Table 1. Summary of SW ODMDS utilization and dispersive properties of site.

YEAR	VOLUME PLACED IN SW ODMDS	SPECIFICIED PLACEMENT METHOD ^ C=contractor G=government	MAXIMUM MOUND HEIGHT @ END OF DREDGING SEASON *	EFFECTIVENESS OF USING ENTIRE SW SITE TO DISPERSE DREDGED MATERIAL	TRANSPORT DURING DREDGING SEASON (CY) **	TRANSPORT DURING WINTER (CY) **	NET ANNUAL TRANSPORT OF SEDIMENT OUT OF SW SITE (CY) **
1997	1.0 MCY	None (C)	**2-3 ft** peak = 5 ft	20% of the Site Was Used	-400,000 (40%)	+614,000 (60%)	**+214,000** (20% accumulated)
1998	3.5 MCY	Grid Cells (C) Uniformly (G)	**5-6 ft** peak = 6 ft	70% of the Site Was Used	-2,100,000 (60%)	-1,216,000 (35%)	**-3,315,000** (95% eroded)
1999	3.8 MCY	Grid Cells(C) Uniformly(G)	**6-7 ft** Peak = 7 ft	80% of the Site Was Used	-1,520,000 (40%)	-1,091,000 (30%)	**-2,611,000** (70% eroded)
2000	2.9 MCY	Grid Cells(C) Uniformly(G)	**6-8 ft** Peak = 8 ft	60% of the Site Was Used	-1,160,000 (40%)	-739,000 (25%)	**-1,899,000** (65% eroded)
2001	2.2 MCY	Disposal Lanes(C) Uniformly(G)	**6-7 ft** Peak = 9 ft	70% of the Site Was Used	-1,200,000 (50%)	-1,752,000 (73%)	**-2,952,000** (123% eroded)
2002	1.5 MCY	Disposal Lanes(C)	**6-7 ft** Peak = 8 ft	50% of the Site Was Used	-300,000 (20%)	not available	not available
	2.8 MCY	**AVERAGE VALUES**	**6-7 ft** Peak = 8 ft	**70%**	**45%**	**40%**	**90%**

^ = method used to distribute dredged material within SW ODMDS during seasonal placement. Grid cells enhance the uniform distribution of dredged material placed through out the site; the release point of each dump is assigned to a given grid cell, the end point of the dump lies 500-1,500 ft away from the release point. Each grid cell is assigned a finite number of dumps. Disposal lanes thru the ODMDS are assigned a limiting elevation, above which accumulation of placed dredged material is restricted. Use of Grid cells to minimize the vertical accumulation of dredged material placed with an ODMDS are superior to disposal lanes.

* = peak value for maximum vertical accumulation of dredged material (mound height) may have occurred before the end of the dredging season.

** = percentage of dredged material transported (out of SW ODMDS) is based on the volume "placed" during a given year. Transport greater than 100% indicates that the SW ODMDS experienced net erosion. Values for 2002 have not been determined.

TABLE 2. Disposal of Dredged Material at Mouth of the Columbia River ODMDSs (1956-2002)

(MCR & Tongue Point Dredged Material Deposited at Cited Disposal Areas)

Disposal Site	A	B	C*	D *	E	F	G	Total cubic yards
Year	cy	cy	cy	cy	cy	cy	cy	cy
1956	12,096,000	1,296,000	504,000	504,000	0	0	0	14,400,000
1957	1,605,643	1,221,307	422,071	838,428	0	0	0	4,087,449
1958	6,135	2,274,704	0	326,753	0	0	0	2,607,592
1959	0	1,914,964	0	661,021	0	0	0	2,575,985
1960	0	1,927,208	0	612,636	0	0	0	2,539,844
1961	0	1,837,879	0	297,066	0	0	0	2,134,945
1962	0	2,322,256	2,838	632,618	0	0	0	2,957,712
1963	0	1,725,851	724,630	234,735	0	0	0	2,685,216
1964	0	514,900	1,459,186	683,151	0	0	0	2,657,237
1965	0	675,921	1,205,090	1,606,671	0	0	0	3,487,682
1966	0	2,010,673	29,891	2,437,451	0	215,002	0	4,693,017
1967	0	1,463,573	1,067	354,700	0	422,066	0	2,241,406
1968	0	1,919,199	0	109,592	0	0	0	2,028,791
1969	0	2,021,562	0	89,042	0	0	0	2,110,604
1970	0	1,489,795	0	3,060	0	0	0	1,492,855
1971	51,047	1,439,042	13,818	241,689	0	0	0	1,745,596
1972	12,995	2,579,688	0	287,646	0	1,886	0	2,882,215
1973	0	3,051,662	0	409,640	291,439	3,060	0	3,755,801
1974	0	994,059	0	506,711	2,168,543	29,123	0	3,698,436
1975	0	333,462	0	895,594	4,886,792	27,539	0	6,143,387
1976	2,574	1,017,100	0	758,743	4,257,150	53,250	602,895	6,691,712
1977	2,867,393	1,868,579	0	710,373	3,678,429	0	0	9,124,774
1978	3,060	187,704	0	312,635	3,925,986	0	0	4,429,385
1979	0	116,502	0	158,466	4,930,840	0	0	5,205,808
1980	11,142	118,686	0	0	2,675,722	0	0	2,805,550
1981	2,254,321	9,180	0	0	3,042,896	0	0	5,306,397
1982	971,209	12,240	0	0	3,086,514	0	0	4,069,963
1983	1,124,466	199,969	0	0	606,218	0	0	1,930,653
1984	4,060,853	3,864,247	0	0	989,600	0	0	8,914,700
1985	1,326,150	2,068,927	0	0	4,126,429	0	0	7,521,506
1986	2,037,455	3,387,376	0	0	2,926,412	0	0	8,351,243
1987	1,593,550	1,209,358	0	0	1,183,050	0	0	3,985,958
1988	1,447,240	4,533,756	0	0	478,864	0	0	6,459,860
1989	647,458	3,456,285	0	0	568,522	2,030,954	0	6,703,219
1990	2,729,358	1,119,663	0	0	507,201	0	0	4,356,222
1991	1,486,938	1,956,570	0	0	380,142	0	0	3,823,650
1992	874,700	2,888,028	0	0	796,198	0	0	4,558,926
1993	0	1,629,208	0	0	988,208	2,288,431	0	4,905,847
1994	408,924	1,002,668	0	0	397,621	1,500,407	0	3,309,620
1995	0	2,480,664	0	0	988,547	0	0	3,469,211
1996	0	1,693,145	0	0	726,336	2,205,113	0	4,624,594
1997	0	326,824	0	0	1,071,246	174,883	0	1,572,953
1998	0	0	0	0	3,444,656	820,722	0	4,265,378
1999	0	0	1,050,000	0	3,750,000	262,000	0	5,062,000
2000	0	0	504,000	0	2,896,000	465,500	0	3,865,500
2001	0	0	498,000	0	2,176,000	1,390,000	0	4,064,000
2002**	0	0	498,800	0	1,503,800	2,270,670	0	4,273,270
Totals	37,618,611	68,160,384	6,913,391	13,672,421	63,449,361	14,160,606	602,895	204,577,669

Volume of **sediment** placed in Ocean Dredged Material Disposal Sites for 1956-2002 (cy) ***183,991,857***

Annual Avg	North Jetty	ODMDS E	ODMDS F	Annual avg. for	
1997-2002	**637,700**	**2,473,617**	**897,296**	1990-2002	4,011,629
				1986-1989	6,375,070
				1977-1985	5,478,748
				1956-1976	3,696,071

Note 1 : ODMDSs receive *Interim* designation in 1977 .

Note 2: Final designation of ODMDSs in 1986 .

Note 3: * Estuarine disposal site.; ** 43,500 cy placed on Benson Beach

Bathymetry of MCR and Vicinity

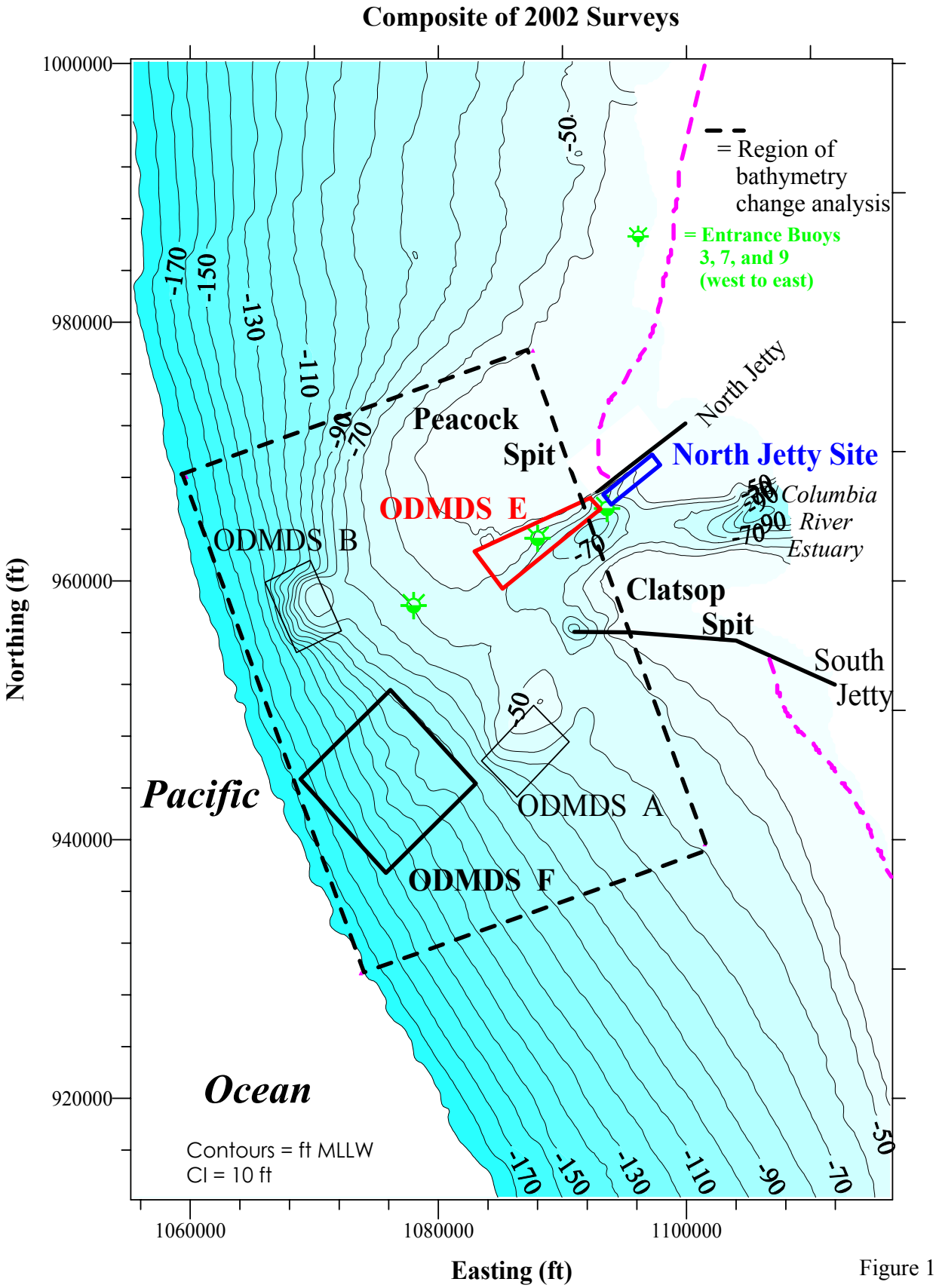


Figure 1

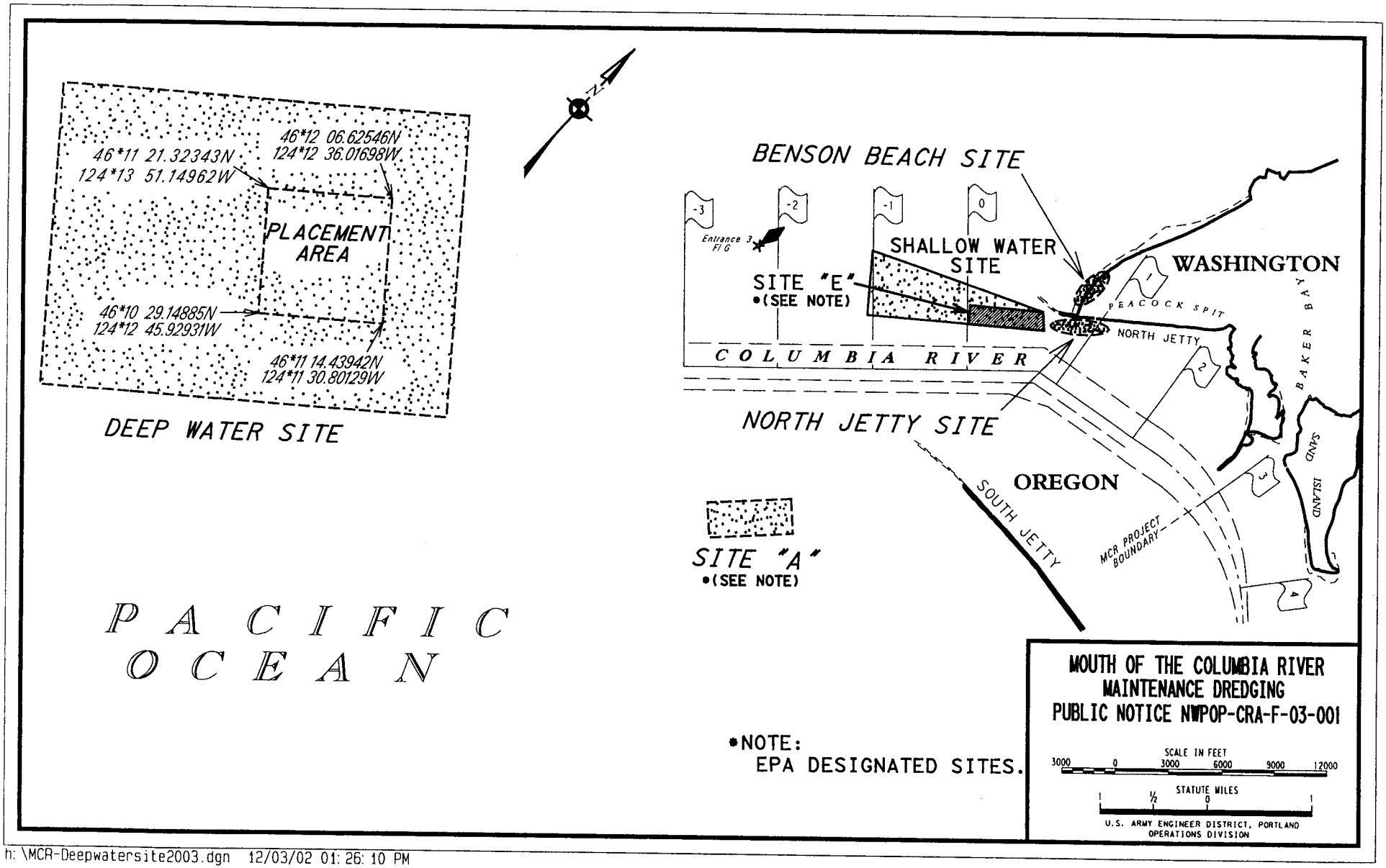

46*11 21.32343N
124*13 51.14962W
46*12 06.62546N
124*12 36.01698W
PLACEMENT AREA
46*10 29.14885N
124*12 45.92931W
46*11 14.43942N
124*11 30.80129W
DEEP WATER SITE
N
BENSON BEACH SITE
-3
-2
-1
0
Entrance 3 FIG
SHALLOW WATER SITE
SITE "E"
•(SEE NOTE)
WASHINGTON
PEACOCK SPIT
NORTH JETTY
BAKER BAY
COLUMBIA RIVER
NORTH JETTY SITE
OREGON
SAND ISLAND
SOUTH JETTY
MCR PROJECT BOUNDARY
SITE "A"
•(SEE NOTE)
PACIFIC OCEAN
•NOTE:
EPA DESIGNATED SITES.
MOUTH OF THE COLUMBIA RIVER
MAINTENANCE DREDGING
PUBLIC NOTICE NWPOP-CRA-F-03-001
SCALE IN FEET
3000 0 3000 6000 9000 12000
STATUTE MILES
1 ½ 0 1
U.S. ARMY ENGINEER DISTRICT, PORTLAND
OPERATIONS DIVISION
h: \MCR-Deepwatersite2003.dgn 12/03/02 01:26:10 PM

Figure 1a

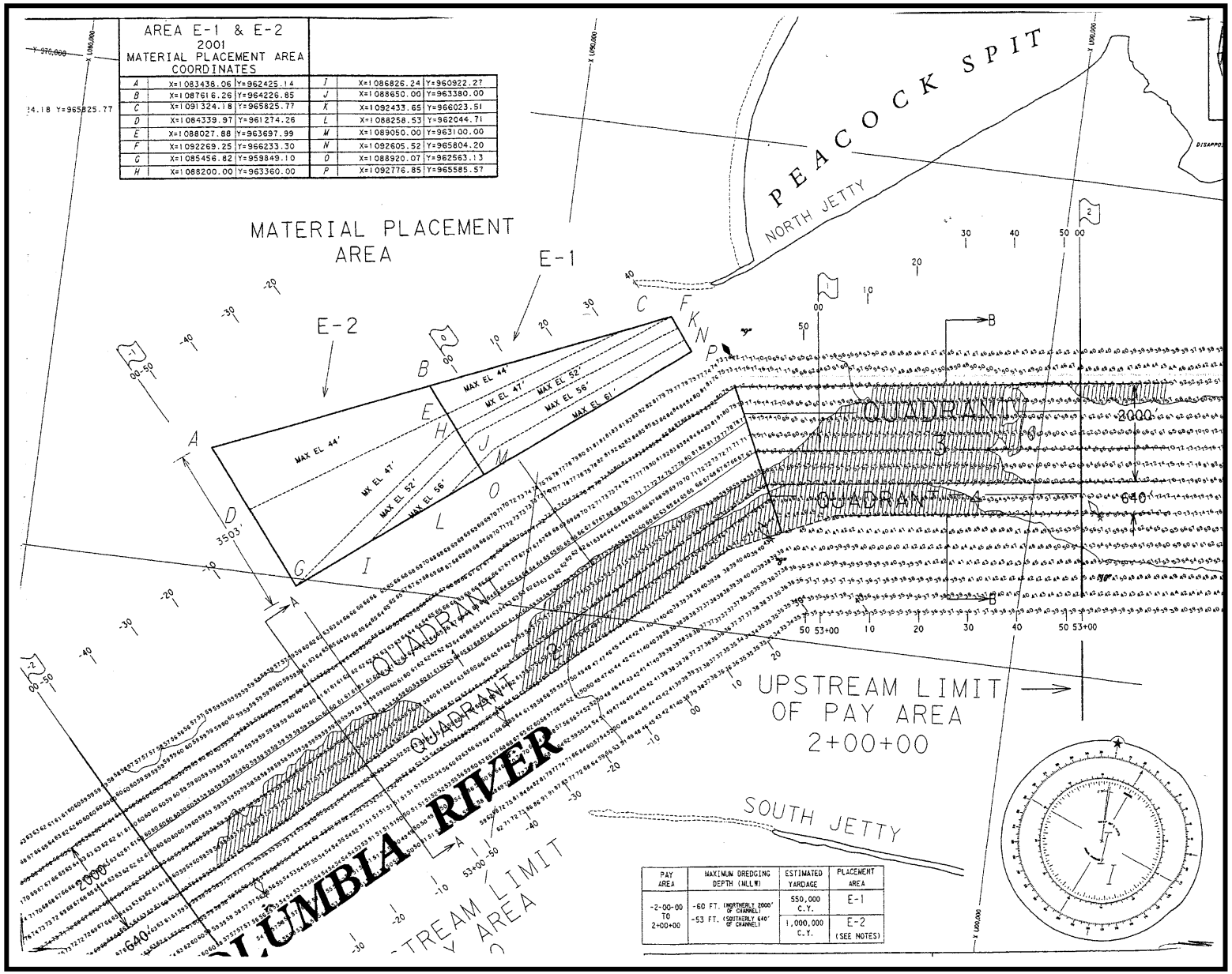

AREA E-1 & E-2
2001
MATERIAL PLACEMENT AREA
COORDINATES
A X=1083438.06 Y=962425.14
B X=1087616.26 Y=964226.85
C X=1091324.18 Y=965825.77
D X=1084339.97 Y=961274.26
E X=1088027.88 Y=963697.99
F X=1092269.25 Y=966233.30
G X=1085456.82 Y=959849.10
H X=1088200.00 Y=963360.00
I X=1086826.24 Y=960922.27
J X=1088650.00 Y=963380.00
K X=1092433.65 Y=966023.51
L X=1088258.53 Y=962046.71
M X=1089050.00 Y=963100.00
N X=1092605.52 Y=965804.20
O X=1088920.07 Y=962563.13
P X=1092776.85 Y=965585.57
MATERIAL PLACEMENT AREA
E-1
E-2
PEACOCK SPIT
NORTH JETTY
SOUTH JETTY
MAX EL 44'
MX EL 47'
MAX EL 52'
MAX EL 56'
MAX EL 44'
MX EL 47'
MAX EL 52'
MAX EL 56'
MAX EL 51'
QUADRANT 1
QUADRANT 2
QUADRANT 3
QUADRANT 4
3503'
2000'
640'
UPSTREAM LIMIT
OF PAY AREA
2+00+00
50 53+00
COLUMBIA RIVER
PAY AREA
MAXIMUM DREDGING DEPTH (MLLW)
ESTIMATED YARDAGE
PLACEMENT AREA
-2-00-00 TO 2+00+00
-60 FT. (NORTHERLY 2000' OF CHANNEL)
-53 FT. (SOUTHERLY 640' OF CHANNEL)
550,000 C.Y.
E-1
1,000,000 C.Y.
E-2
(SEE NOTES)

Figure 2

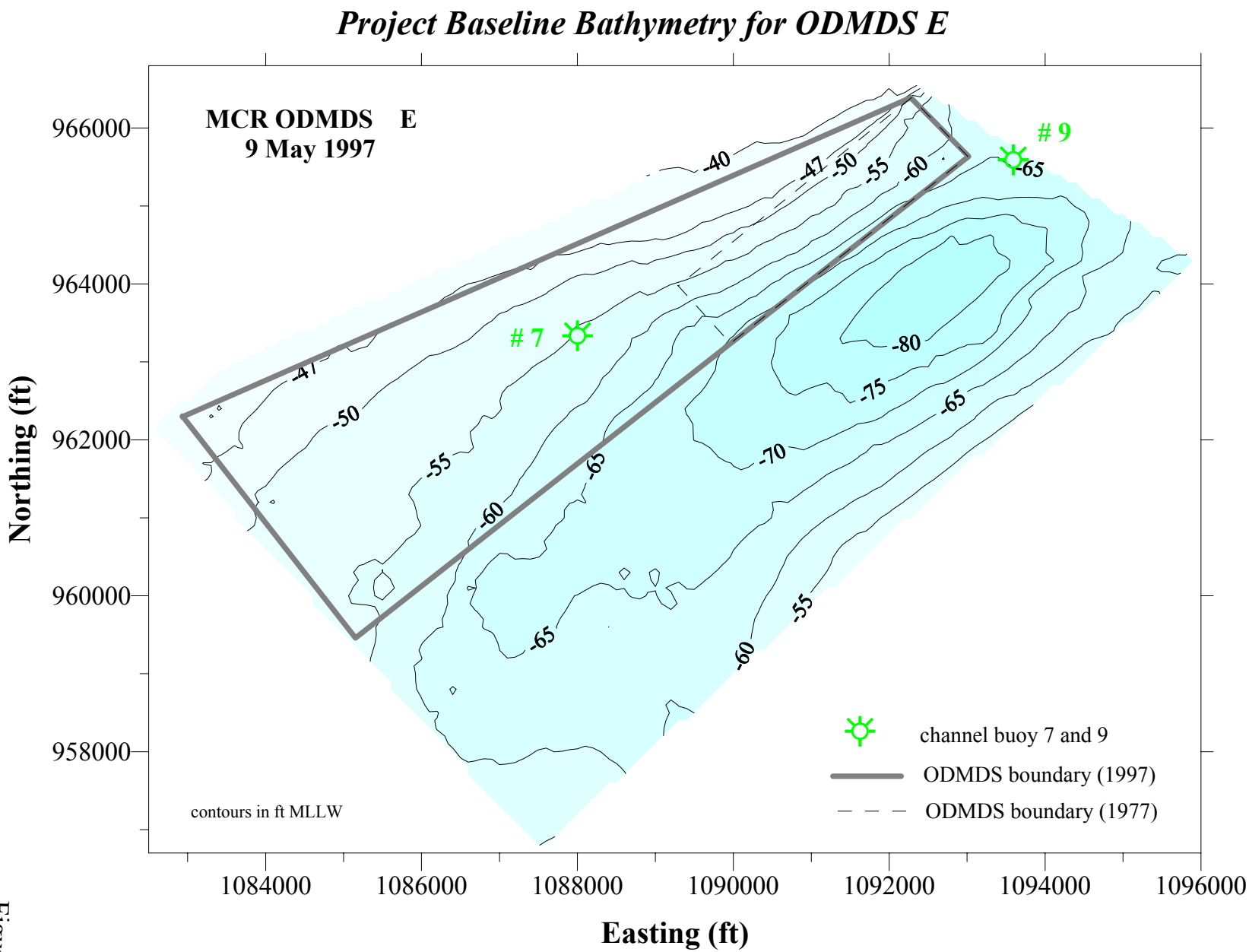

Project Baseline Bathymetry for ODMDS E
MCR ODMDS E
9 May 1997
7
9
-40
-47
-50
-55
-60
-65
-70
-75
-80
contours in ft MLLW
channel buoy 7 and 9
ODMDS boundary (1997)
ODMDS boundary (1977)
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 3

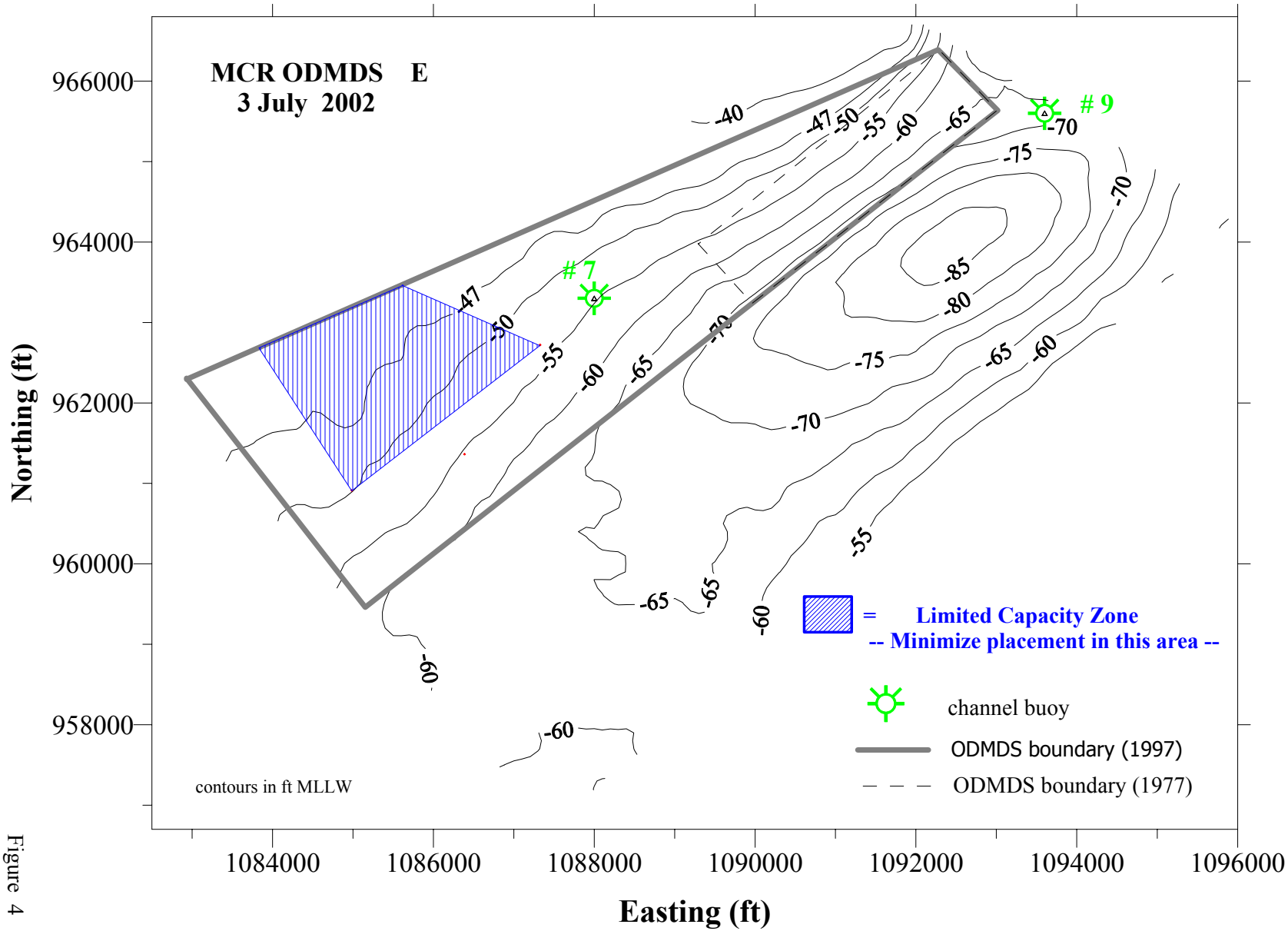

MCR ODMDS E
3 July 2002
7
9
-40
-47
-50
-55
-60
-65
-70
-75
-80
-85
Limited Capacity Zone
-- Minimize placement in this area --
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
contours in ft MLLW
966000
964000
962000
960000
958000
Northing (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000
Easting (ft)

Figure 4

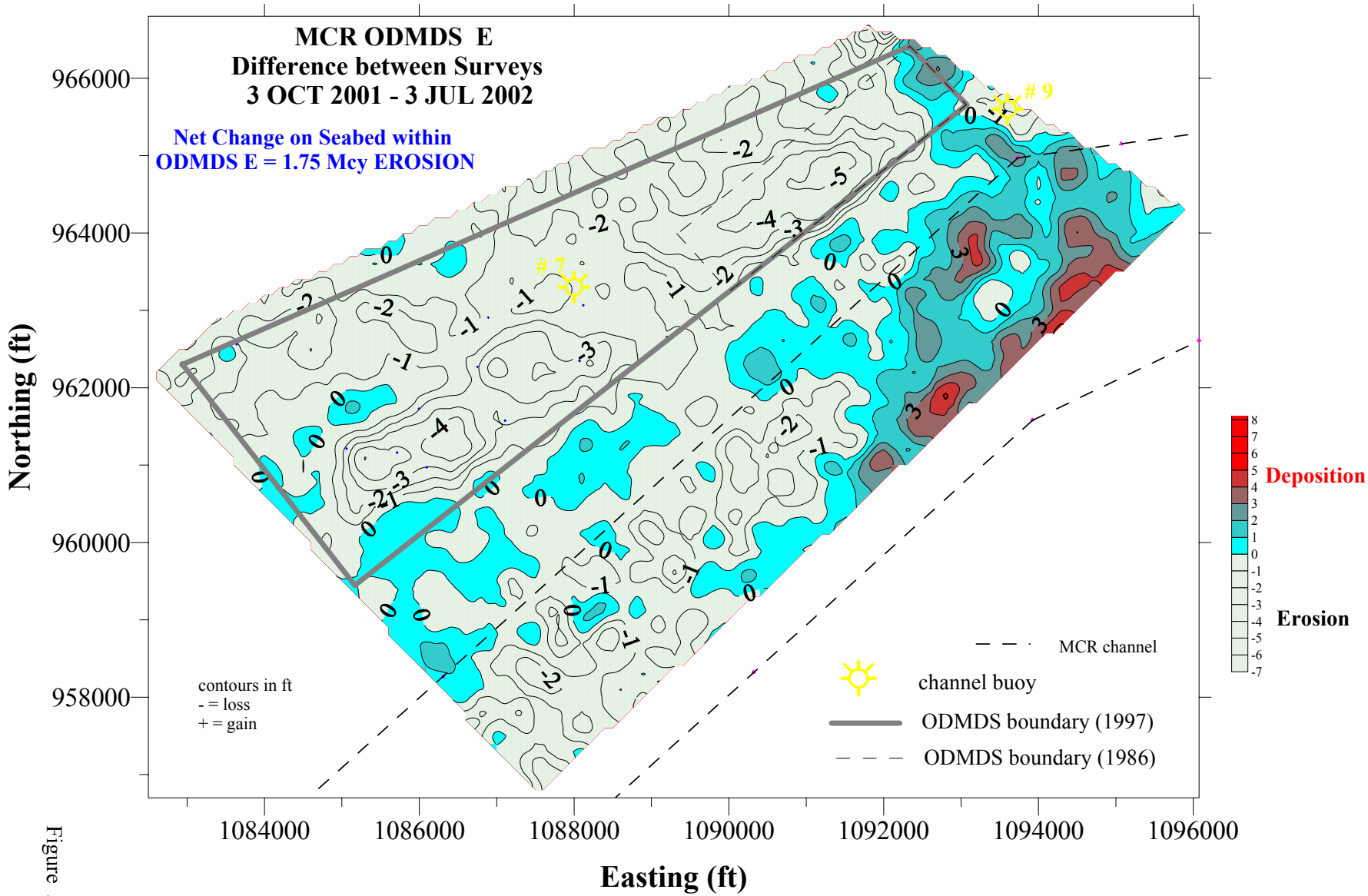

MCR ODMDS E
Difference between Surveys
3 OCT 2001 - 3 JUL 2002
Net Change on Seabed within
ODMDS E = 1.75 Mcy EROSION
7
9
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Deposition
Erosion
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
966000
964000
962000
960000
958000
Northing (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000
Easting (ft)

Figure 5

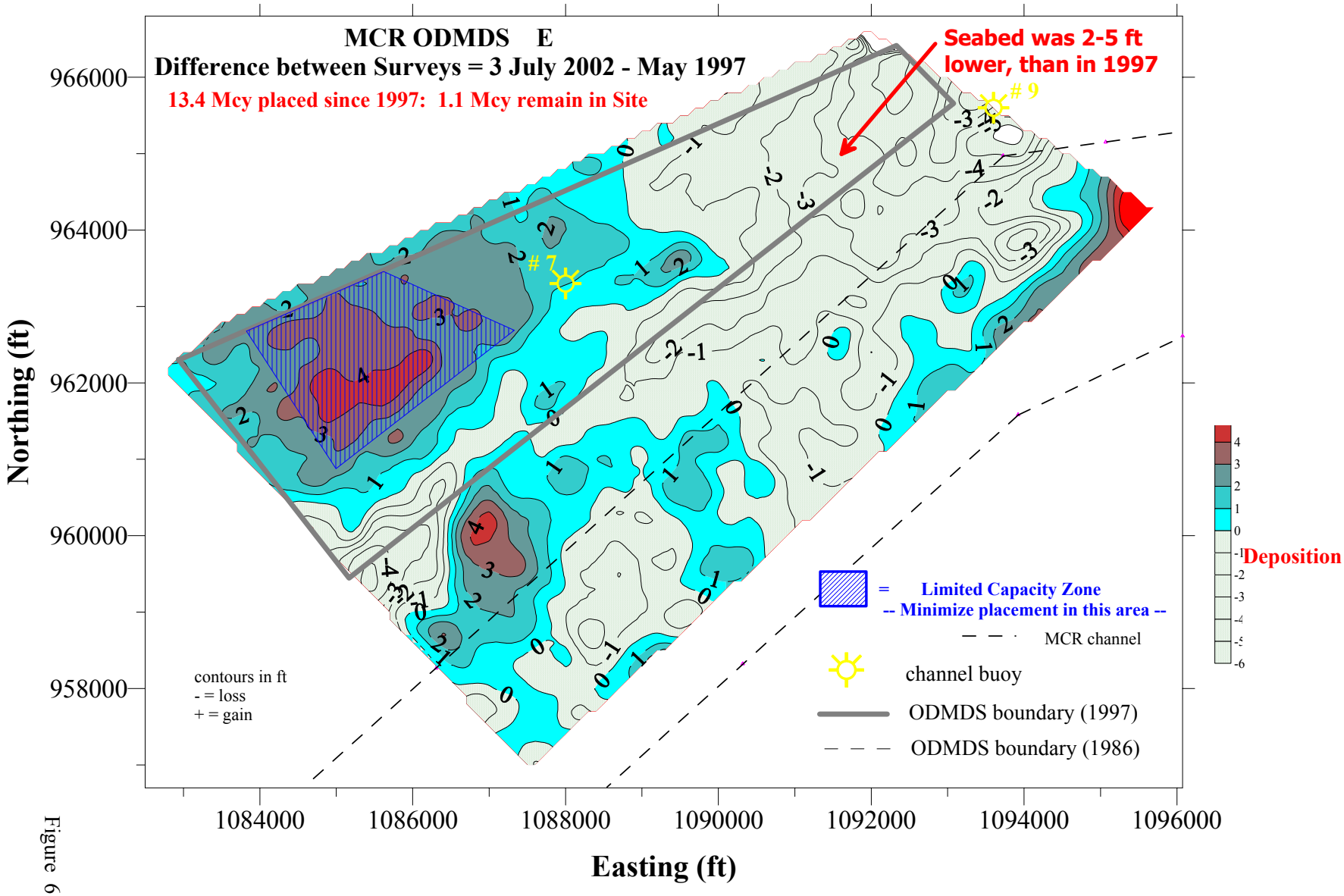

MCR ODMDS E
Difference between Surveys = 3 July 2002 - May 1997
13.4 Mcy placed since 1997: 1.1 Mcy remain in Site
Seabed was 2-5 ft lower, than in 1997
9
7
contours in ft
- = loss
+ = gain
= Limited Capacity Zone
-- Minimize placement in this area --
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Deposition
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 6

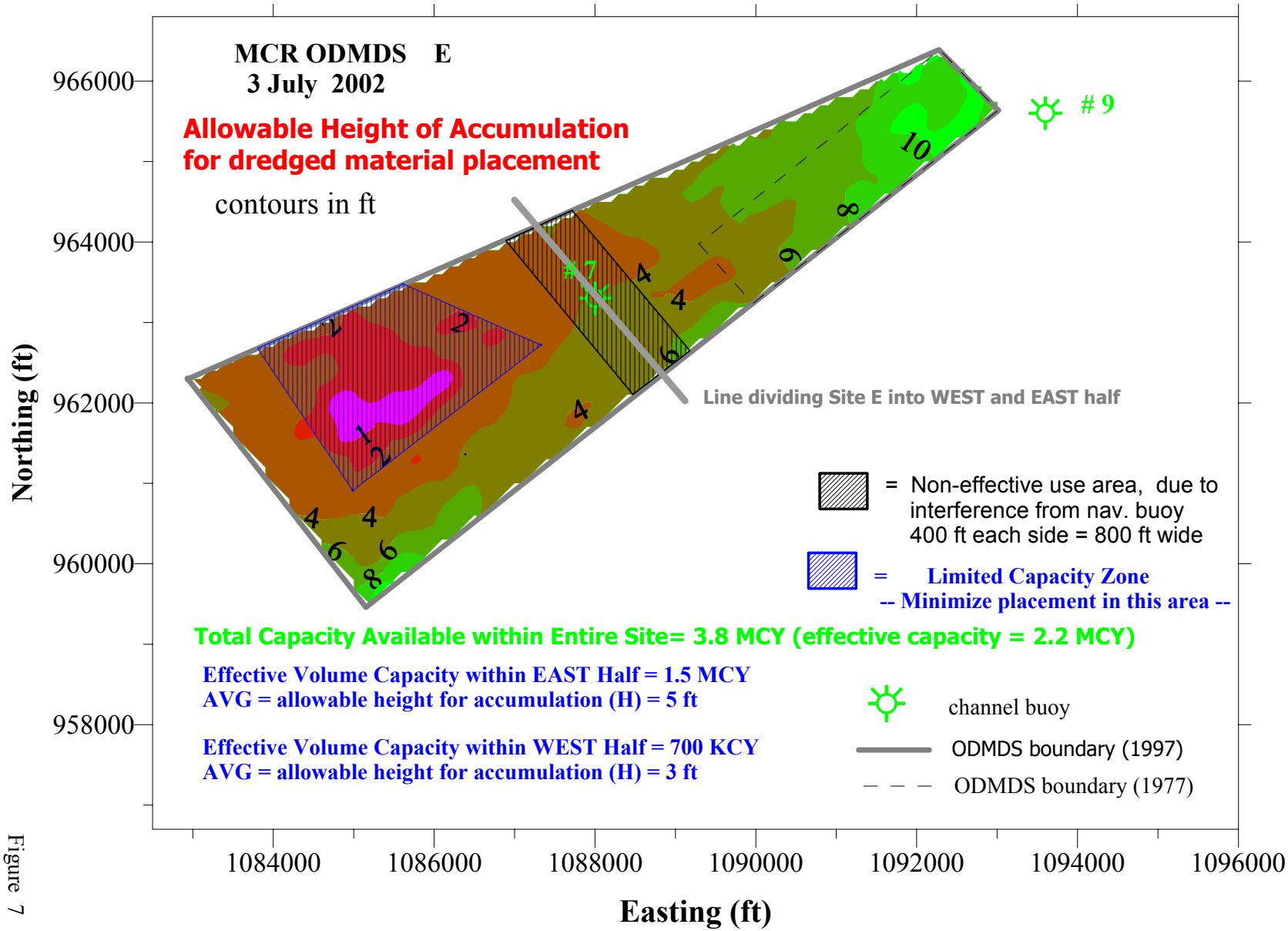

MCR ODMDS E
3 July 2002
Allowable Height of Accumulation
for dredged material placement
contours in ft
9
7
Line dividing Site E into WEST and EAST half
= Non-effective use area, due to interference from nav. buoy 400 ft each side = 800 ft wide
= Limited Capacity Zone
-- Minimize placement in this area --
Total Capacity Available within Entire Site= 3.8 MCY (effective capacity = 2.2 MCY)
Effective Volume Capacity within EAST Half = 1.5 MCY
AVG = allowable height for accumulation (H) = 5 ft
Effective Volume Capacity within WEST Half = 700 KCY
AVG = allowable height for accumulation (H) = 3 ft
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 7

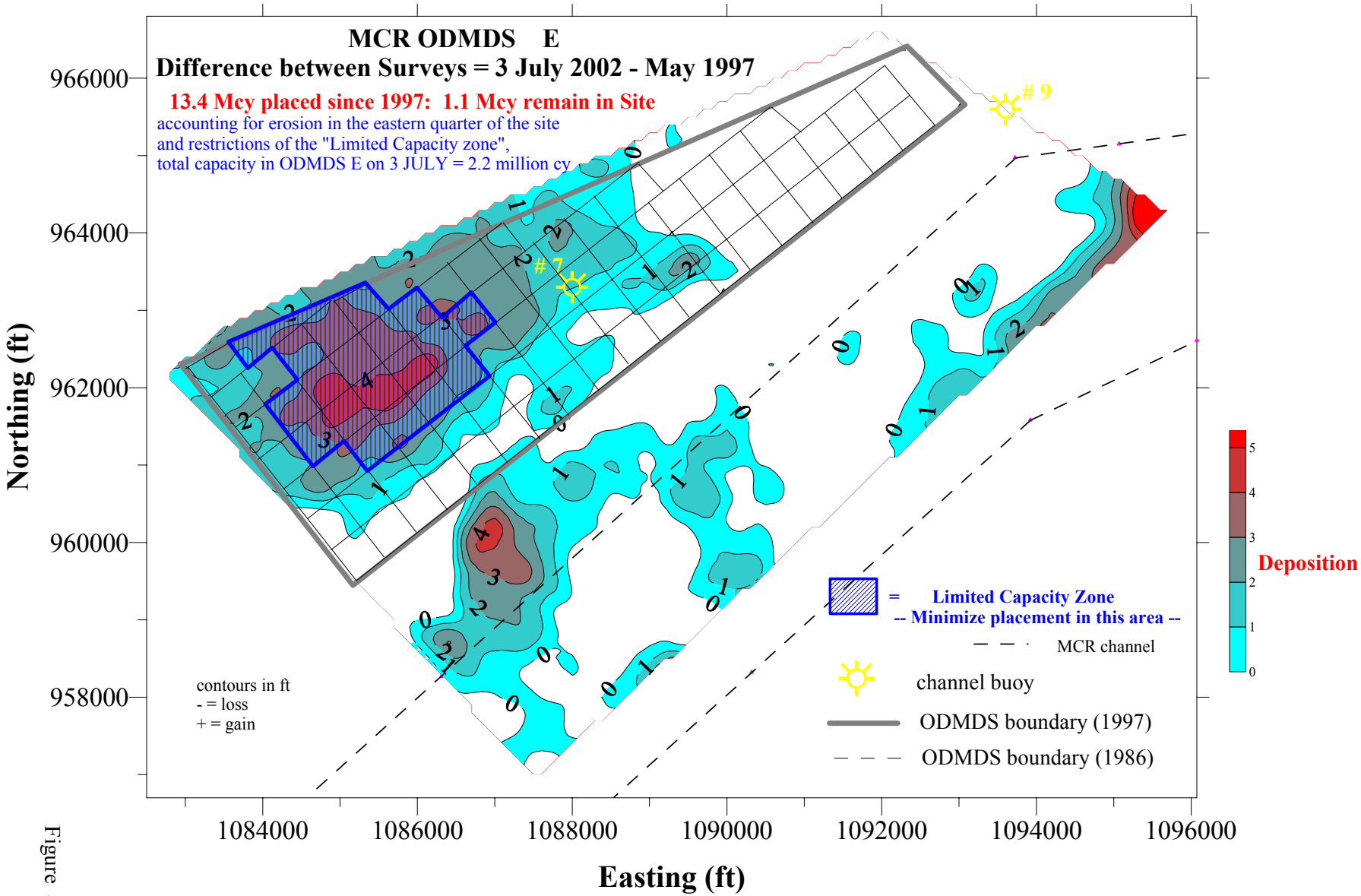

MCR ODMDS E
Difference between Surveys = 3 July 2002 - May 1997
13.4 Mcy placed since 1997: 1.1 Mcy remain in Site
accounting for erosion in the eastern quarter of the site
and restrictions of the "Limited Capacity zone",
total capacity in ODMDS E on 3 JULY = 2.2 million cy
9
7
contours in ft
- = loss
+ = gain
= Limited Capacity Zone
-- Minimize placement in this area --
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Deposition
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 8

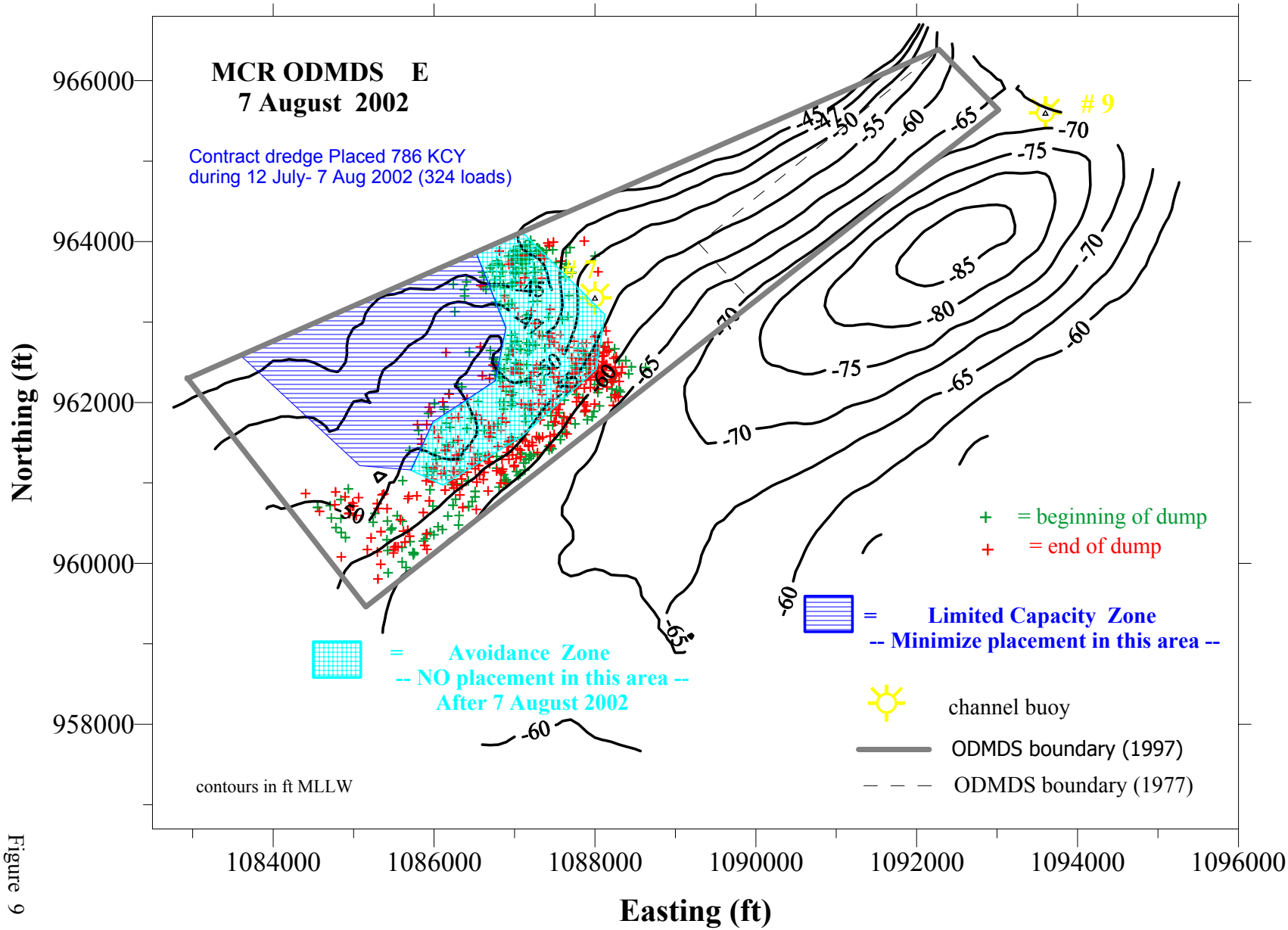

MCR ODMDS E
7 August 2002
Contract dredge Placed 786 KCY
during 12 July- 7 August 2002 (324 loads)
9
7
+ = beginning of dump
+ = end of dump
= Limited Capacity Zone
-- Minimize placement in this area --
= Avoidance Zone
-- NO placement in this area --
After 7 August 2002
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
contours in ft MLLW
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 9

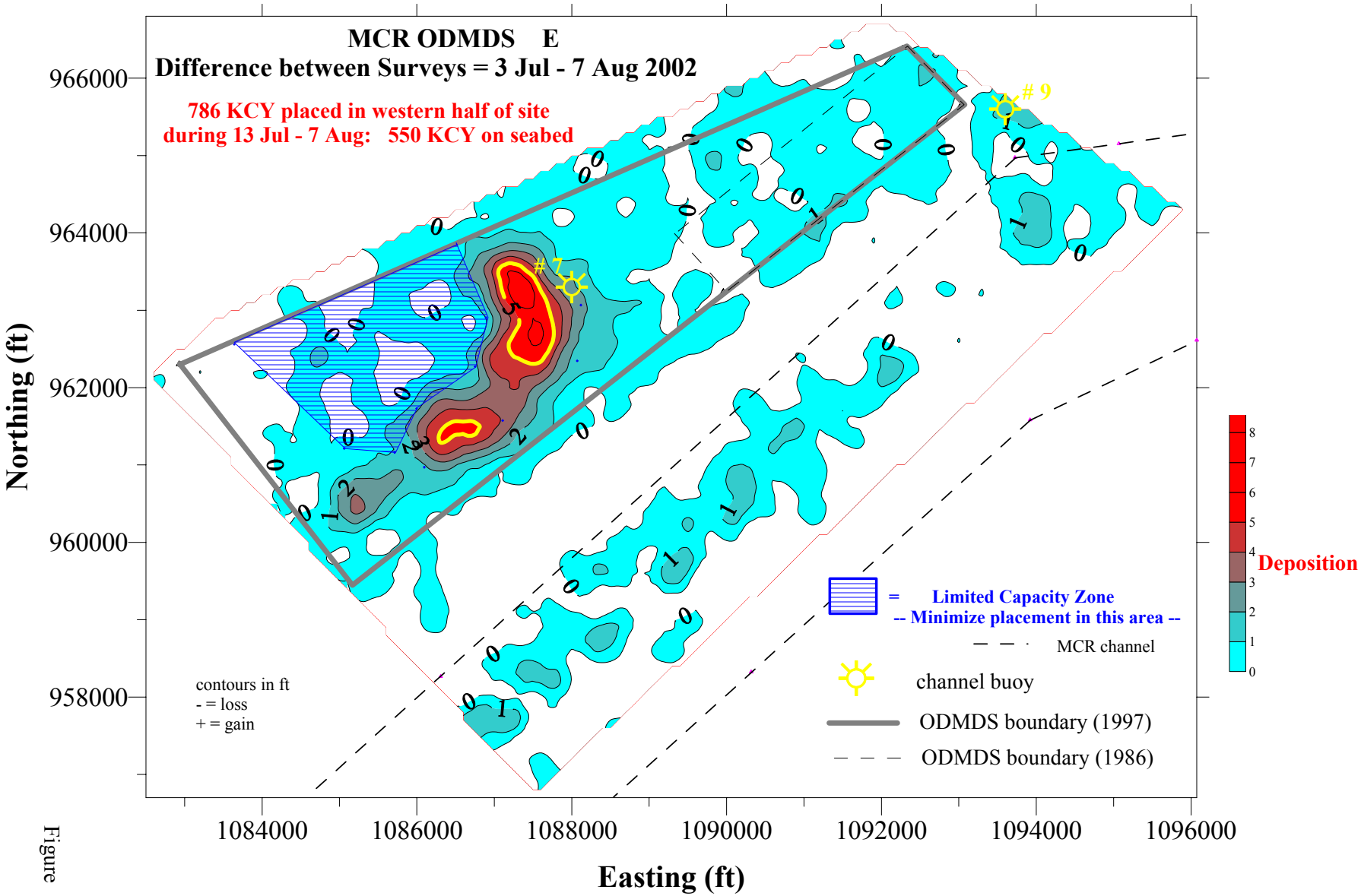

MCR ODMDS E
Difference between Surveys = 3 Jul - 7 Aug 2002
786 KCY placed in western half of site
during 13 Jul - 7 Aug: 550 KCY on seabed
9
7
contours in ft
- = loss
+ = gain
= Limited Capacity Zone
-- Minimize placement in this area --
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Deposition
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 10

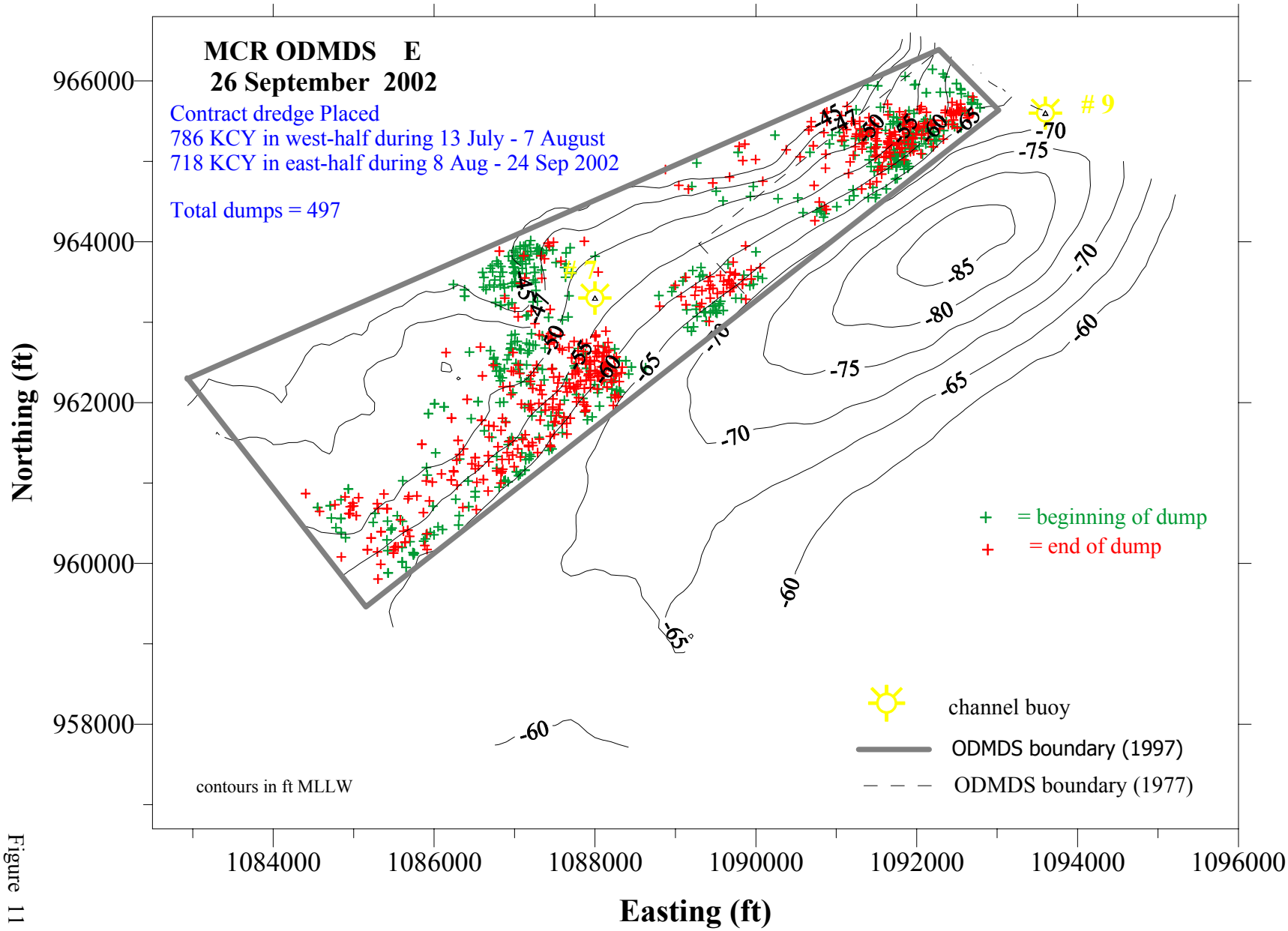

MCR ODMDS E
26 September 2002
Contract dredge Placed
786 KCY in west-half during 13 July - 7 August
718 KCY in east-half during 8 Aug - 24 Sep 2002
Total dumps = 497
7
9
+ = beginning of dump
+ = end of dump
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
contours in ft MLLW
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 11

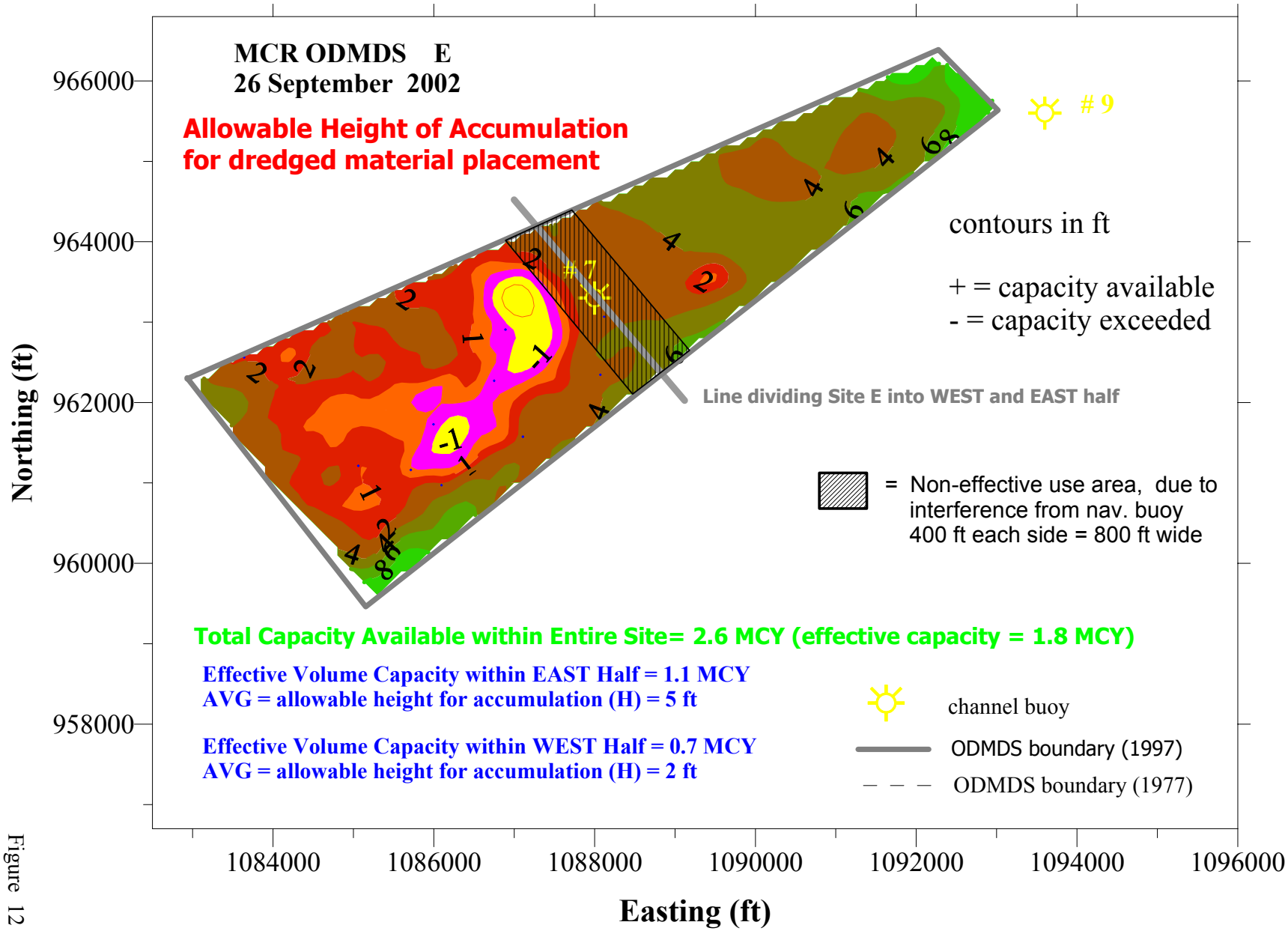

MCR ODMDS E
26 September 2002
Allowable Height of Accumulation
for dredged material placement
9
7
contours in ft
+ = capacity available
- = capacity exceeded
Line dividing Site E into WEST and EAST half
= Non-effective use area, due to interference from nav. buoy 400 ft each side = 800 ft wide
Total Capacity Available within Entire Site= 2.6 MCY (effective capacity = 1.8 MCY)
Effective Volume Capacity within EAST Half = 1.1 MCY
AVG = allowable height for accumulation (H) = 5 ft
Effective Volume Capacity within WEST Half = 0.7 MCY
AVG = allowable height for accumulation (H) = 2 ft
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
Northing (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000
Easting (ft)

Figure 12

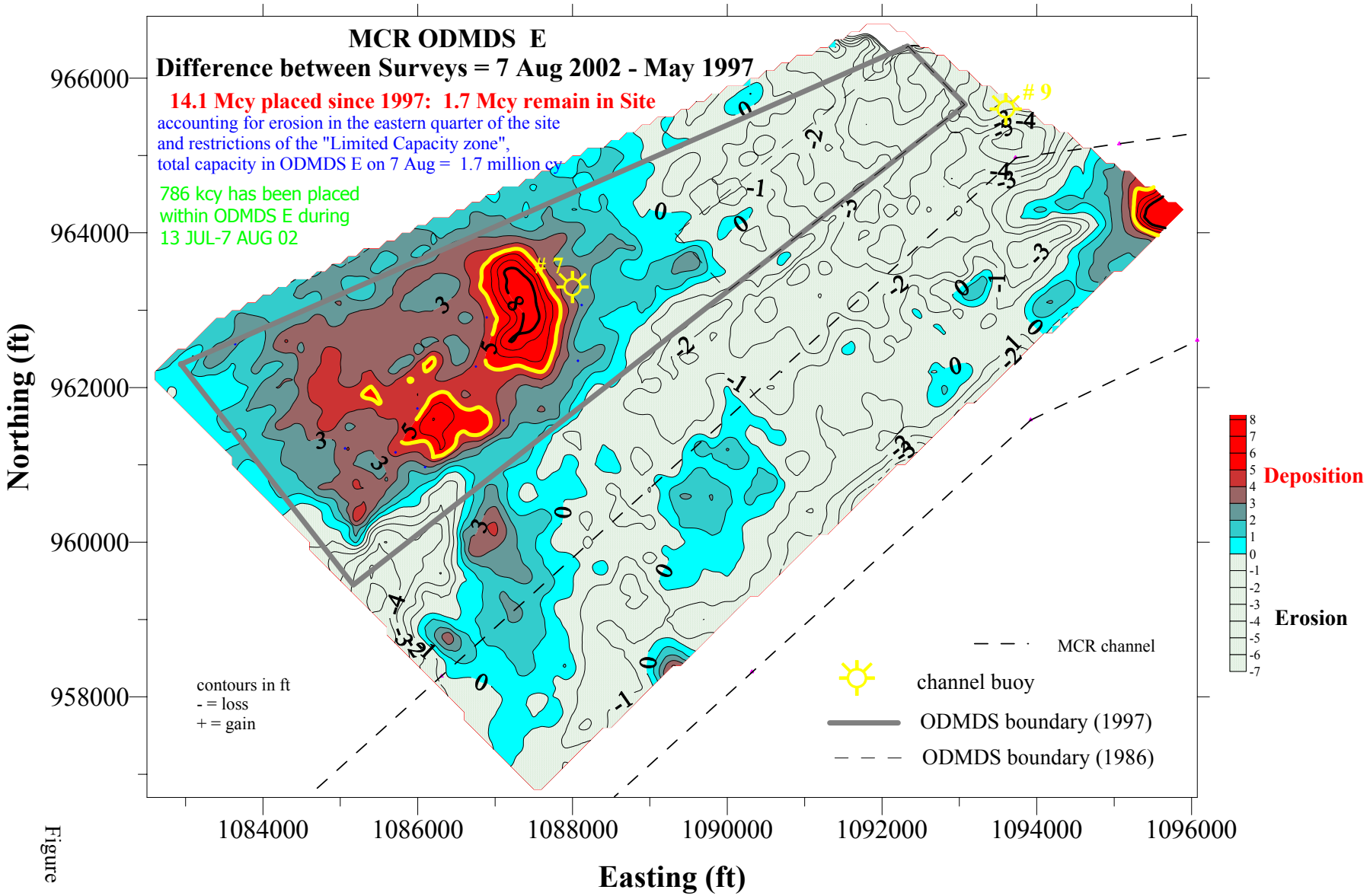

MCR ODMDS E
Difference between Surveys = 7 Aug 2002 - May 1997
14.1 Mcy placed since 1997: 1.7 Mcy remain in Site
accounting for erosion in the eastern quarter of the site
and restrictions of the "Limited Capacity zone",
total capacity in ODMDS E on 7 Aug = 1.7 million cy
786 kcy has been placed
within ODMDS E during
13 JUL-7 AUG 02
9
7
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Deposition
Erosion
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 13

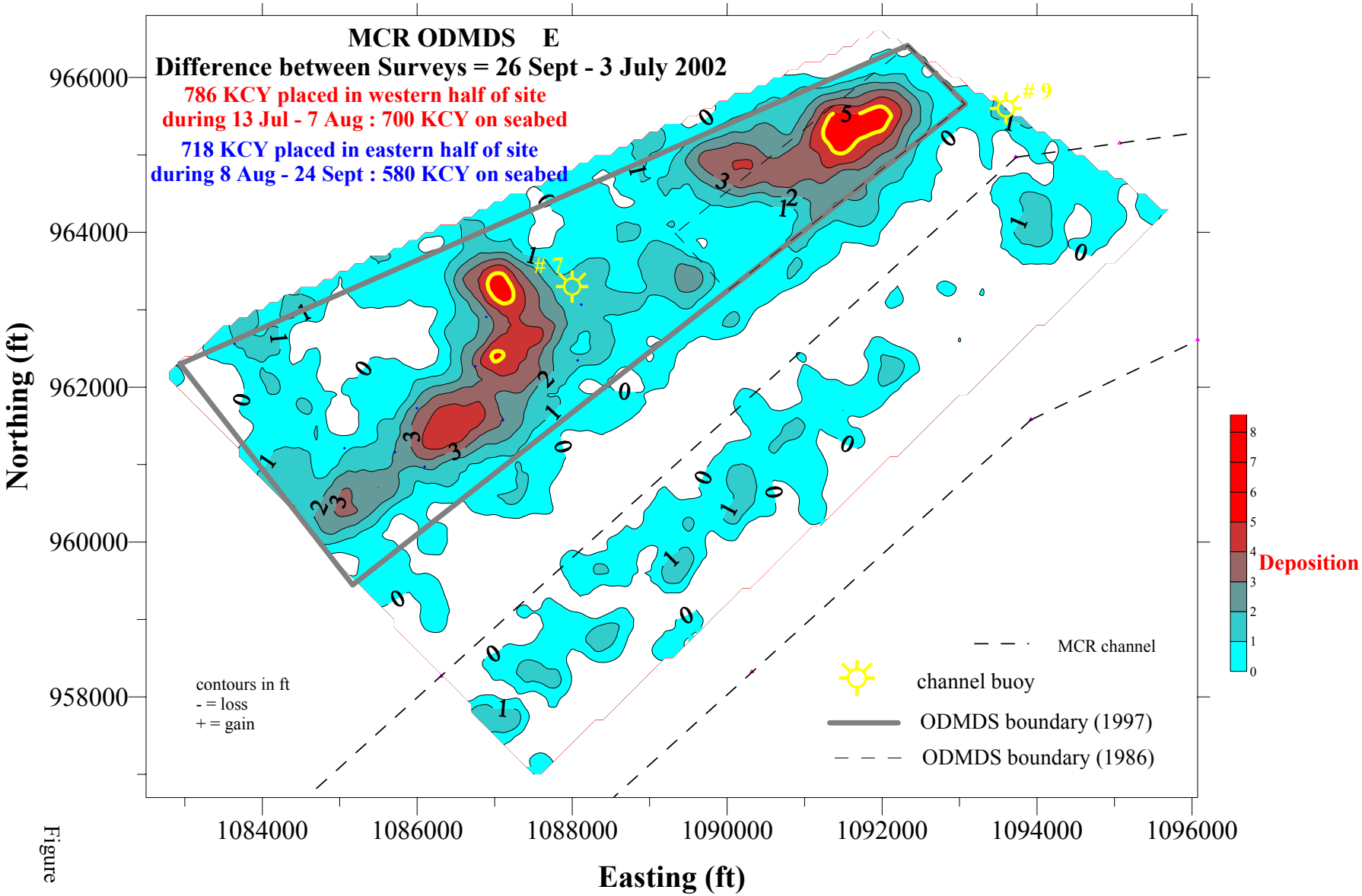

MCR ODMDS E
Difference between Surveys = 26 Sept - 3 July 2002
786 KCY placed in western half of site
during 13 Jul - 7 Aug : 700 KCY on seabed
718 KCY placed in eastern half of site
during 8 Aug - 24 Sept : 580 KCY on seabed
9
7
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Deposition
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 14

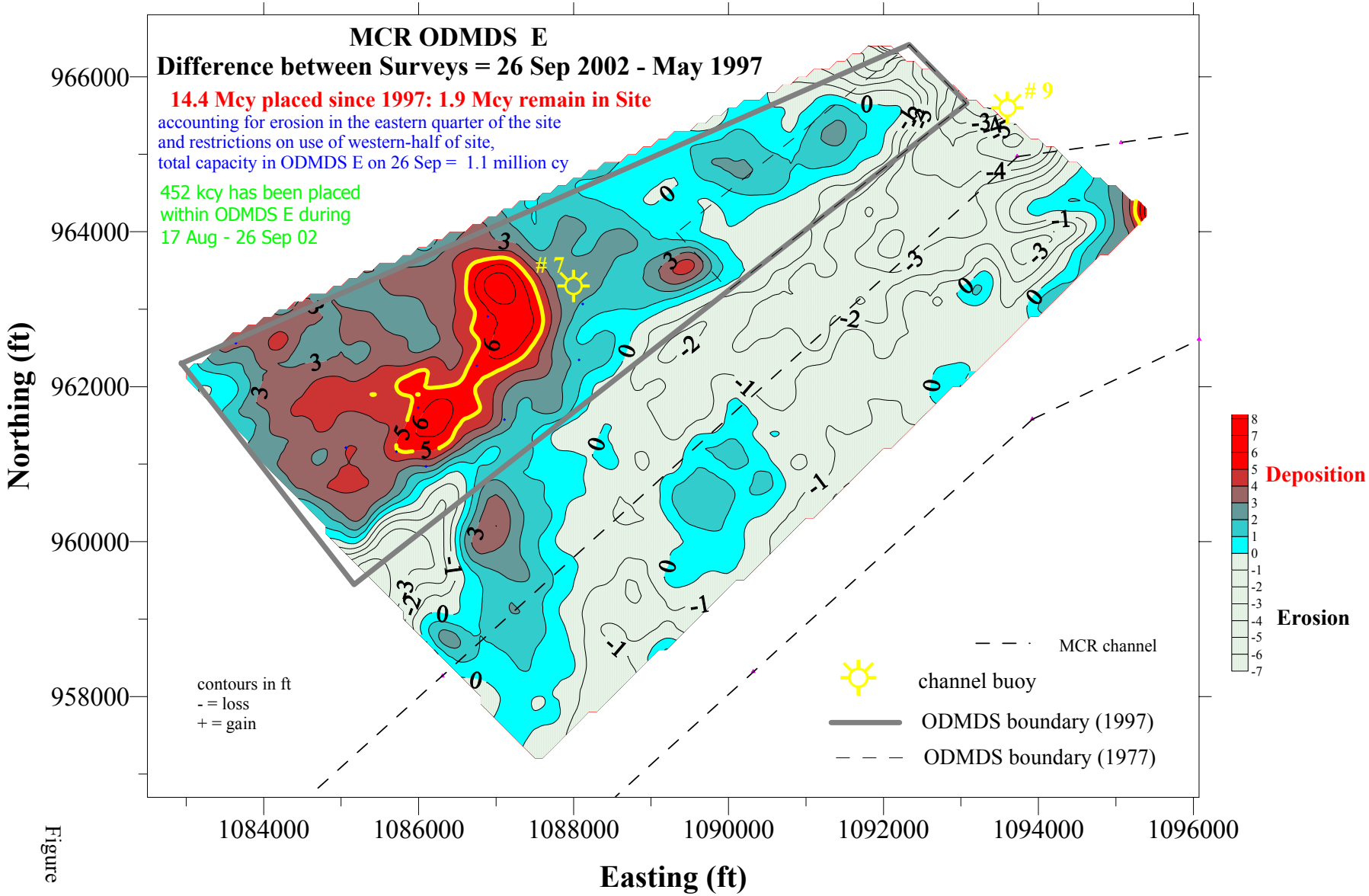

MCR ODMDS E
Difference between Surveys = 26 Sep 2002 - May 1997
14.4 Mcy placed since 1997: 1.9 Mcy remain in Site
accounting for erosion in the eastern quarter of the site
and restrictions on use of western-half of site,
total capacity in ODMDS E on 26 Sep = 1.1 million cy
452 kcy has been placed
within ODMDS E during
17 Aug - 26 Sep 02
7
9
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
Deposition
Erosion
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 15

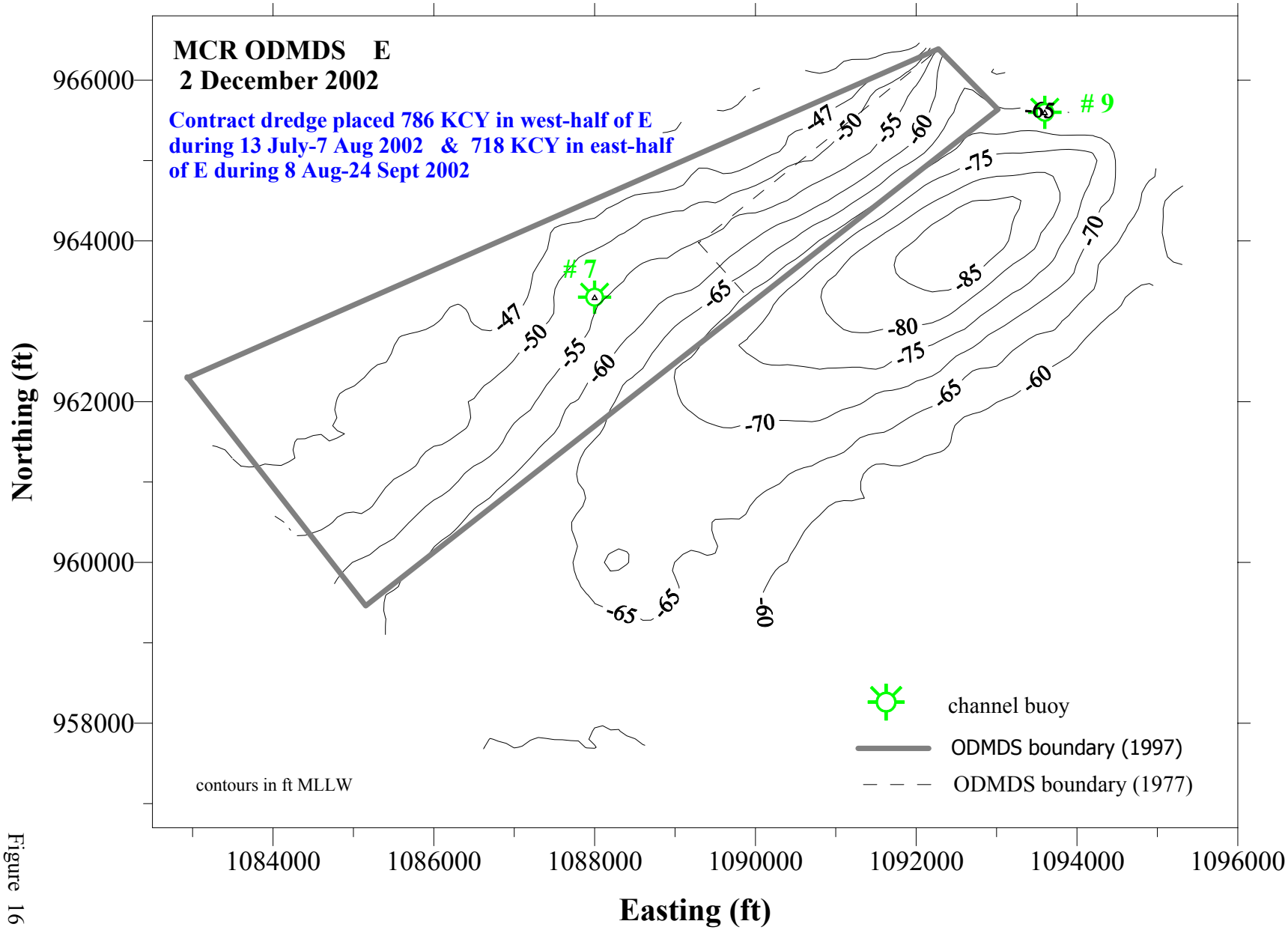

MCR ODMDS E
2 December 2002
Contract dredge placed 786 KCY in west-half of E
during 13 July-7 Aug 2002 & 718 KCY in east-half
of E during 8 Aug-24 Sept 2002
7
9
-47
-50
-55
-60
-65
-70
-75
-80
-85
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
contours in ft MLLW
966000
964000
962000
960000
958000
Northing (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000
Easting (ft)

Figure 16

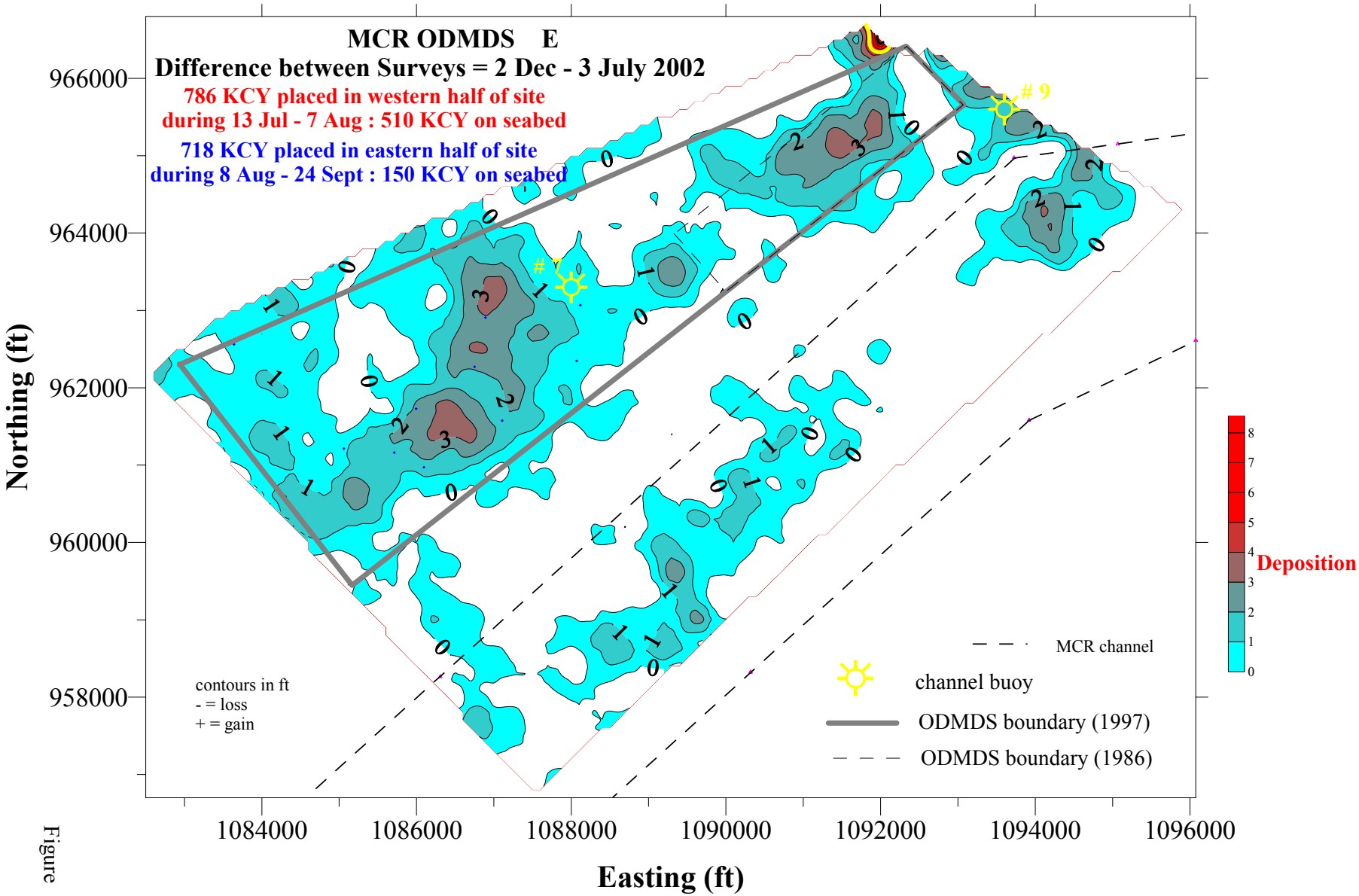

MCR ODMDS E
Difference between Surveys = 2 Dec - 3 July 2002
786 KCY placed in western half of site
during 13 Jul - 7 Aug : 510 KCY on seabed
718 KCY placed in eastern half of site
during 8 Aug - 24 Sept : 150 KCY on seabed
9
7
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Deposition
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 17

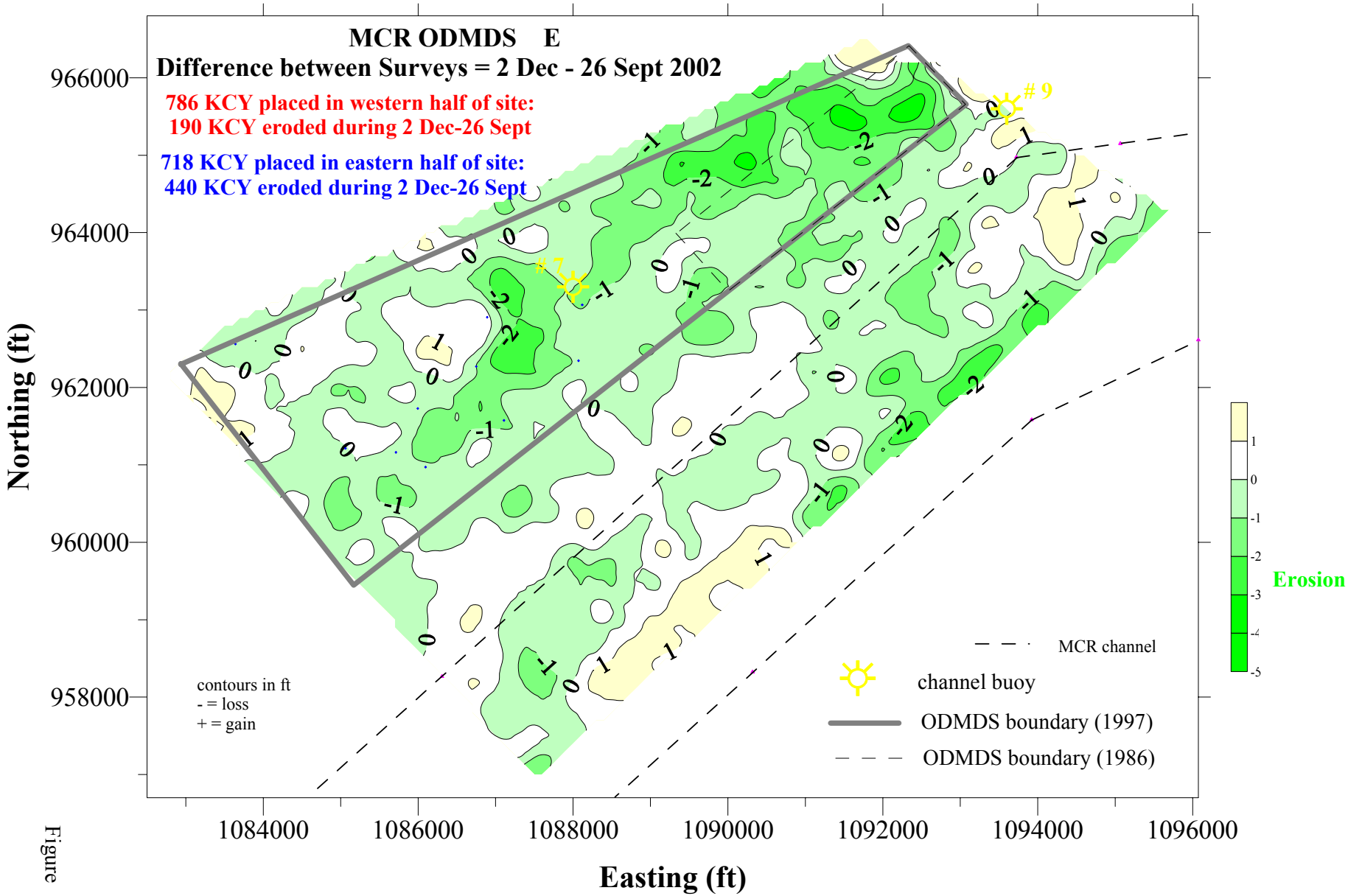

MCR ODMDS E
Difference between Surveys = 2 Dec - 26 Sept 2002
786 KCY placed in western half of site:
190 KCY eroded during 2 Dec-26 Sept
718 KCY placed in eastern half of site:
440 KCY eroded during 2 Dec-26 Sept
9
7
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1986)
Erosion
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 18

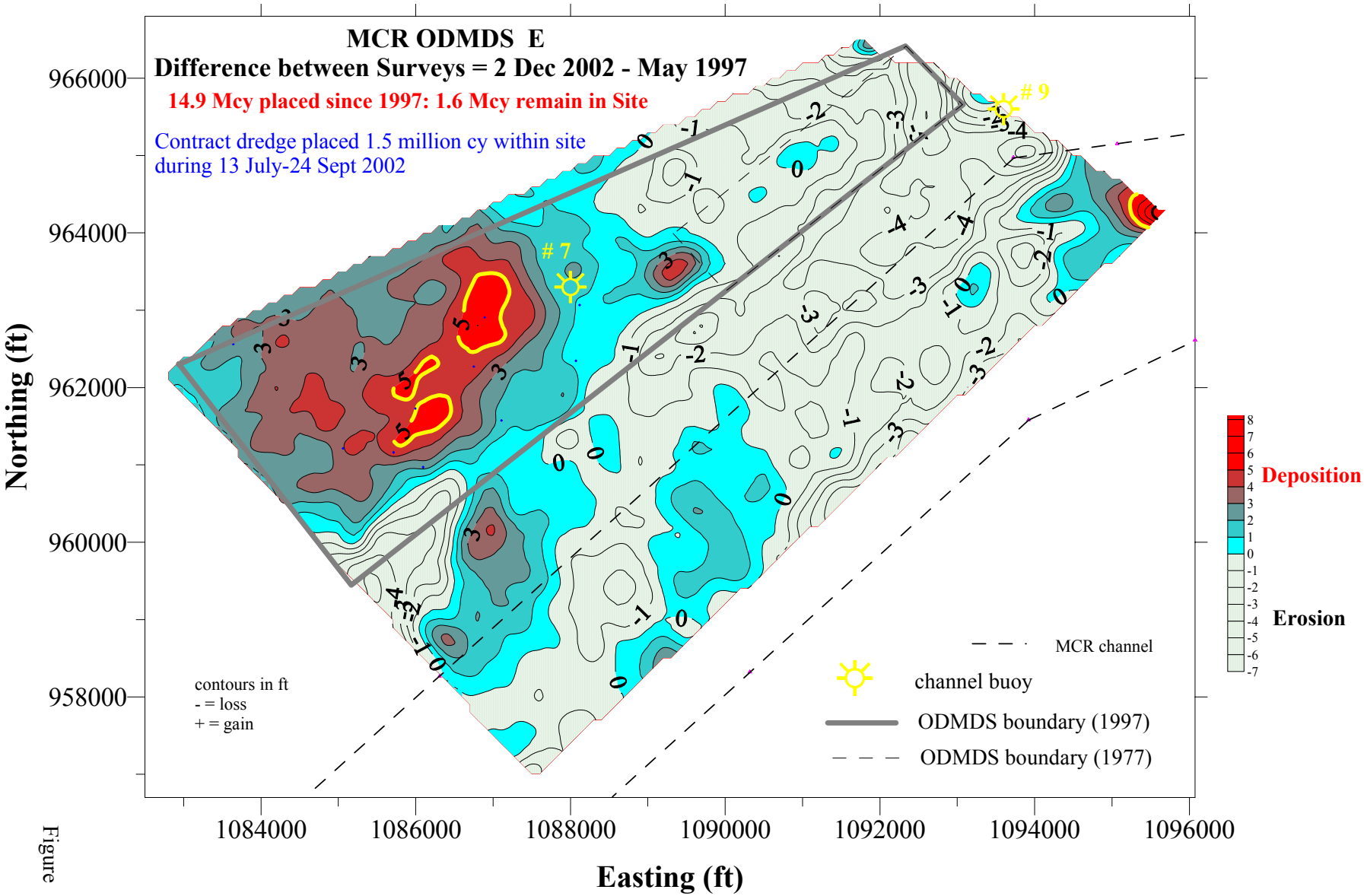

MCR ODMDS E
Difference between Surveys = 2 Dec 2002 - May 1997
14.9 Mcy placed since 1997: 1.6 Mcy remain in Site
Contract dredge placed 1.5 million cy within site
during 13 July-24 Sept 2002
7
9
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
Deposition
Erosion
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

Figure 19

MCR Bathymetry Difference: 1997 - 2002

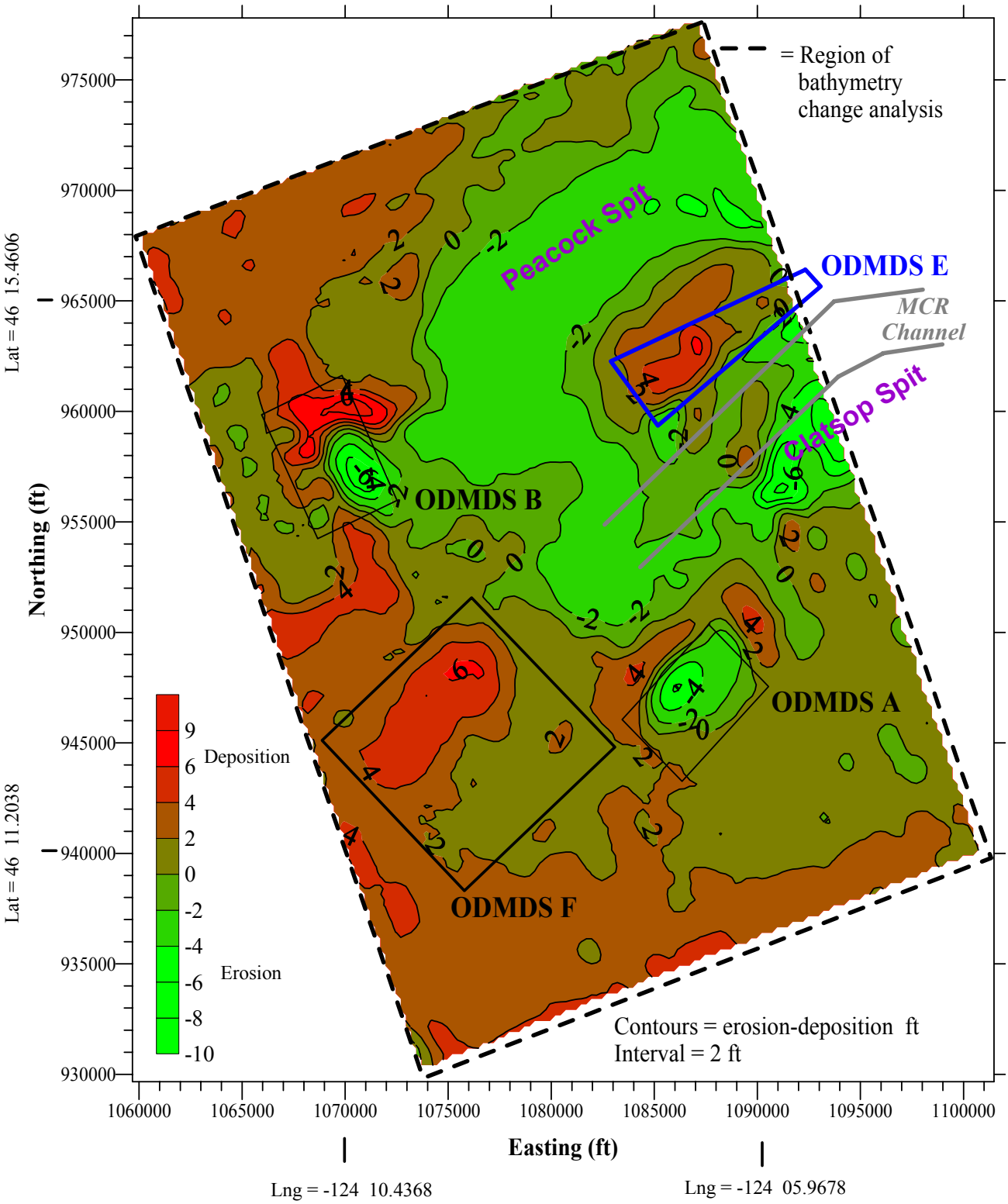
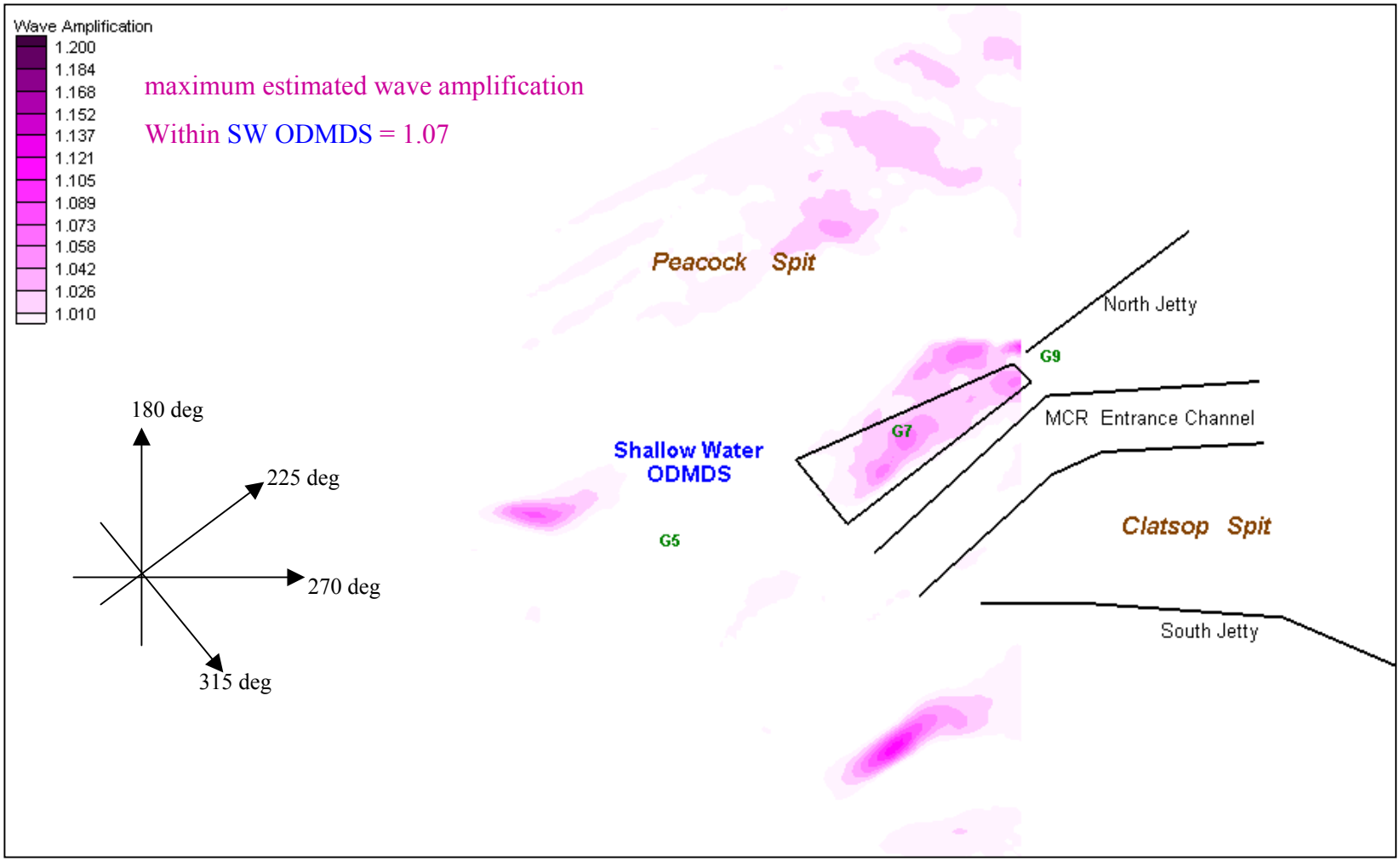
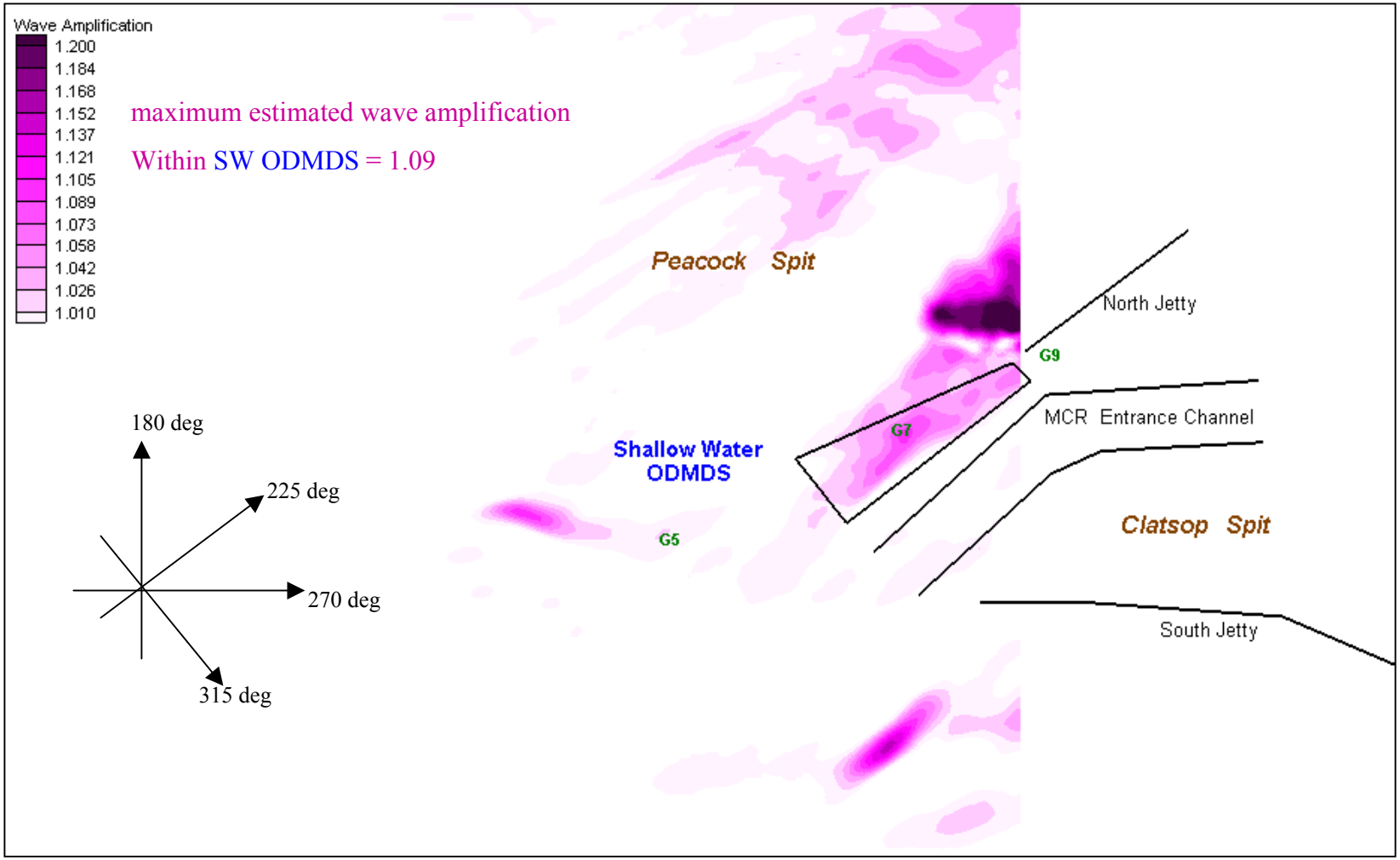


Figure 20



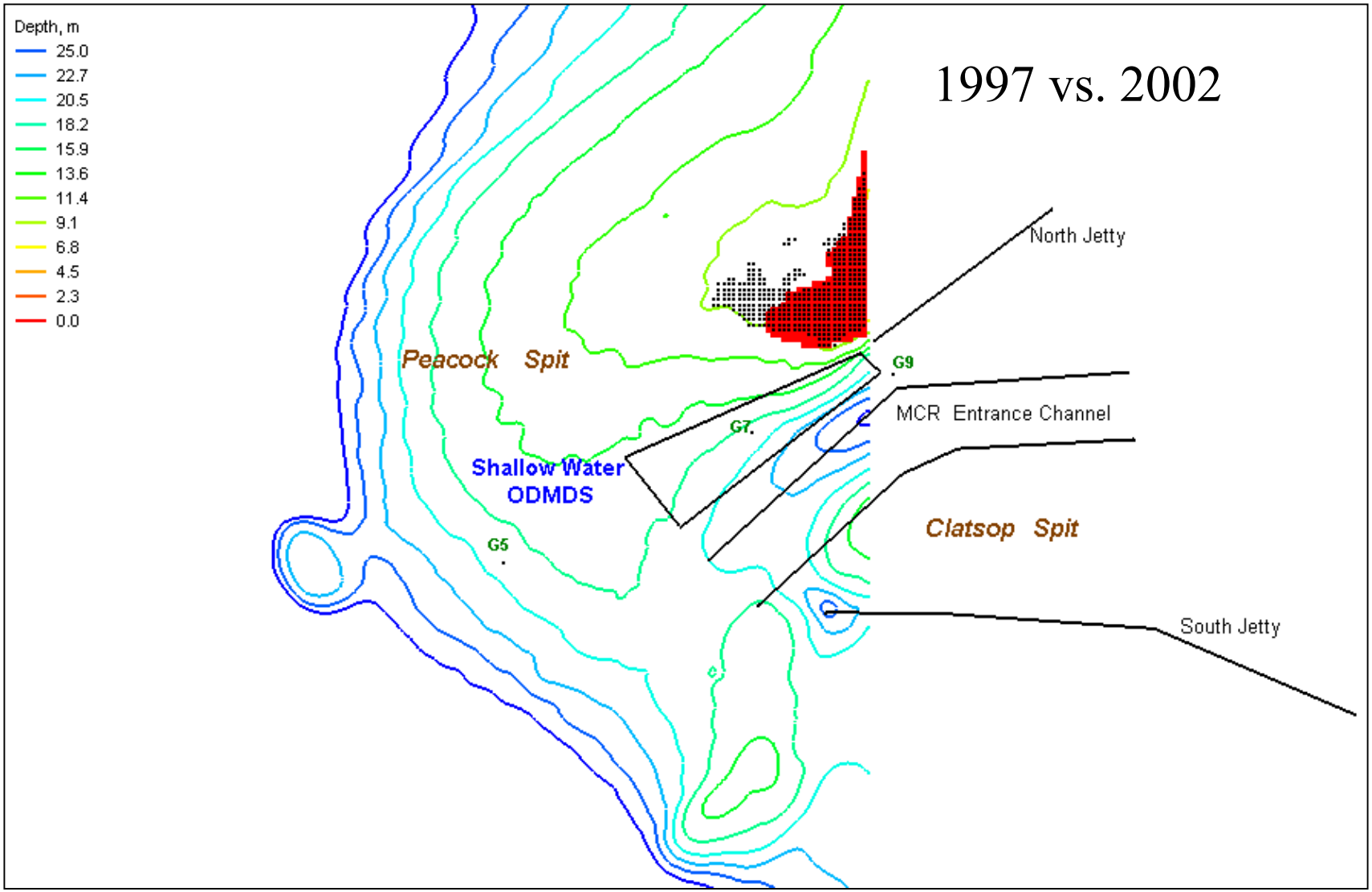
Offshore wave conditions (figure S6) for Summer Swell: Ht = 1.79 m, Tp=11.0 sec, Dir =275 deg, Wind=5.9 m/s @ 329 deg

Figure 21 . Estimated wave amplification at MCR due to 1997-2002 bathymetry change, for the prescribed offshore wave condition. Wave amplification was calculated as "2002 wave height / 1997 wave height"; only values greater than 1.0 are shown. A value of 1.2 means that waves in 2002 were estimated to be 20% greater than in 1997.



Offshore wave conditions (figure S9) for Winter Swell: Ht = 3.75 m, Tp=16.7 sec, Dir =275 deg, Wind=6.9 m/s @ 108 deg

Figure 22 . Estimated wave amplification at MCR due to 1997-2002 bathymetry change, for the prescribed offshore wave condition. Wave amplification was calculated as "2002 wave height / 1997 wave height"; only values greater than 1.0 are shown. A value of 1.2 means that waves in 2002 were estimated to be 20% greater than in 1997.



Winter Swell: Avg. wave height= 3.75 m, peak wave period =16.7 sec, Avg. wave direction =W (275 deg), Wind=6.9 m/s @ E (108 deg)

Figure 22a. Estimated wave breaking location for 1997 (shown in black markers) and for 2002 (shown in red markers), based on the prescribed offshore wave condition. Bathymetry is shown for 1997; depth contour values are limited to 25 meters for clarity.

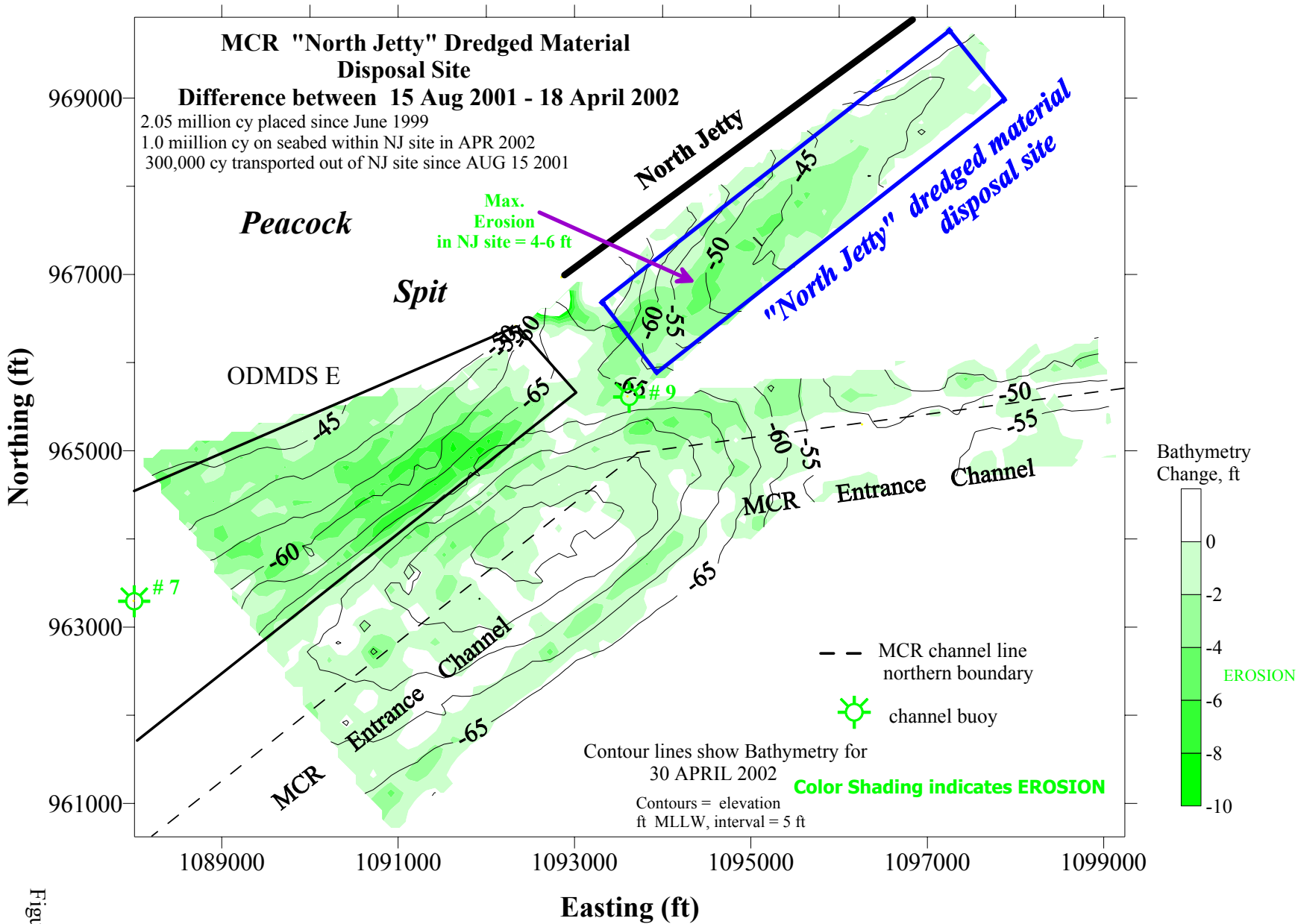

MCR "North Jetty" Dredged Material
Disposal Site
Difference between 15 Aug 2001 - 18 April 2002
2.05 million cy placed since June 1999
1.0 miillion cy on seabed within NJ site in APR 2002
300,000 cy transported out of NJ site since AUG 15 2001
Peacock
Spit
Max.
Erosion
in NJ site = 4-6 ft
North Jetty
"North Jetty" dredged material disposal site
ODMDS E
9
7
MCR
Entrance
Channel
MCR channel line
northern boundary
channel buoy
Contour lines show Bathymetry for
30 APRIL 2002
Contours = elevation
ft MLLW, interval = 5 ft
Color Shading indicates EROSION
Bathymetry
Change, ft
0
-2
-4
EROSION
-6
-8
-10
Northing (ft)
969000
967000
965000
963000
961000
Easting (ft)
1089000
1091000
1093000
1095000
1097000
1099000

Figure 23

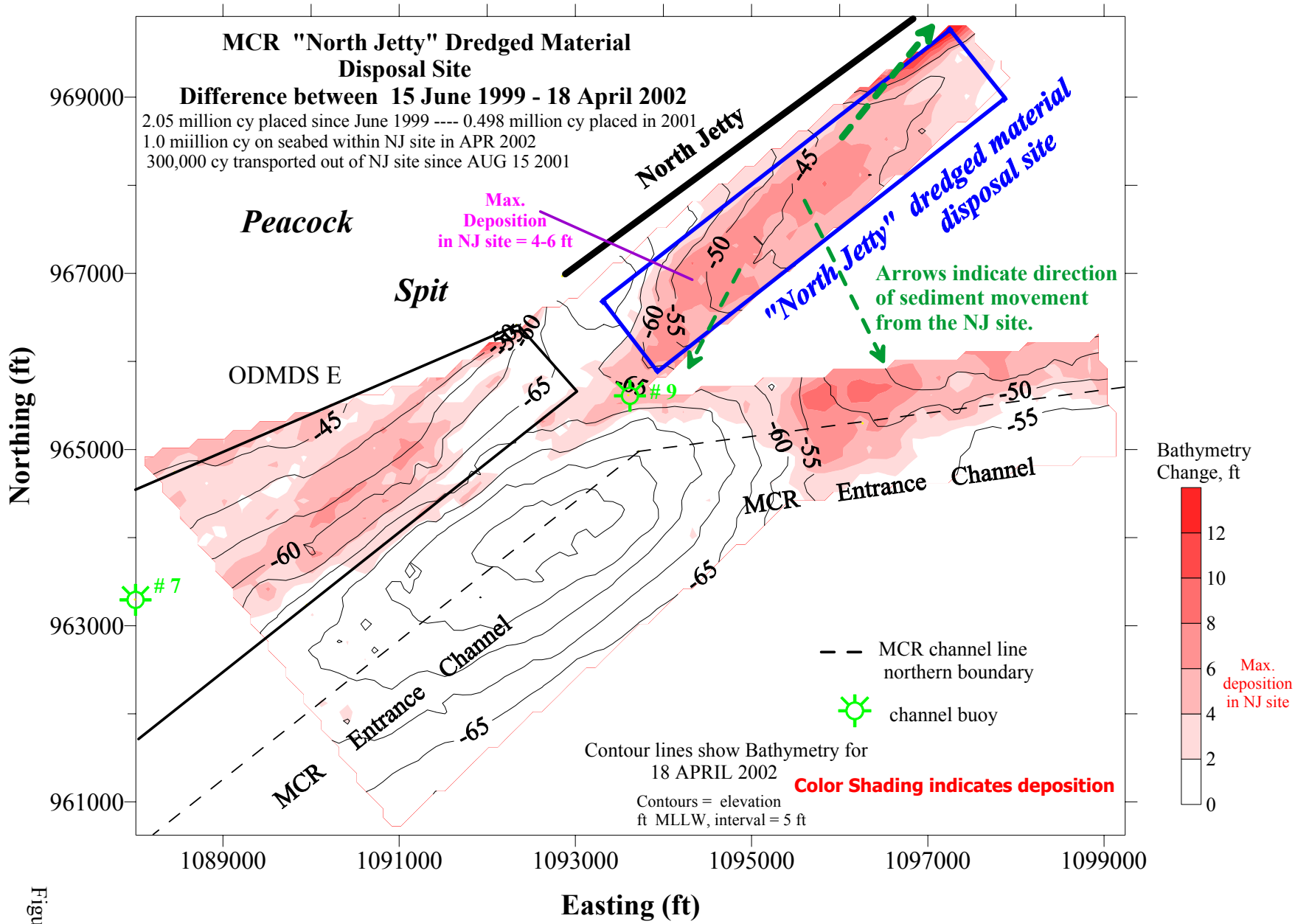

MCR "North Jetty" Dredged Material Disposal Site
Difference between 15 June 1999 - 18 April 2002
2.05 million cy placed since June 1999 ---- 0.498 million cy placed in 2001
1.0 miillion cy on seabed within NJ site in APR 2002
300,000 cy transported out of NJ site since AUG 15 2001
Peacock Spit
Max. Deposition in NJ site = 4-6 ft
North Jetty
"North Jetty" dredged material disposal site
Arrows indicate direction of sediment movement from the NJ site.
ODMDS E
9
7
MCR Entrance Channel
MCR channel line northern boundary
channel buoy
Contour lines show Bathymetry for 18 APRIL 2002
Contours = elevation ft MLLW, interval = 5 ft
Color Shading indicates deposition
Bathymetry Change, ft
Max. deposition in NJ site
Northing (ft)
Easting (ft)
969000
967000
965000
963000
961000
1089000
1091000
1093000
1095000
1097000
1099000

Figure 24

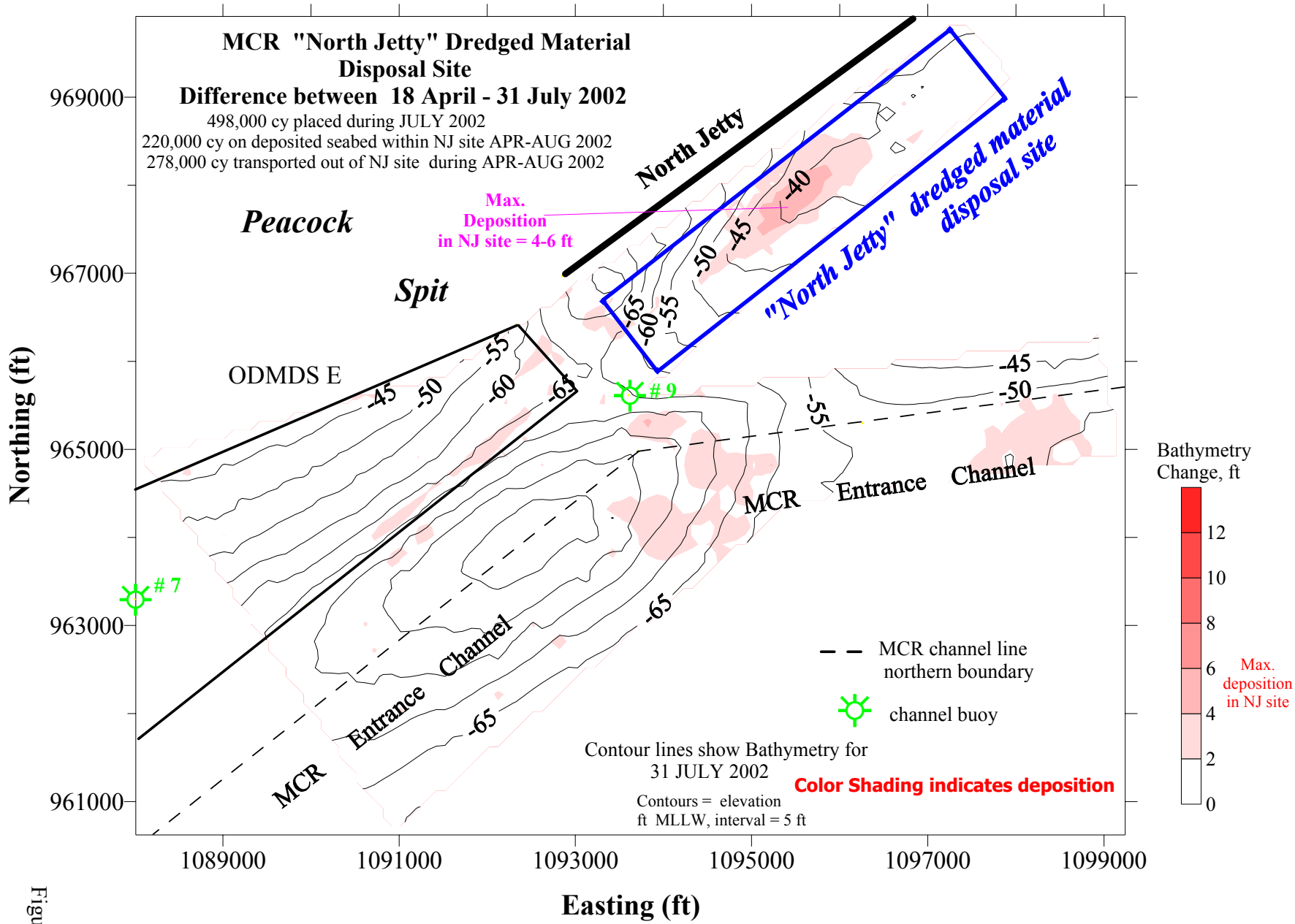

MCR "North Jetty" Dredged Material Disposal Site
Difference between 18 April - 31 July 2002
498,000 cy placed during JULY 2002
220,000 cy on deposited seabed within NJ site APR-AUG 2002
278,000 cy transported out of NJ site during APR-AUG 2002
Peacock Spit
Max. Deposition in NJ site = 4-6 ft
North Jetty
"North Jetty" dredged material disposal site
ODMDS E
9
7
MCR Entrance Channel
MCR channel line northern boundary
channel buoy
Contour lines show Bathymetry for 31 JULY 2002
Contours = elevation ft MLLW, interval = 5 ft
Color Shading indicates deposition
Bathymetry Change, ft
Max. deposition in NJ site
Northing (ft)
Easting (ft)
969000
967000
965000
963000
961000
1089000
1091000
1093000
1095000
1097000
1099000

Figure 25

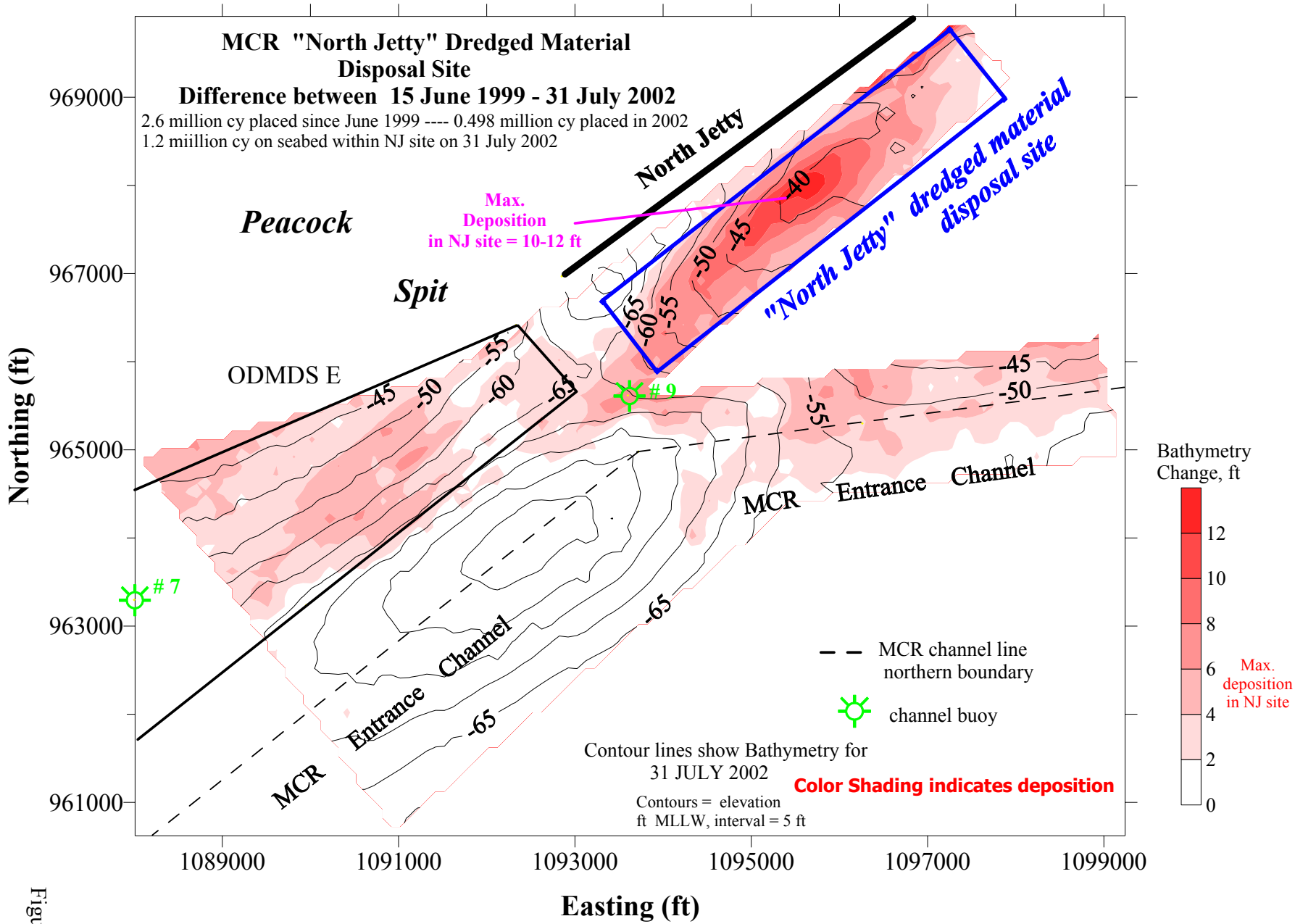

MCR "North Jetty" Dredged Material
Disposal Site
Difference between 15 June 1999 - 31 July 2002
2.6 million cy placed since June 1999 ---- 0.498 million cy placed in 2002
1.2 miillion cy on seabed within NJ site on 31 July 2002
North Jetty
Peacock
Spit
Max.
Deposition
in NJ site = 10-12 ft
"North Jetty" dredged material disposal site
ODMDS E
9
7
MCR Entrance Channel
MCR channel line
northern boundary
channel buoy
Contour lines show Bathymetry for
31 JULY 2002
Color Shading indicates deposition
Contours = elevation
ft MLLW, interval = 5 ft
Bathymetry
Change, ft
Max.
deposition
in NJ site
Northing (ft)
Easting (ft)
969000
967000
965000
963000
961000
1089000
1091000
1093000
1095000
1097000
1099000

Figure 26

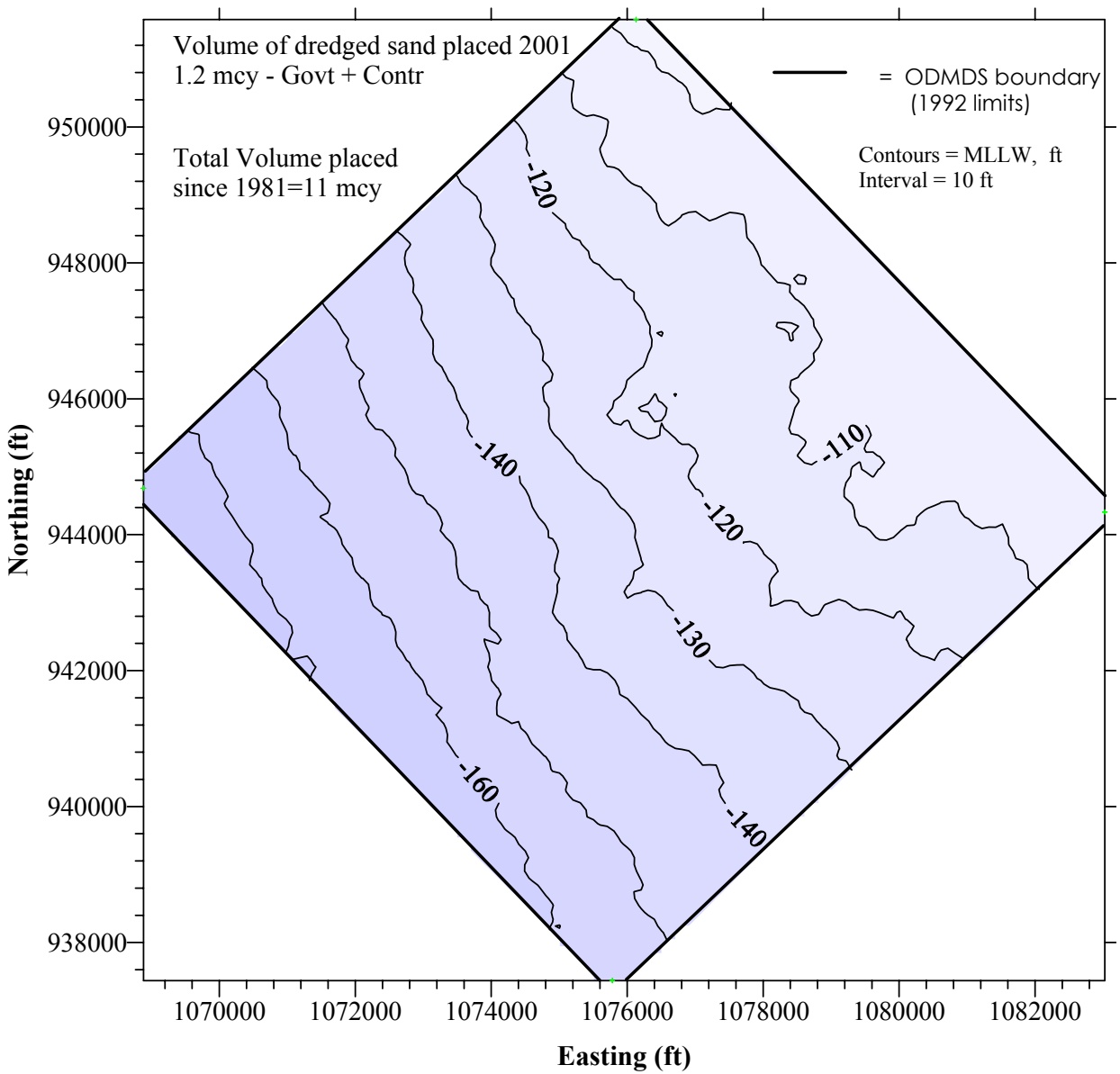

MCR ODMDS F
8 April 2002
Volume of dredged sand placed 2001
1.2 mcy - Govt + Contr
Total Volume placed
since 1981=11 mcy
= ODMDS boundary
(1992 limits)
Contours = MLLW, ft
Interval = 10 ft
-110
-120
-130
-140
-160
950000
948000
946000
944000
942000
940000
938000
Northing (ft)
1070000
1072000
1074000
1076000
1078000
1080000
1082000
Easting (ft)

Figure 27

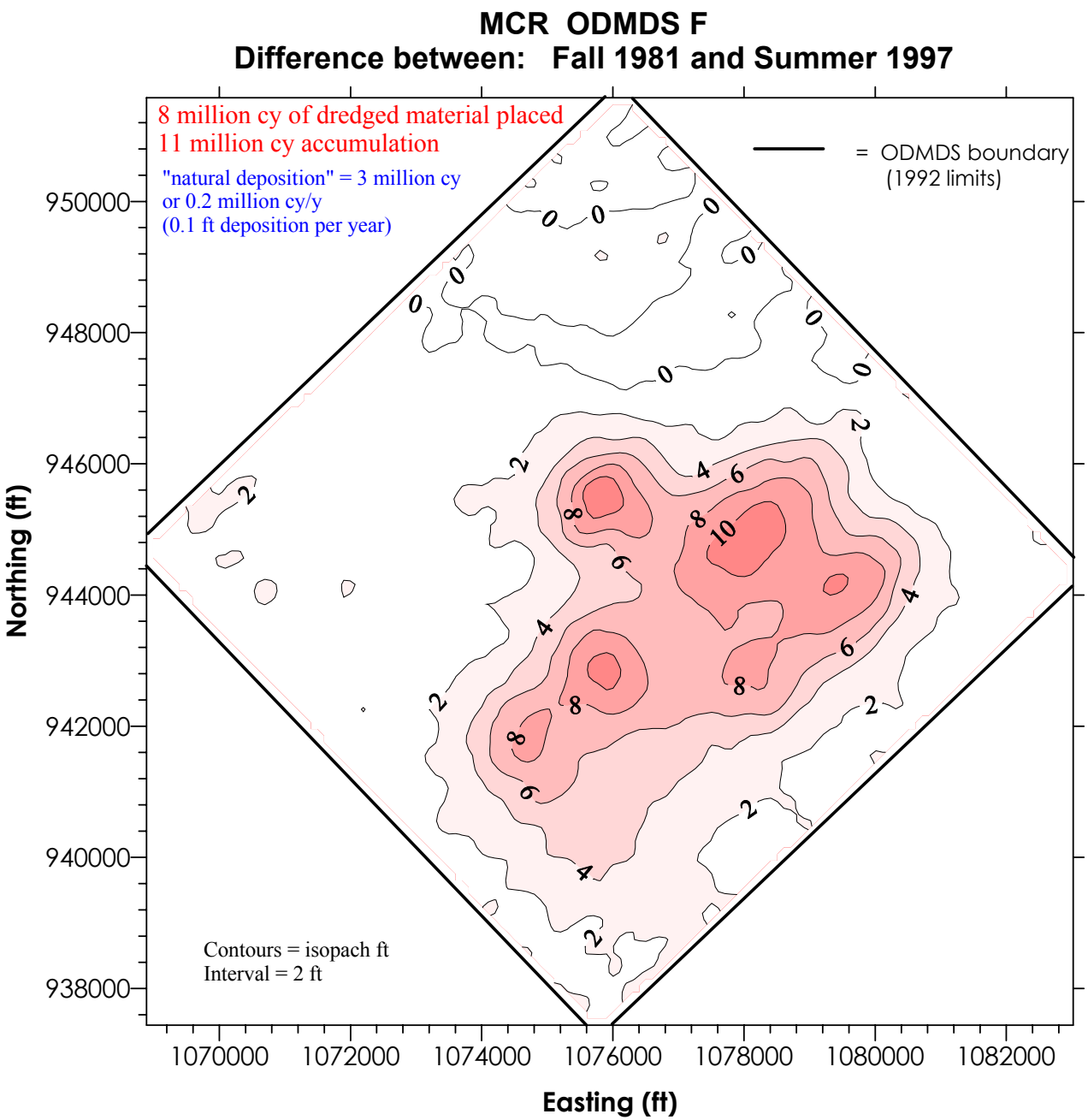

MCR ODMDS F
Difference between: Fall 1981 and Summer 1997
8 million cy of dredged material placed
11 million cy accumulation
"natural deposition" = 3 million cy
or 0.2 million cy/y
(0.1 ft deposition per year)
= ODMDS boundary
(1992 limits)
Contours = isopach ft
Interval = 2 ft
Northing (ft)
950000
948000
946000
944000
942000
940000
938000
Easting (ft)
1070000
1072000
1074000
1076000
1078000
1080000
1082000

Figure 28

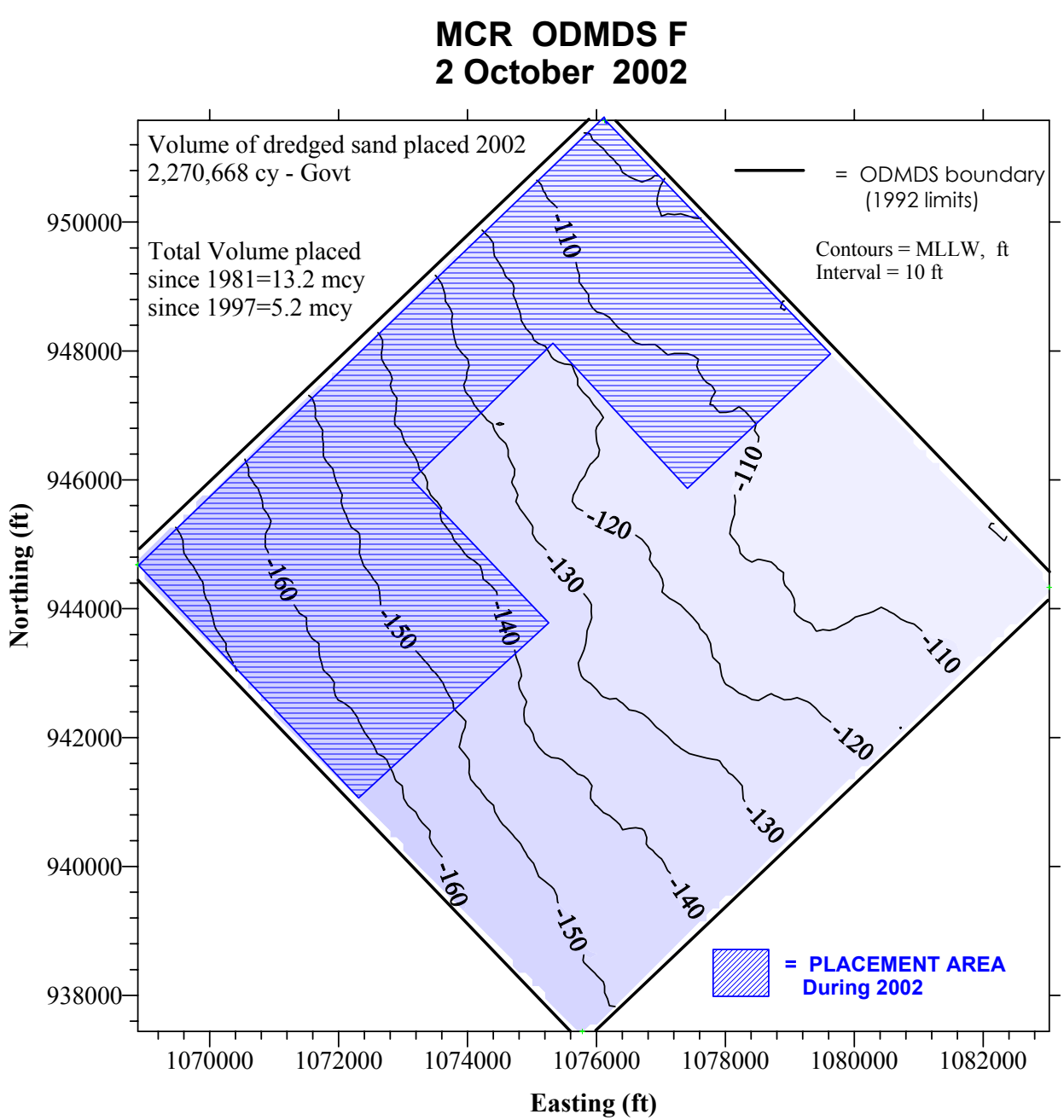

MCR ODMDS F
2 October 2002
Volume of dredged sand placed 2002
2,270,668 cy - Govt
Total Volume placed
since 1981=13.2 mcy
since 1997=5.2 mcy
= ODMDS boundary
(1992 limits)
Contours = MLLW, ft
Interval = 10 ft
-110
-120
-130
-140
-150
-160
= PLACEMENT AREA
During 2002
Northing (ft)
950000
948000
946000
944000
942000
940000
938000
Easting (ft)
1070000
1072000
1074000
1076000
1078000
1080000
1082000

Figure 29

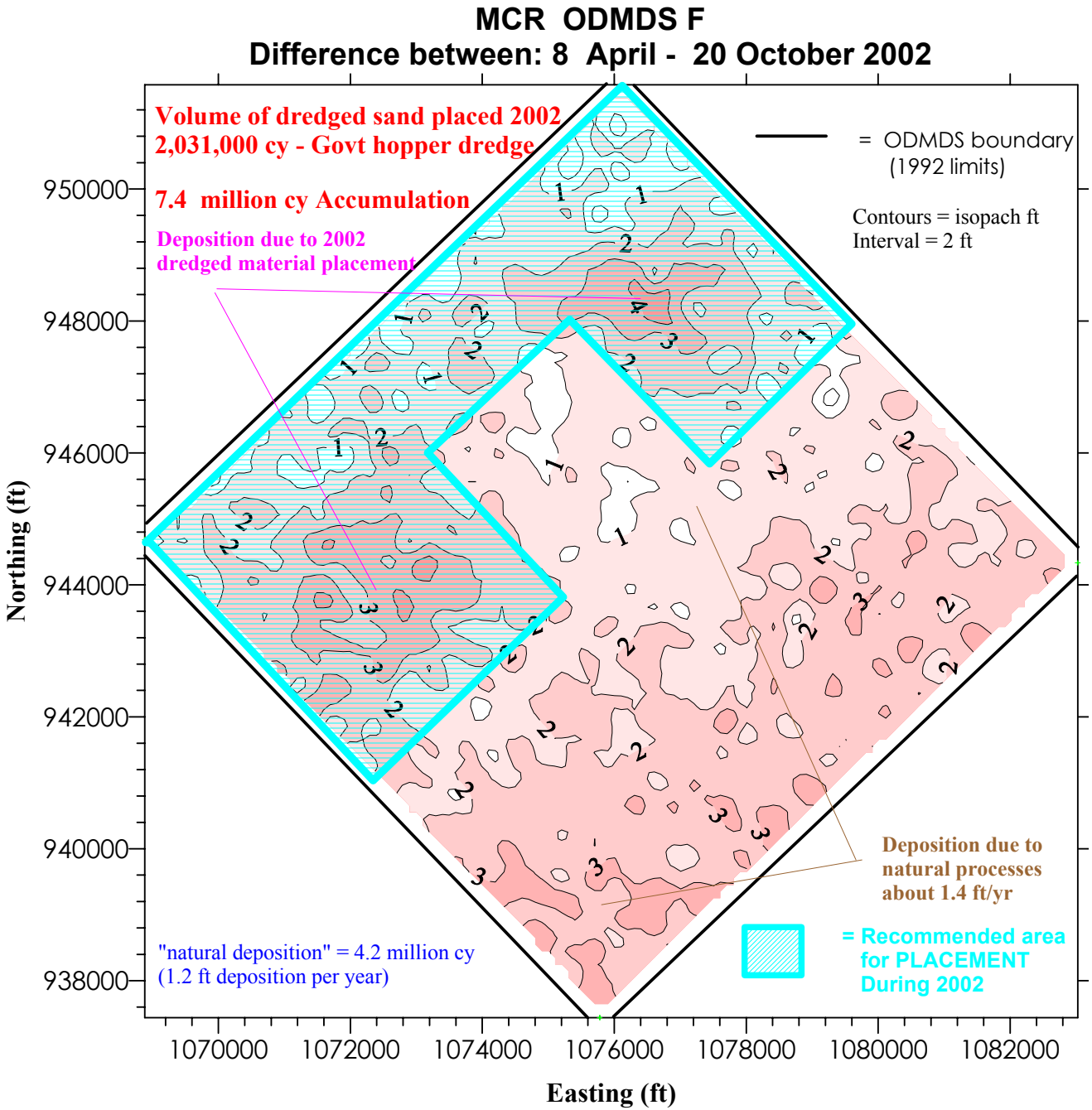

MCR ODMDS F
Difference between: 8 April - 20 October 2002
Volume of dredged sand placed 2002
2,031,000 cy - Govt hopper dredge
7.4 million cy Accumulation
Deposition due to 2002
dredged material placement
= ODMDS boundary
(1992 limits)
Contours = isopach ft
Interval = 2 ft
Deposition due to
natural processes
about 1.4 ft/yr
"natural deposition" = 4.2 million cy
(1.2 ft deposition per year)
= Recommended area
for PLACEMENT
During 2002
Northing (ft)
950000
948000
946000
944000
942000
940000
938000
1070000
1072000
1074000
1076000
1078000
1080000
1082000
Easting (ft)

Figure 30

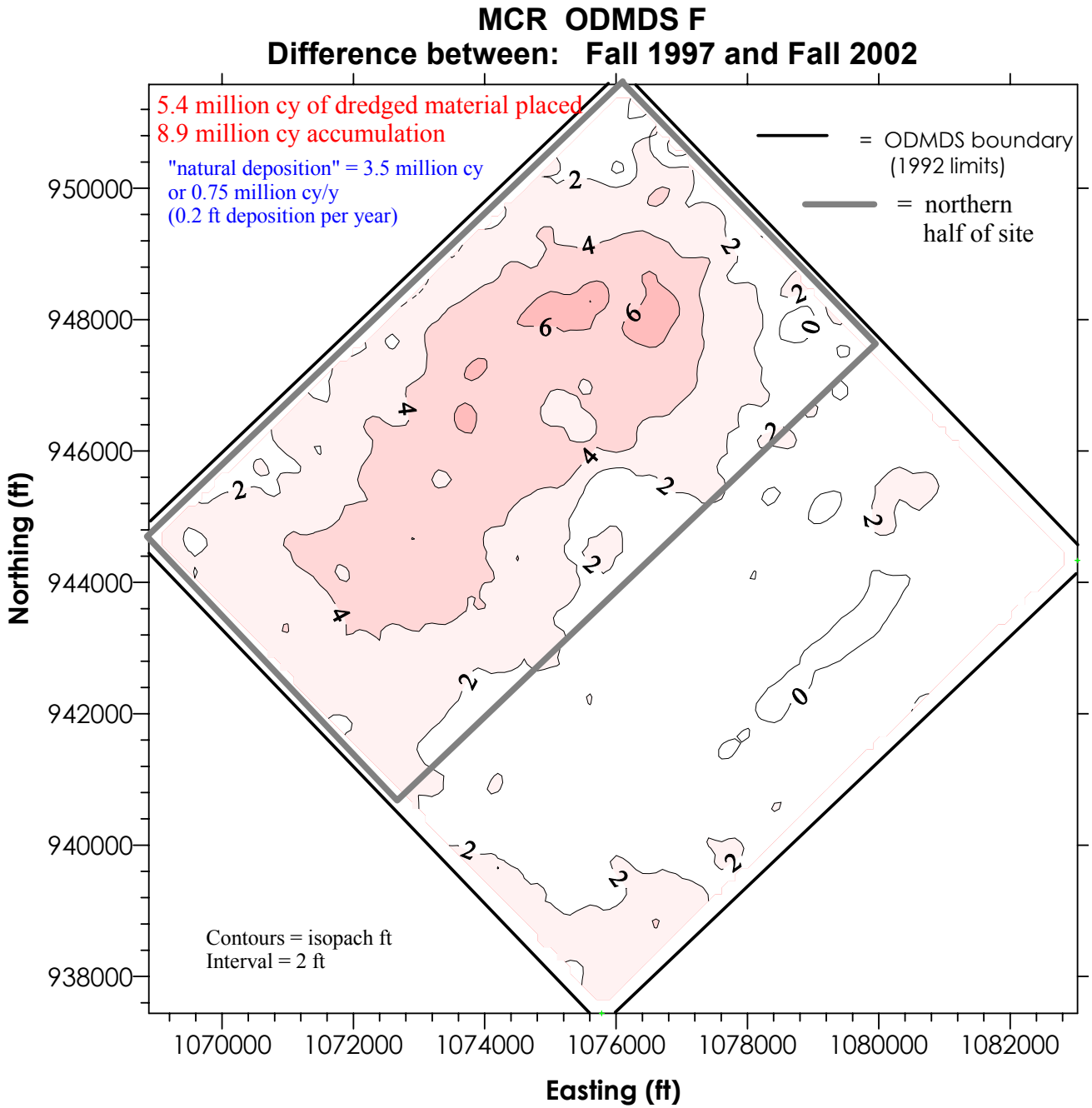

MCR ODMDS F
Difference between: Fall 1997 and Fall 2002
5.4 million cy of dredged material placed
8.9 million cy accumulation
"natural deposition" = 3.5 million cy
or 0.75 million cy/y
(0.2 ft deposition per year)
= ODMDS boundary
(1992 limits)
= northern
half of site
Contours = isopach ft
Interval = 2 ft
Northing (ft)
950000
948000
946000
944000
942000
940000
938000
Easting (ft)
1070000
1072000
1074000
1076000
1078000
1080000
1082000

Figure 31

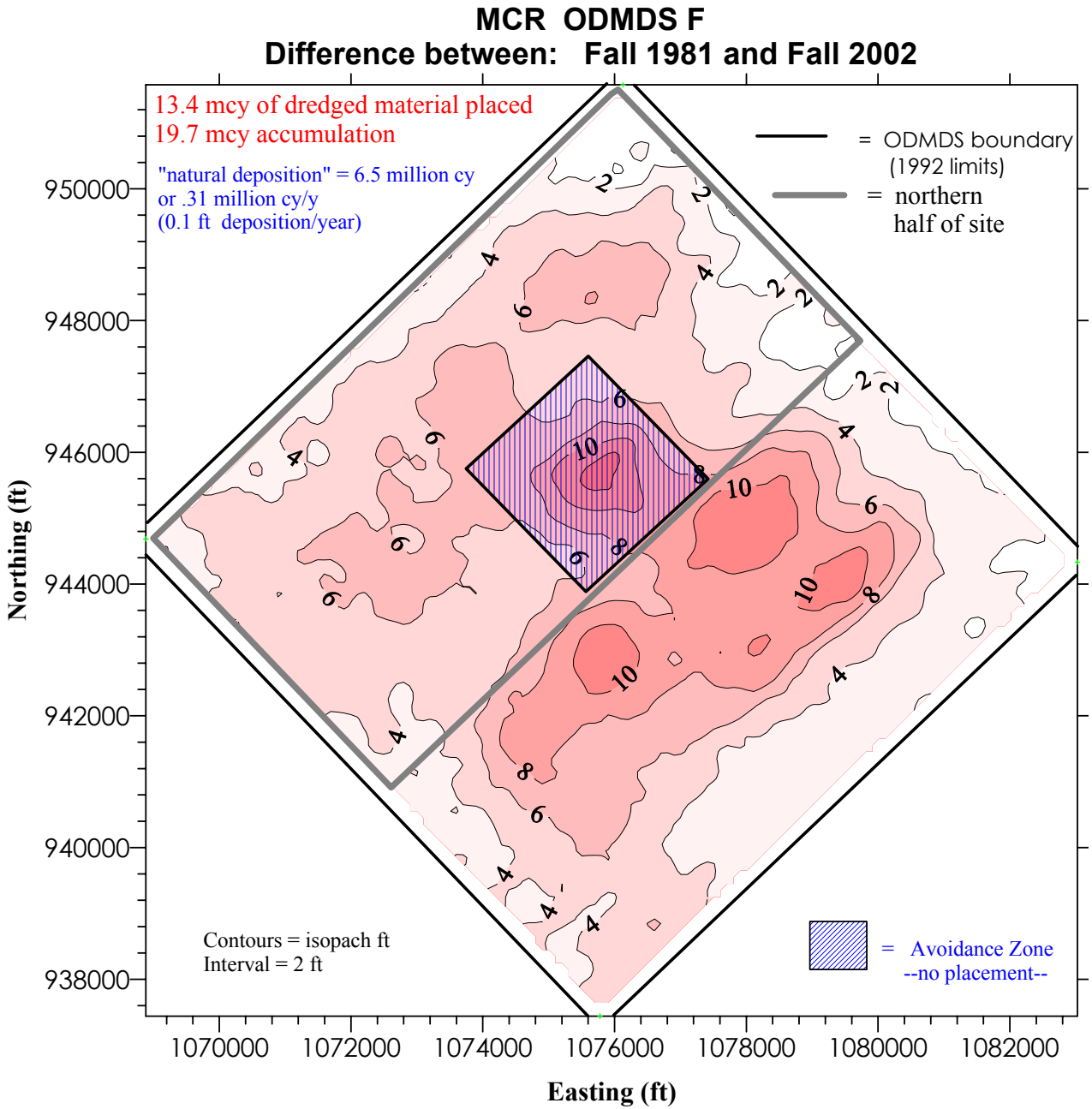

MCR ODMDS F
Difference between: Fall 1981 and Fall 2002
13.4 mcy of dredged material placed
19.7 mcy accumulation
"natural deposition" = 6.5 million cy
or .31 million cy/y
(0.1 ft deposition/year)
= ODMDS boundary
(1992 limits)
= northern
half of site
Contours = isopach ft
Interval = 2 ft
= Avoidance Zone
--no placement--
Northing (ft)
950000
948000
946000
944000
942000
940000
938000
Easting (ft)
1070000
1072000
1074000
1076000
1078000
1080000
1082000

Figure 32

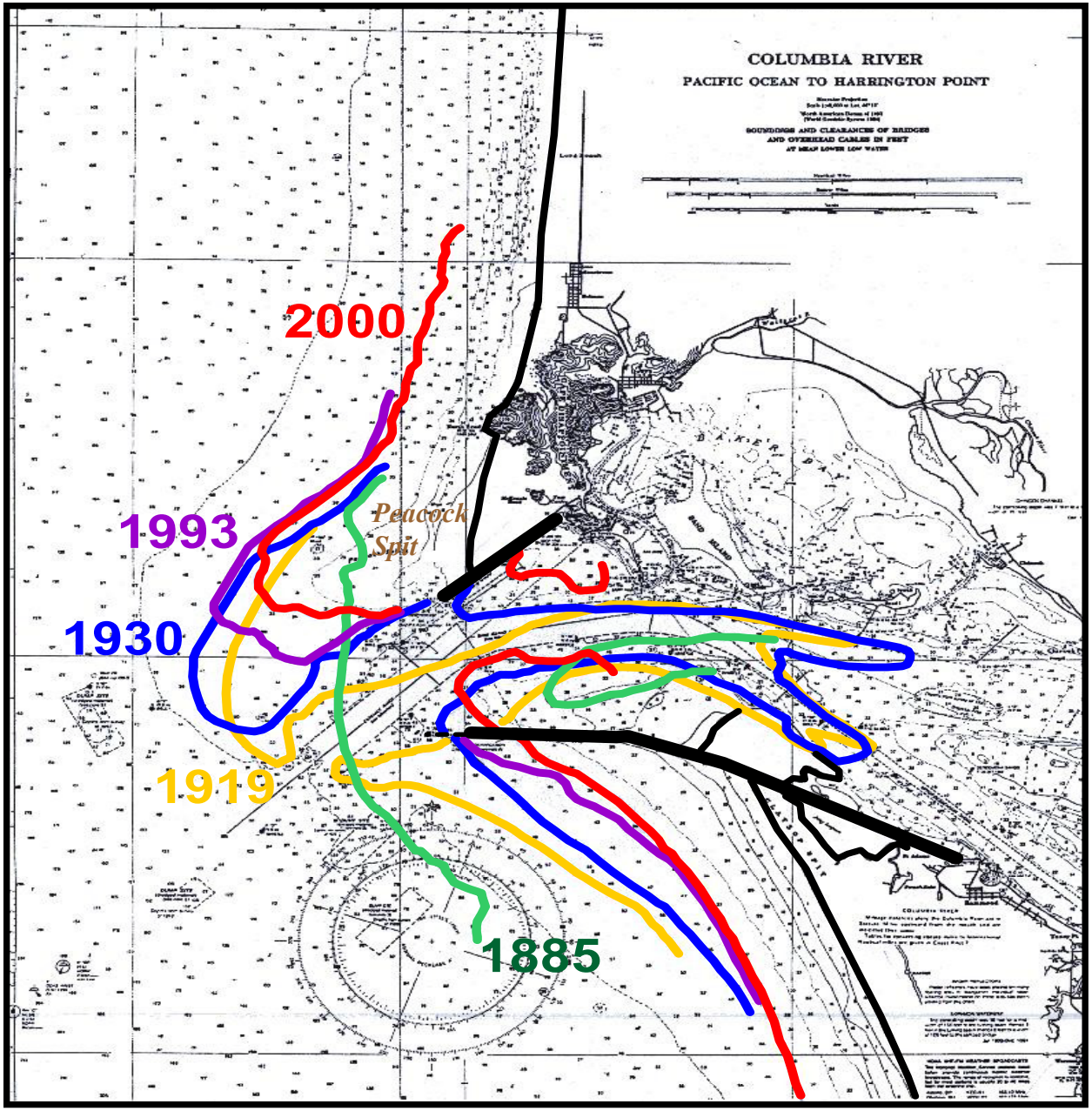


Figure 33. Map of –40 ft depth contour at MCR for 5 time periods

During 1993 to 2000, the 40 ft contour on Peacock Spit receded landward at a rate 7x faster than during 1930 to 1993. As the offshore shoals recede, the wave climate at will change. MCR jetties were built on tidal shoals 1885-1917 that are now eroding. Stability of jetties is compromised due to scour-based failure.

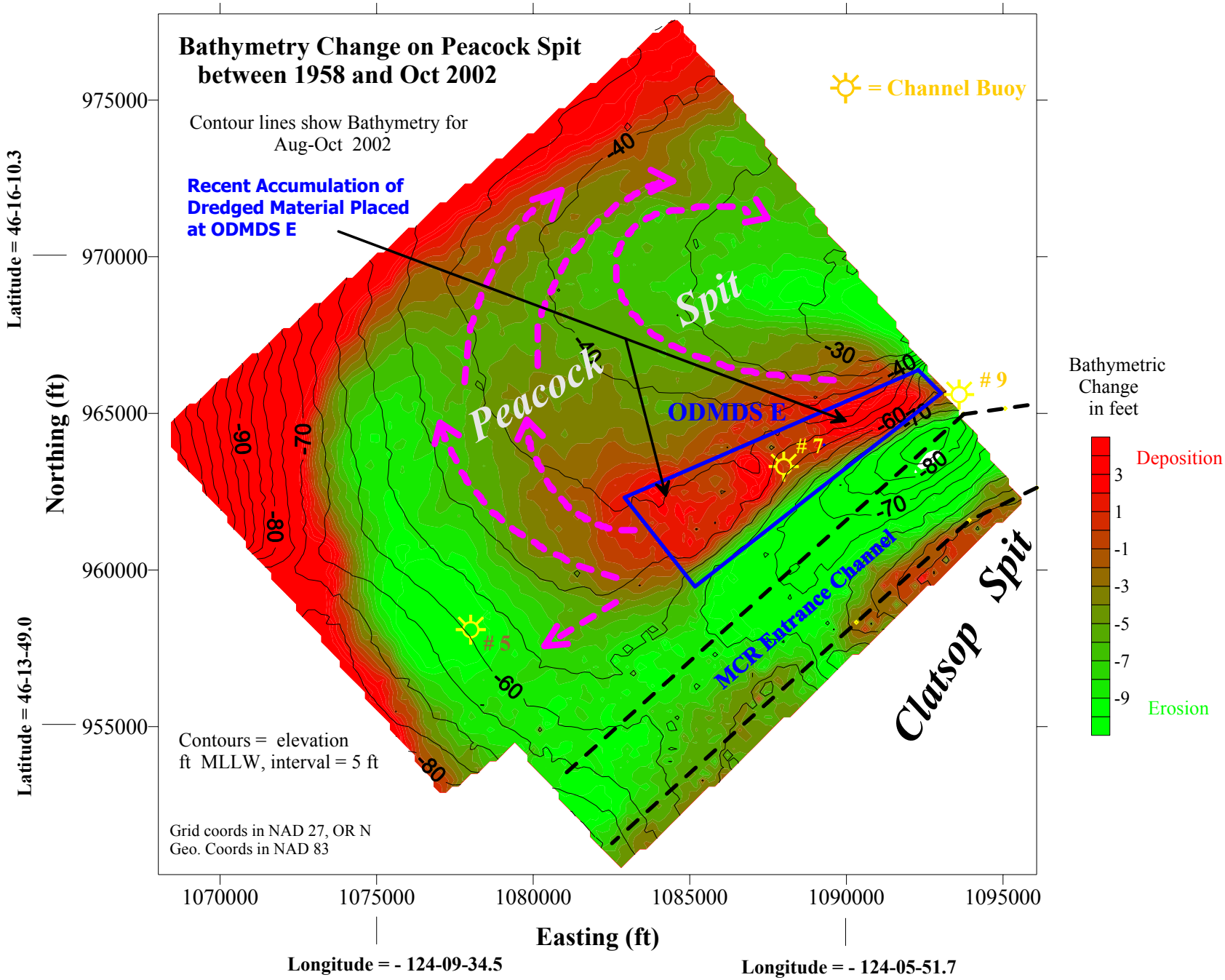

Bathymetry Change on Peacock Spit
between 1958 and Oct 2002
Contour lines show Bathymetry for
Aug-Oct 2002
Recent Accumulation of
Dredged Material Placed
at ODMDS E
= Channel Buoy
Peacock
Spit
ODMDS E
MCR Entrance Channel
Clatsop Spit
5
7
9
-40
-30
-40
-60
-70
-80
-90
-70
-80
-60
-80
Contours = elevation
ft MLLW, interval = 5 ft
Grid coords in NAD 27, OR N
Geo. Coords in NAD 83
Bathymetric
Change
in feet
Deposition
3
1
-1
-3
-5
-7
-9
Erosion
975000
970000
965000
960000
955000
Northing (ft)
Latitude = 46-16-10.3
Latitude = 46-13-49.0
1070000
1075000
1080000
1085000
1090000
1095000
Easting (ft)
Longitude = - 124-09-34.5
Longitude = - 124-05-51.7

Figure 34