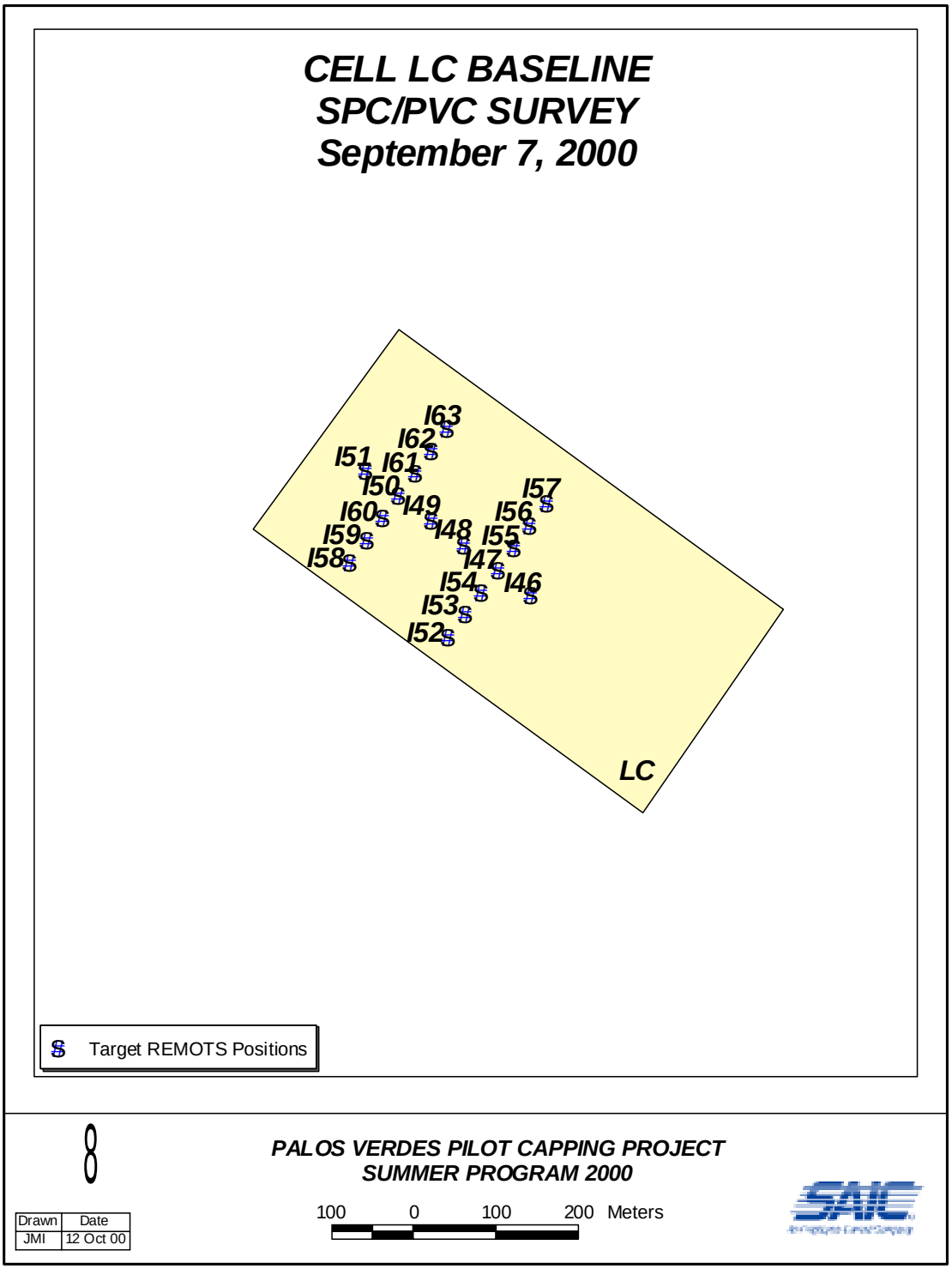
Jason Infantino and Greg Tufts had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0907.tgt
Points_09072000_YF.csv


CELL LC BASELINE
SPC/PVC SURVEY
September 7, 2000
I63
I62
I51
I61
I50
I49
I57
I60
I56
I59
I48
I55
I58
I47
I54
I46
I53
I52
LC
Target REMOTS Positions
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
12 Oct 00
100
0
100
200
Meters

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 9, 2000**
Survey: **SPC/PVC, LD Post Pump Out (Flex), LC Post Pump Out (Flex)**
Cells: **LD, LC**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Jason Infantino (SPC), Greg Tufts (PVC), Lisa McAuliffe (Navigation)
Vessel: Ken Kivett (Captain), Dennis Mahaffy (Mate), Shoshanna Grevenwald (Deckhand)

Survey Operations:
Survey Schedule
The R/V *Sea Watch* departed SCMI at 14:57 for the Cell LD Post Pump Out SPC/PVC survey. Nineteen sites (I01 – I15, I20, I21, O01, O07) were completed with no interruptions or equipment difficulties. Eighteen sites were also completed for Cell LC Post Pump Out survey (I46 – I63). Thirty-eight sites were surveyed for the two cells. The R/V *Sea Watch* completed survey operations at 19:53 and returned to SCMI. The vessel arrived at dock at 20:42.

Survey Equipment:

- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Benthos Model 3731 Sediment Profile Camera
  Photosea 1000a 35-mm Underwater Camera System (Plan View Camera)
  Photosea 1500s Strobe Light (Plan View Camera)

Problems Encountered:

None

Custody of Samples:

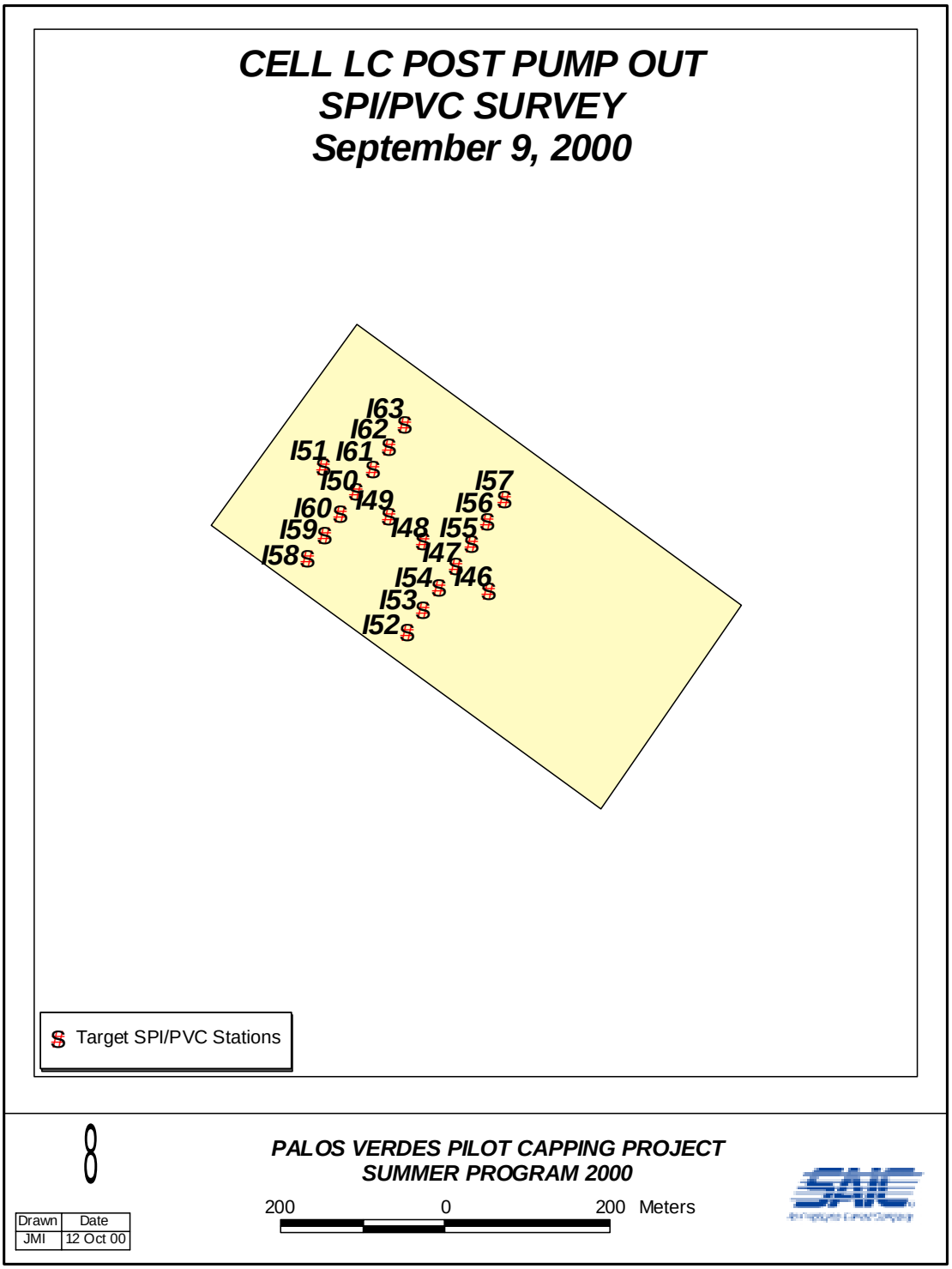
Greg Tufts had custody of the film upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

RAW0909.tgt
Points_09092000_SW.csv


CELL LC POST PUMP OUT
SPI/PVC SURVEY
September 9, 2000
I63
I62
I51
I61
I50
I49
I57
I56
I60
I59
I48
I55
I58
I47
I54
I46
I53
I52
Target SPI/PVC Stations
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
200
0
200
Meters
Drawn
Date
JMI
12 Oct 00

CELL LC
SEDIMENT CORING CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 15, 2000**
Survey: **Coring, LU Post Post Cap (Flex), LC and LD Post Pump Out (Flex)**
Cell: **LU, LC, LD**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: John Evans (Coring), Dave Fischman (Coring), Edward Basmadjian (Coring), Lisa McAuliffe (Navigation)
SCMI: Ken Kevitt (Captain), Kerin Wiesenbaker (Deckhand), David Renoso (Mate)

Survey Operations:
Survey Schedule
The coring crew arrived at the R/V *Sea Watch* at 13:35 and departed dock at 14:00. They were scheduled to complete the LU Post Post Cap survey, comprised of five sites, 60 - 64. Two Post Pump Out sites were also scheduled, one each in LC and LD. The *Sea Watch* went to Cell LU first, where they completed the first site (62) with no difficulty. Site 63, located in the center of the cell, had less than 20 cm of penetration for the first two repetitions. Due to the limited number of core liners on board, the crew moved on to the remaining three sites (60, 61, &64). Following the completion of Site 64, the vessel moved to Cell LC to take one core in the center of the cell (65), and then to Cell LD to take one core, also in the center of the cell (66). Following those two sites, the *Sea Watch* returned to the center of LU (Site 63) and took two additional cores. The fourth core, 63D, was over 47cm in length. A total of ten cores were collected, eight in Cell LU, one each in LC and LD. The R/V *Sea Watch* returned to SCMI upon completion of survey activity, arriving at dock at 18:10.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Gravity corer

Problems Encountered
None

Custody of Samples:

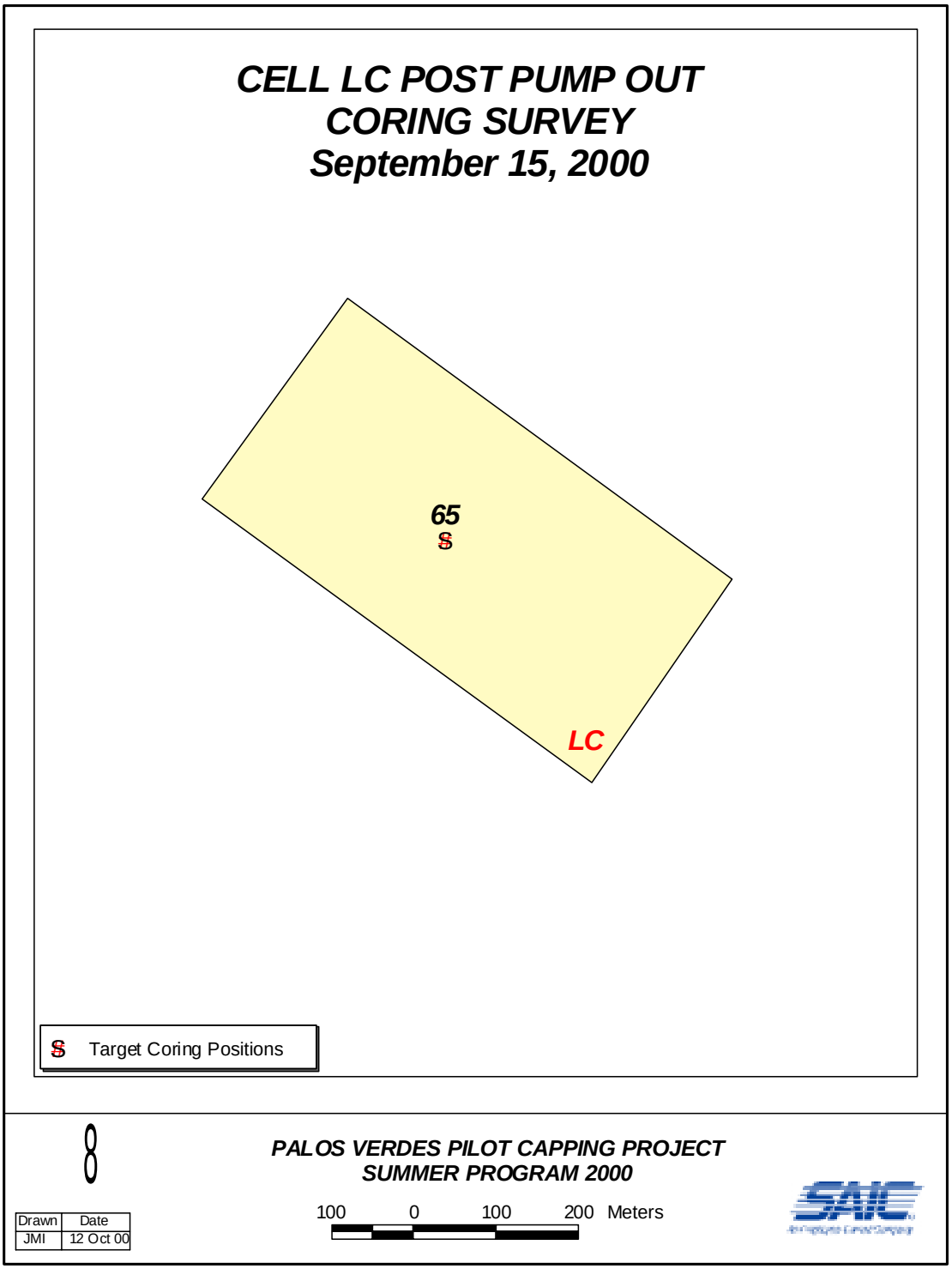
Pam Walter was given custody of the core samples upon the vessel's arrival at dock.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager.

Navigation Data Files:

Raw0915.tgt
Points_09152000_SW_cores.csv


CELL LC POST PUMP OUT
CORING SURVEY
September 15, 2000
65
LC
Target Coring Positions
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
12 Oct 00
100
0
100
200
Meters

CELL LC
CTD AND WATER QUALITY CRUISES

Palos Verdes Pilot Capping Monitoring Program
Cruise Report

Survey Date: **September 8, 2000**
Survey: **CTD and Rosette, Pump Out Survey (Flex)**
Cell: **LC**
Survey Vessel: **R/V *Sea Watch***
(All Times UTC)

Survey Team:
SAIC: Scott McDowell (Leader), Pam Walter (Water Sampling), Ellen Tobey (Navigation)
SCMI Vessel: Ken Kivett (Captain), Dave Reynose (Mate), Kerin Wiesenbaker (Deckhand),
SCMI CTD: Ximena Hernandez USACOE: Larry Smith (Observer)

Survey Operations:
Survey Schedule
The CTD and Rosette crew departed the Southern California Marine Institute (SCMI) at 15:00 to conduct CTD and Rosette operations for the LC Pump Out placement event. When the vessel reached the survey area, the generator filters needed to be replaced. The vessel returned to SCMI for maintenance at 19:31. The vessel departed SCMI again at 23:42. The survey was conducted between 23:42 and 02:39. The survey started by first conducting a background study, which occurred between 23:44 and 23:51. The placement occurred at 00:24. The placement survey started at 00:33 and ended at 02:36. A total of 33 water samples were collected. Thirty of the samples were collected after the placement; two near-bottom background water samples were collected at the planned point of disposal prior to the placement event. The purpose of these samples was to determine the natural background levels of TSS and p,p' DDE in the water column prior to the placement of the cap material. background samples were collected. All samples were collected near the centroid of the plume during multiple down casts of the Rosette or following a drogue and within 2 meters of the sea floor. Detailed times of individual water sample collections can be found in the Monitoring Results from the Field Pilot Survey. One CTD down cast was taken prior to the placement and four CTD down casts during the placement survey. The vessel also moved to the location of the two current drogues whenever the CTD rosette was on deck. The green drogue was used to track currents at 15 m depth and the yellow drogue tracked currents at 30 m depth. Position fixes were taken at these drogue locations to establish a drogue trackline.

Surveying Equipment
- Navigation: Trimble 4000RS GPS receiver
  Trimble NavBeaconXL DGPS receiver
  Coastal Oceanographic Hypack Navigation software

- Survey: Rosette Multi-Bottle Array System
  C Star Transmissometer
  Datasonics PSA-900 Altimeter
  SeaBird 911 plus CTD

Problems Encountered
Upon reaching the survey area the generator filters needed to be replaced. The vessel returned to SCMI for maintenance and left 2 hours later. Also the Dredge Sugar Island took some unscheduled time to take on water during the day. This left some down time for the SAIC crew and company.

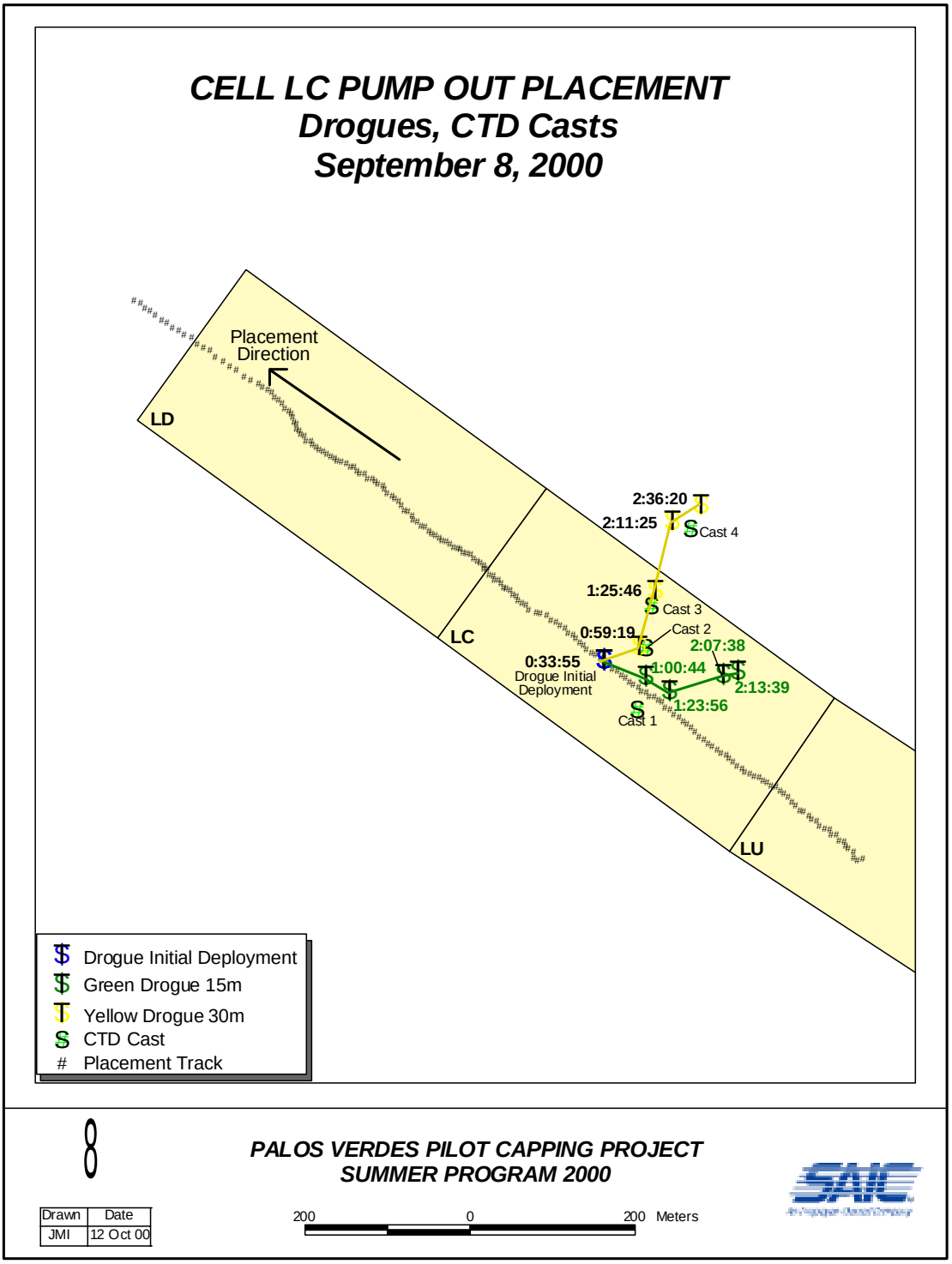
Custody of Samples:

Pam Walter had custody of samples upon completion of the cruise.

Custody of Survey Data:

All navigation data were transferred to the custody of the Data Manager. The CTD data was downloaded and processed by SCMI personnel immediately following survey activities. The processed data was then returned to the SAIC Data Manager within one day of the completion of the survey for data archiving and analysis.

Navigation Data Files:
Raw0908.tgt


CELL LC PUMP OUT PLACEMENT
Drogues, CTD Casts
September 8, 2000
Placement Direction
LD
LC
LU
2:36:20
2:11:25
Cast 4
1:25:46
Cast 3
Cast 2
0:59:19
2:07:38
0:33:55
Drogue Initial Deployment
1:00:44
2:13:39
1:23:56
Cast 1
Drogue Initial Deployment
Green Drogue 15m
Yellow Drogue 30m
CTD Cast
Placement Track
PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000
Drawn
Date
JMI
12 Oct 00
200
0
200
Meters

CELL LC
ADISS MONITORING
OF
HOPPER DREDGE OPERATIONS

Survey Dates: **September 8, 2000**
Survey: **ADISS Hopper Dredge Position Tracking**
Cell: **LC**
Survey Vessel: **Dredge Sugar Island**
(All Times UTC)

Survey Team:
SAIC: David Fischman, Marc Wakeman, Steve Pace, Mike Mueller

Survey Operations:
Survey Schedule
The NATCO dredge Sugar Island was outfitted with an Automated Disposal Surveillance System, or ADISS, Box. This box recorded vessel position and draft for each placement throughout the Pilot Capping project. The system defined the precise location of each placement by recording the changes in draft that occur as the dredge released the capping material. Position information was downloaded following the completion of the pump out placement. The Pump Out placement in Cells LC and LD occurred on September 8, 2000.

Surveying Equipment

- Survey: ADISS Box
  Data Card (records raw position data)

  DGPS & GPS Antennae

  Toshiba Satellite computer
  AdissPLAY® – Database program

Problems Encountered

None

Custody of Samples:

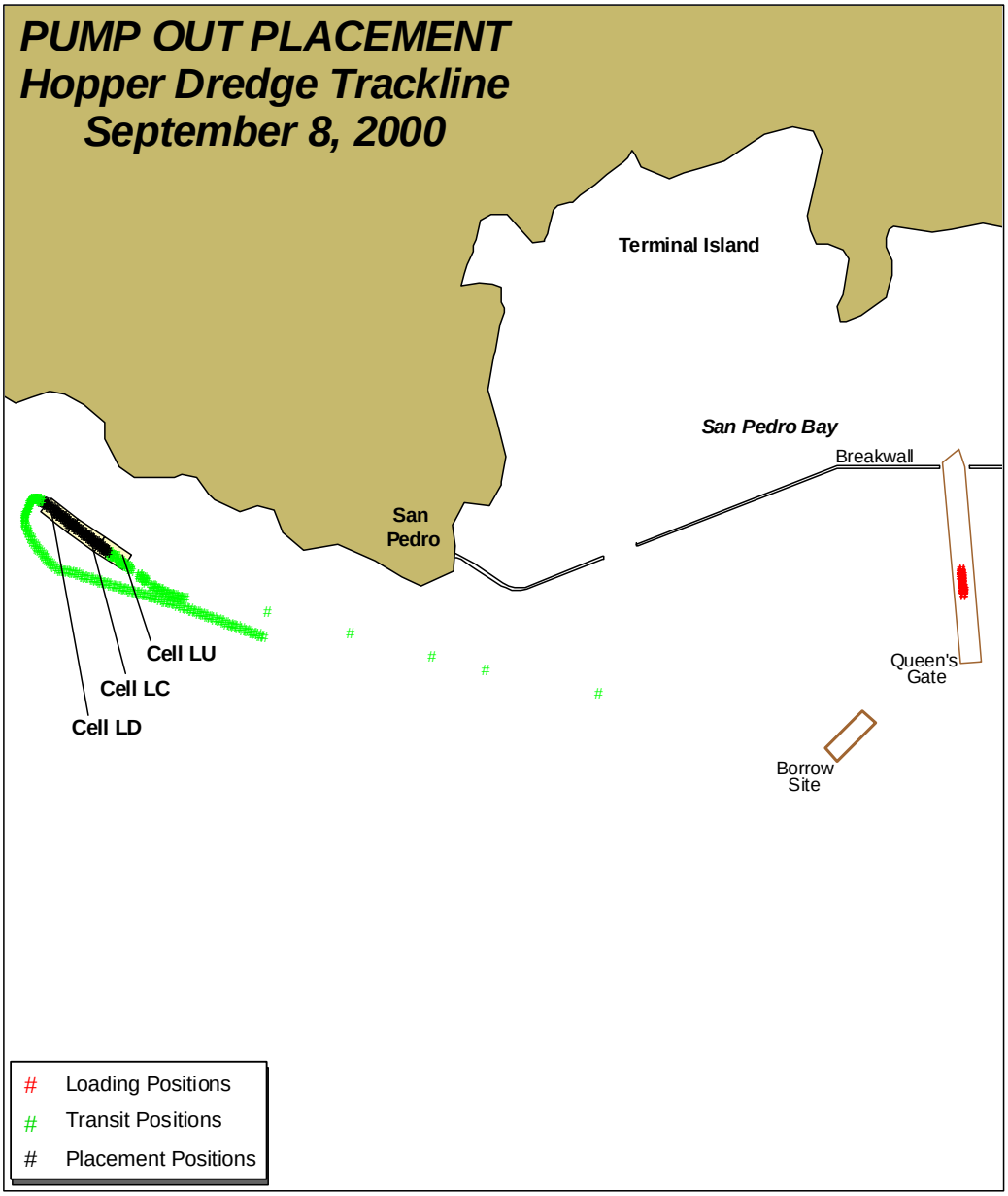
None

Custody of Survey Data:

David Fischman had custody of the ADISS data following each download and upon final completion of all survey operations on the Palos Verdes shelf.

Navigation Data Files:

None

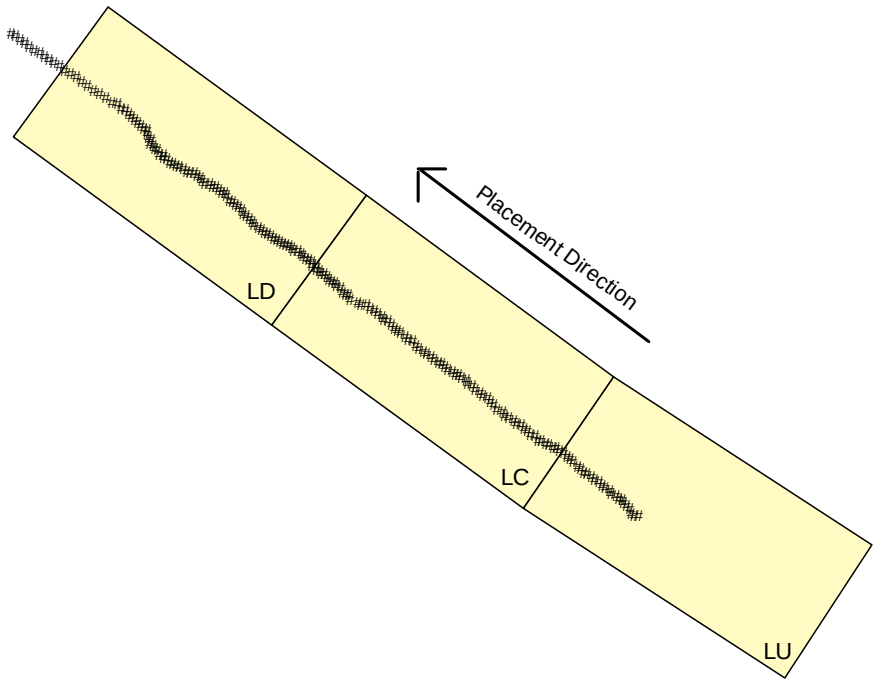


PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
DEF	10 Sep 00

2 0 2 4 Kilometers

PUMP OUT PLACEMENT
September 8, 2000



UTC Time of Placement
Start: 0:24:06
End: 0:45:29
(GMT Date: 9/9/00)

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PALOS VERDES PILOT CAPPING PROJECT
SUMMER PROGRAM 2000

Drawn	Date
DEF	10 Sep 00

200 0 200 Meters