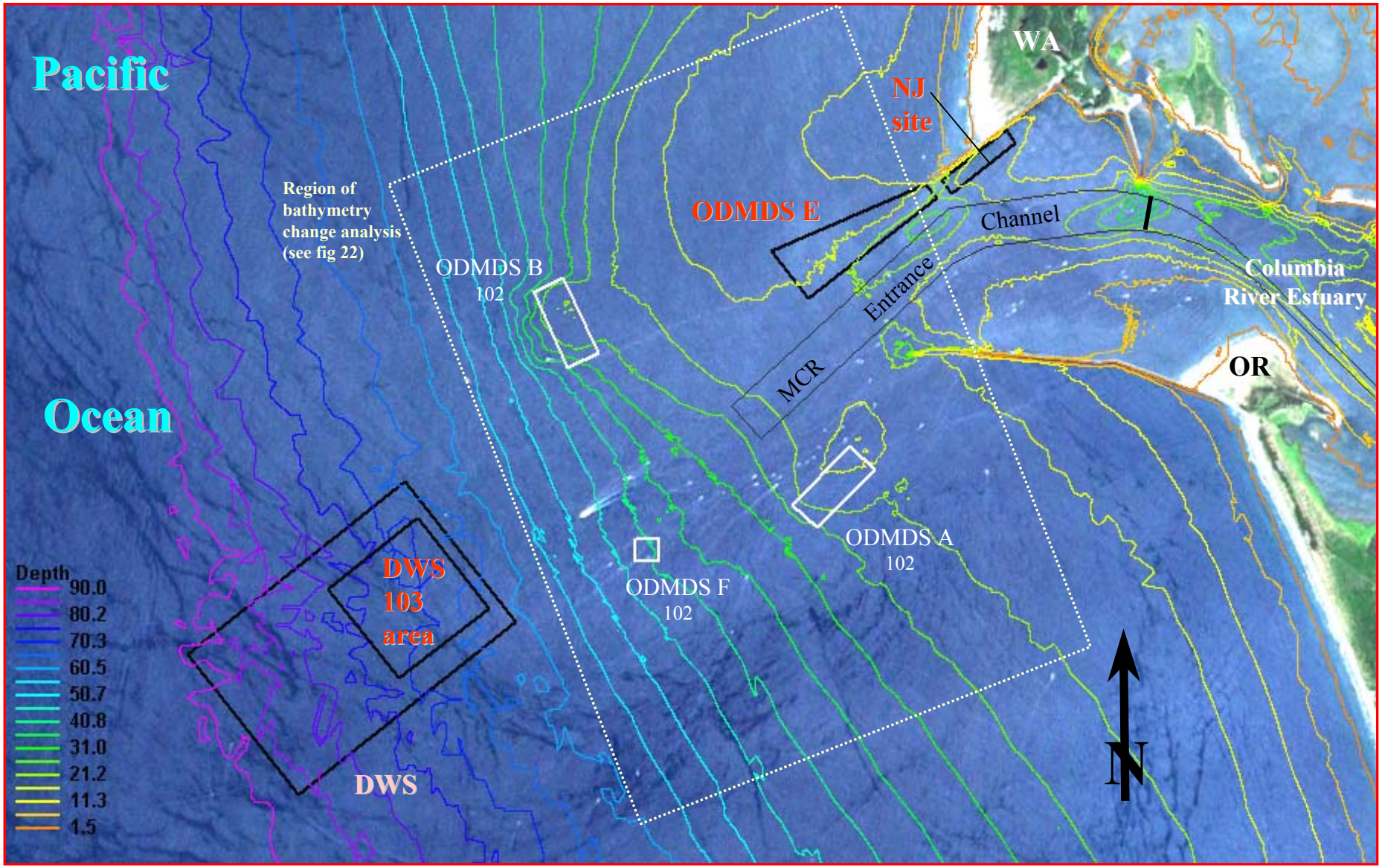
Mouth of the Columbia River - Bathymetry and Dredged Material Placement Sites



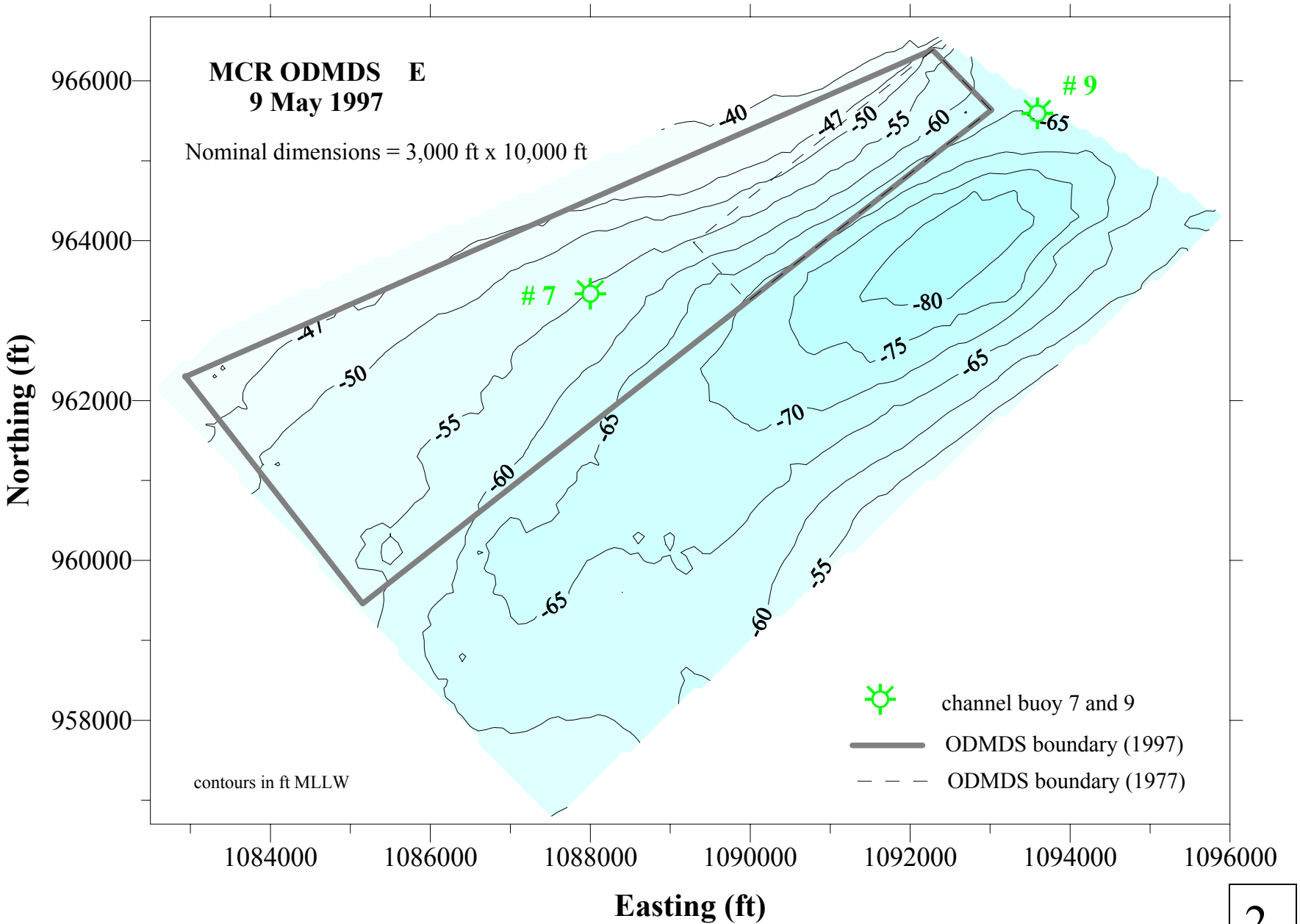
DWS= Deep Water Site ODMDS

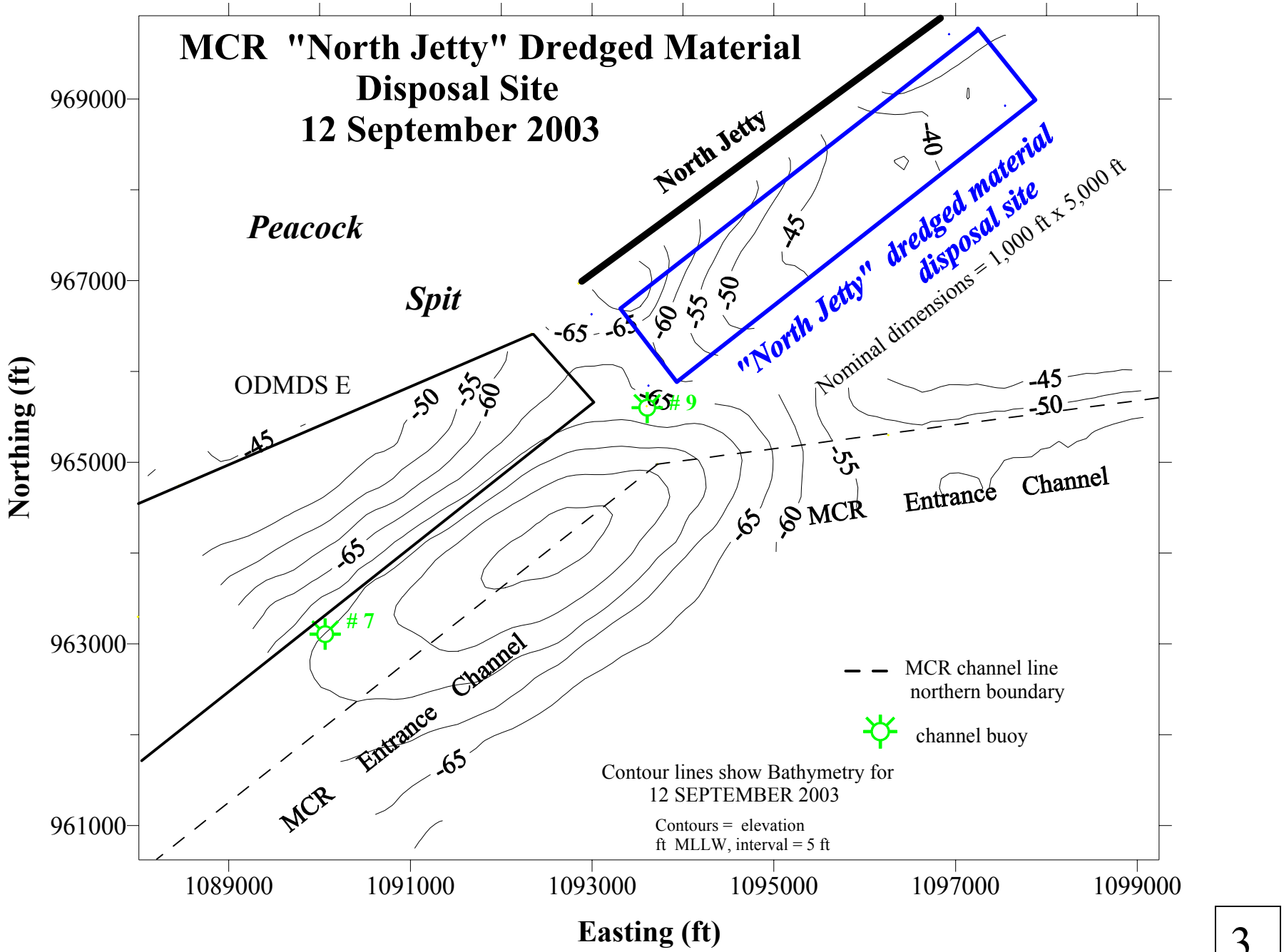
SWS= Shallow Water Site ODMDS E

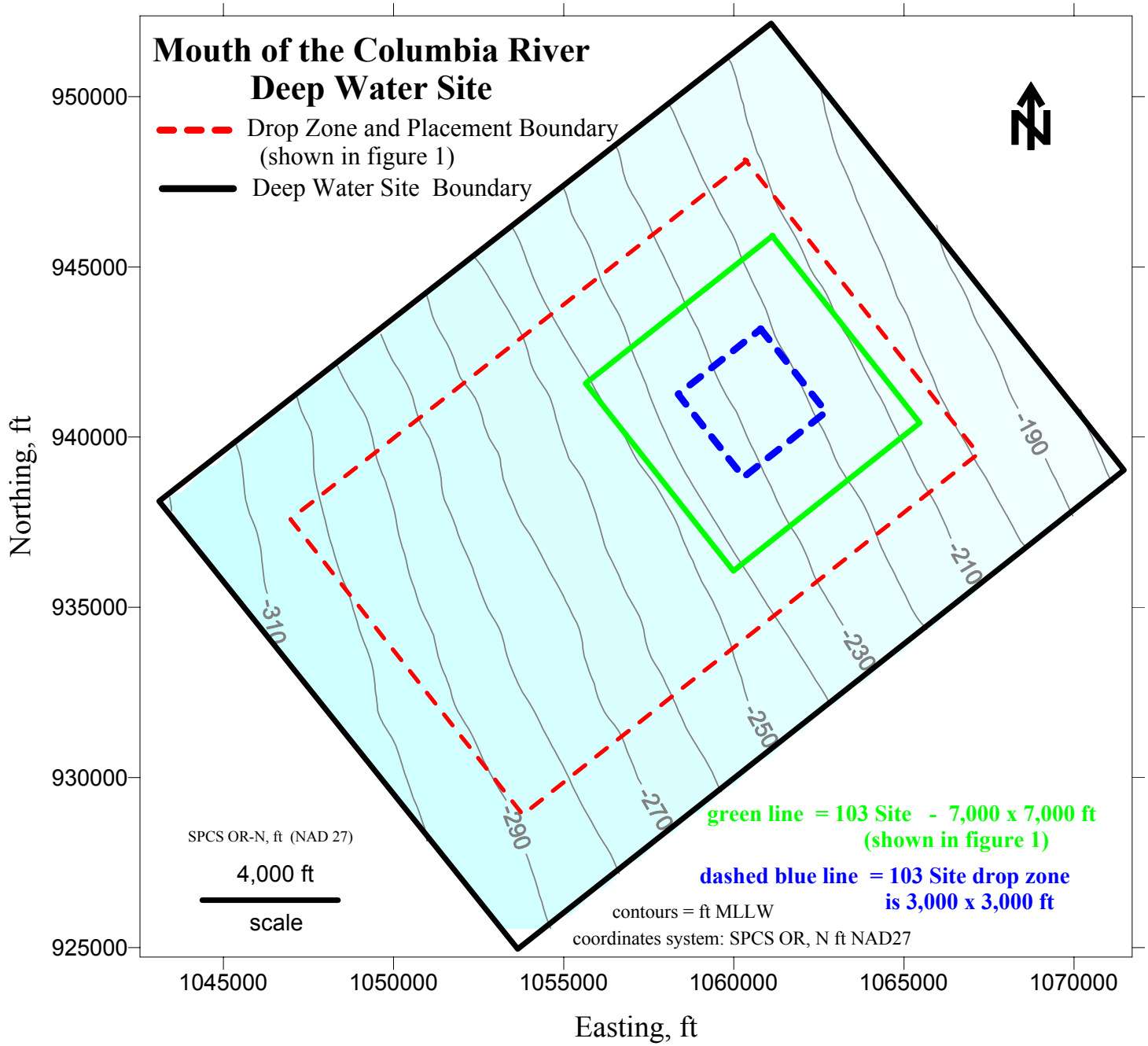
ODMDS = ocean dredged material disposal site, MPRSA

NJ Site = North Jetty disposal site, CWA

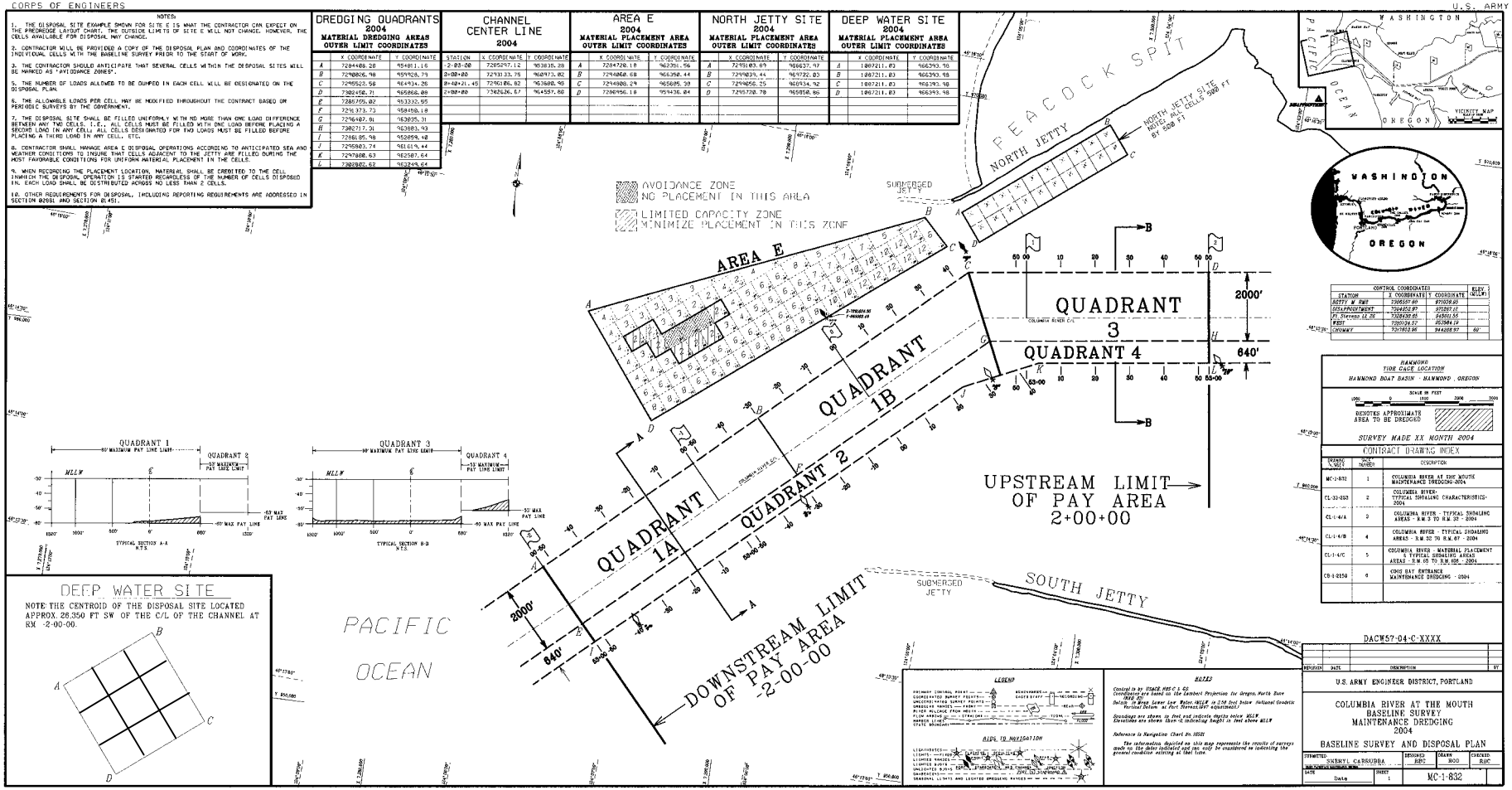
Project Baseline Bathymetry for ODMDS E

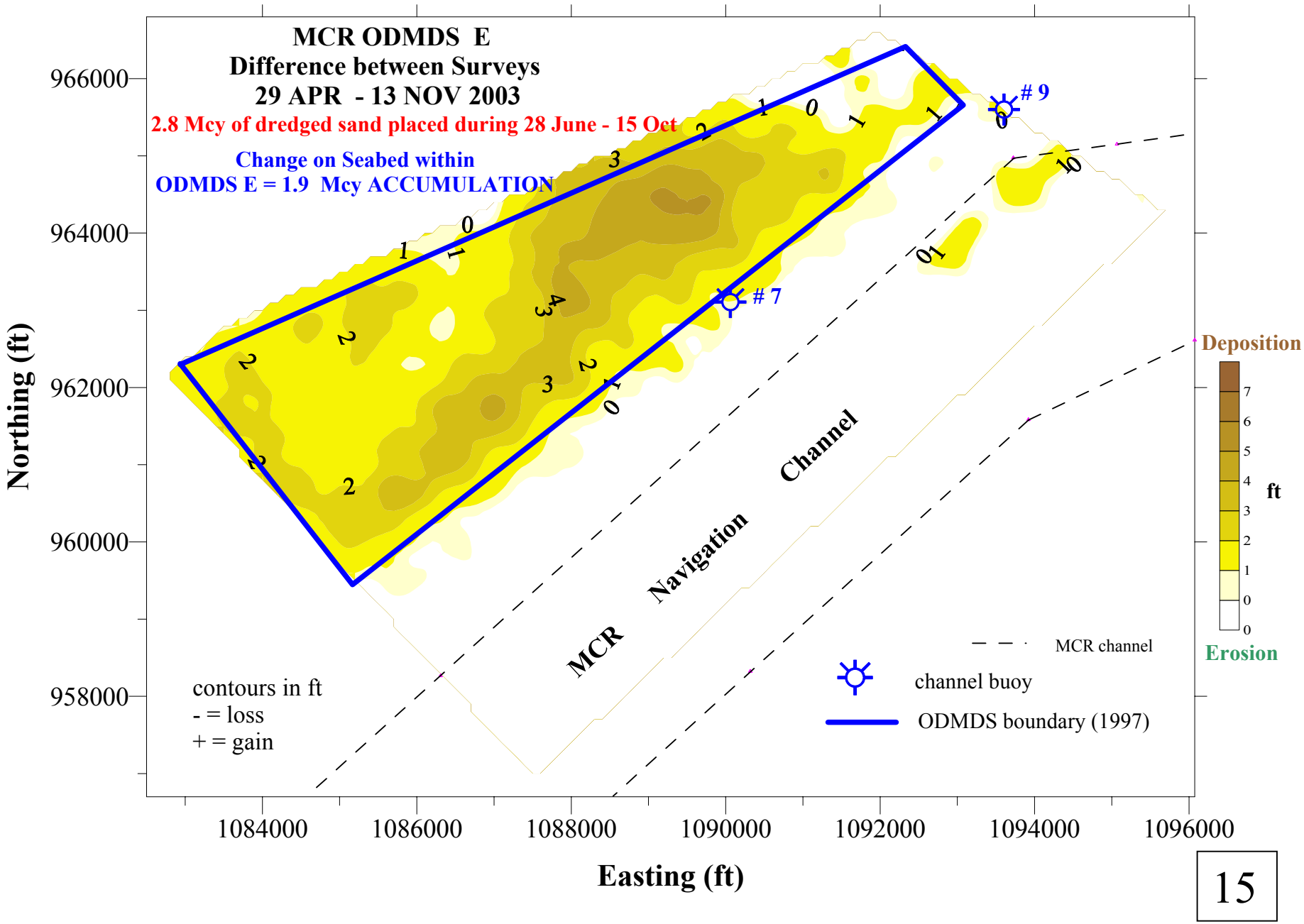


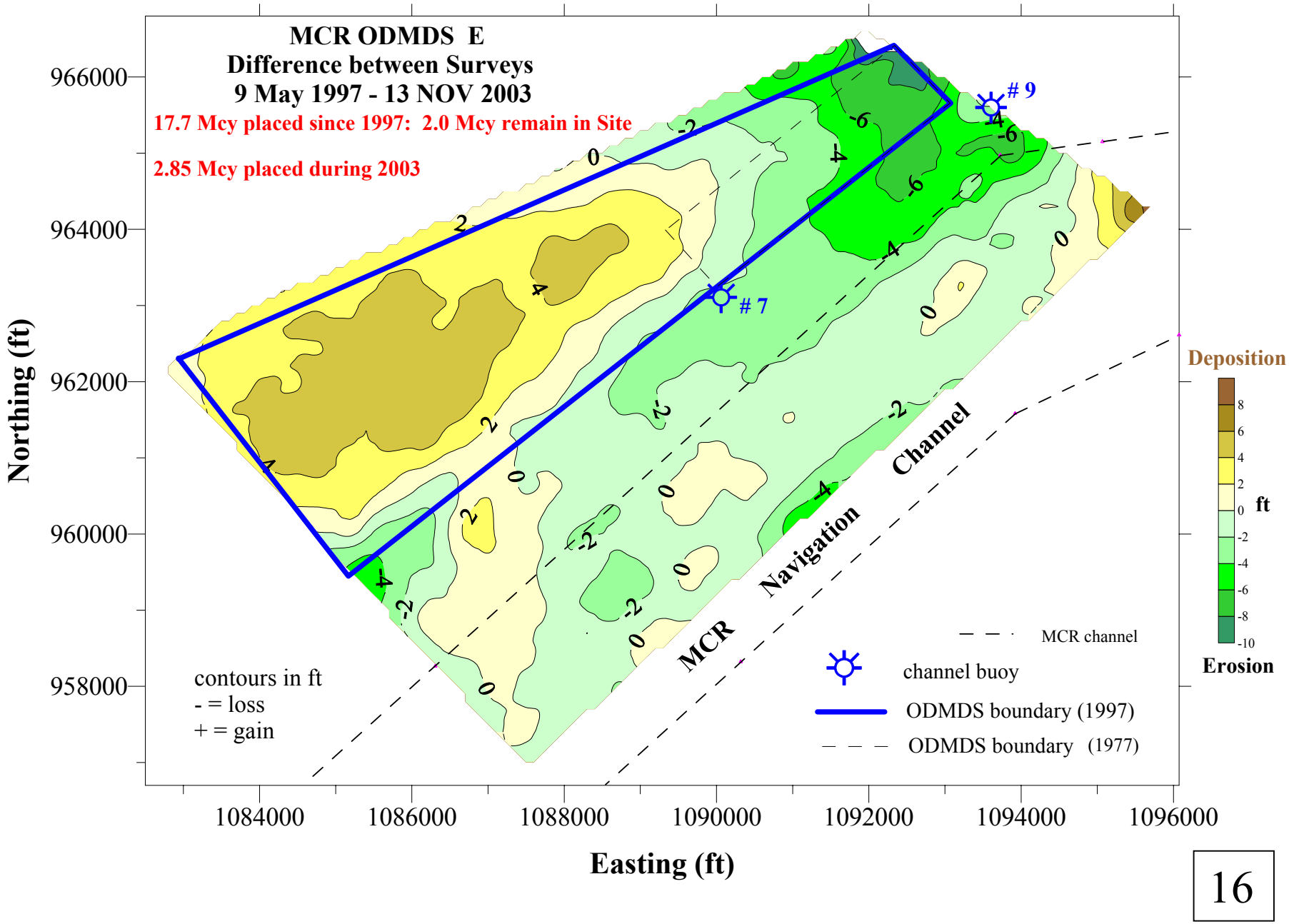

MCR "North Jetty" Dredged Material
Disposal Site
12 September 2003
North Jetty
Peacock
Spit
"North Jetty" dredged material disposal site
Nominal dimensions = 1,000 ft x 5,000 ft
ODMDS E
9
7
MCR Entrance Channel
MCR channel line northern boundary
channel buoy
Contour lines show Bathymetry for 12 SEPTEMBER 2003
Contours = elevation ft MLLW, interval = 5 ft
Northing (ft)
Easting (ft)
969000
967000
965000
963000
961000
1089000
1091000
1093000
1095000
1097000
1099000

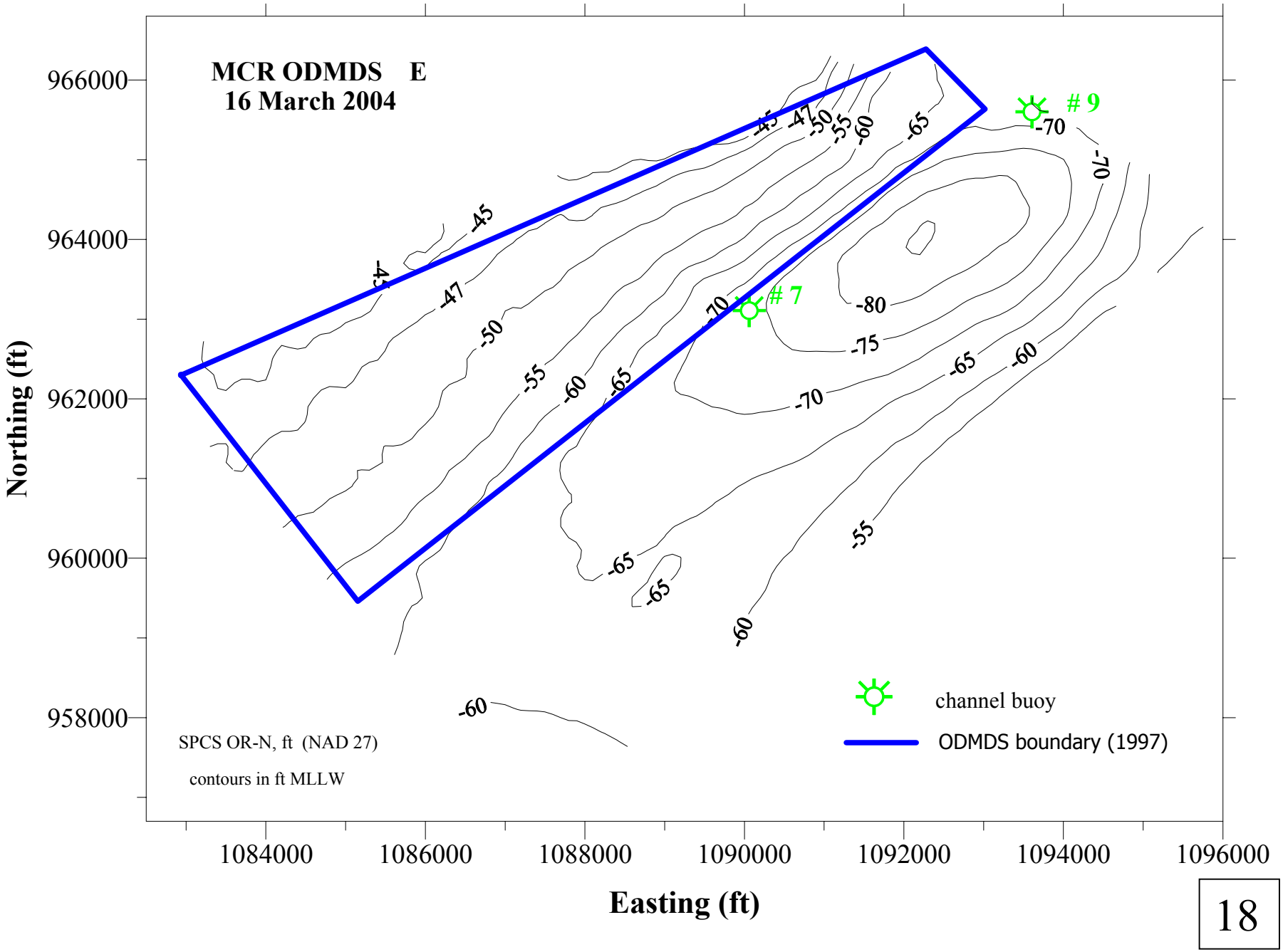

Mouth of the Columbia River
Deep Water Site
Drop Zone and Placement Boundary
(shown in figure 1)
Deep Water Site Boundary
950000
945000
940000
935000
930000
925000
Northing, ft
1045000
1050000
1055000
1060000
1065000
1070000
Easting, ft
-190
-210
-230
-250
-270
-290
-310
SPCS OR-N, ft (NAD 27)
4,000 ft
scale
green line = 103 Site - 7,000 x 7,000 ft
(shown in figure 1)
dashed blue line = 103 Site drop zone
is 3,000 x 3,000 ft
contours = ft MLLW
coordinates system: SPCS OR, N ft NAD27

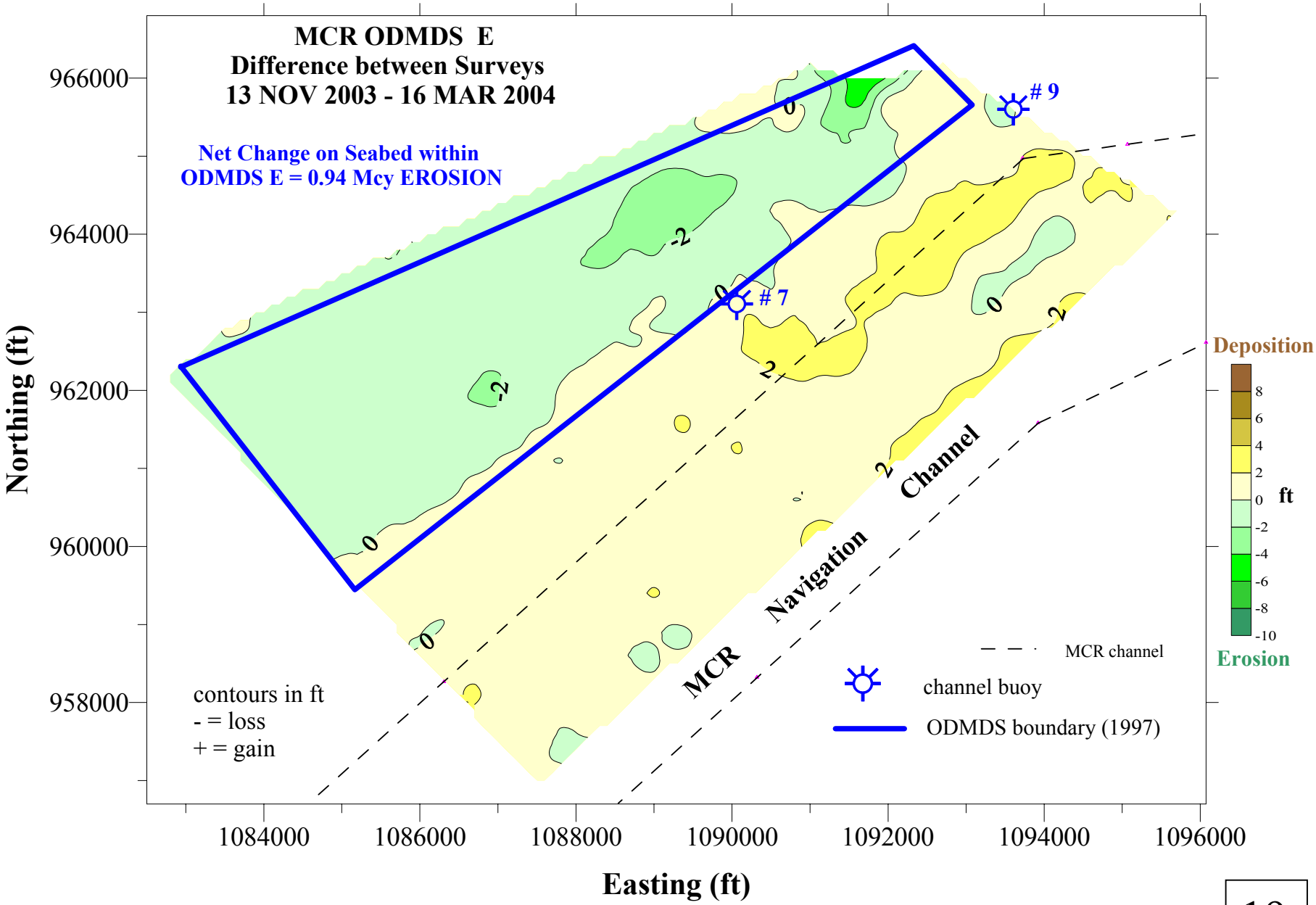
MCR Channel and dredged material disposal sites available during 2004

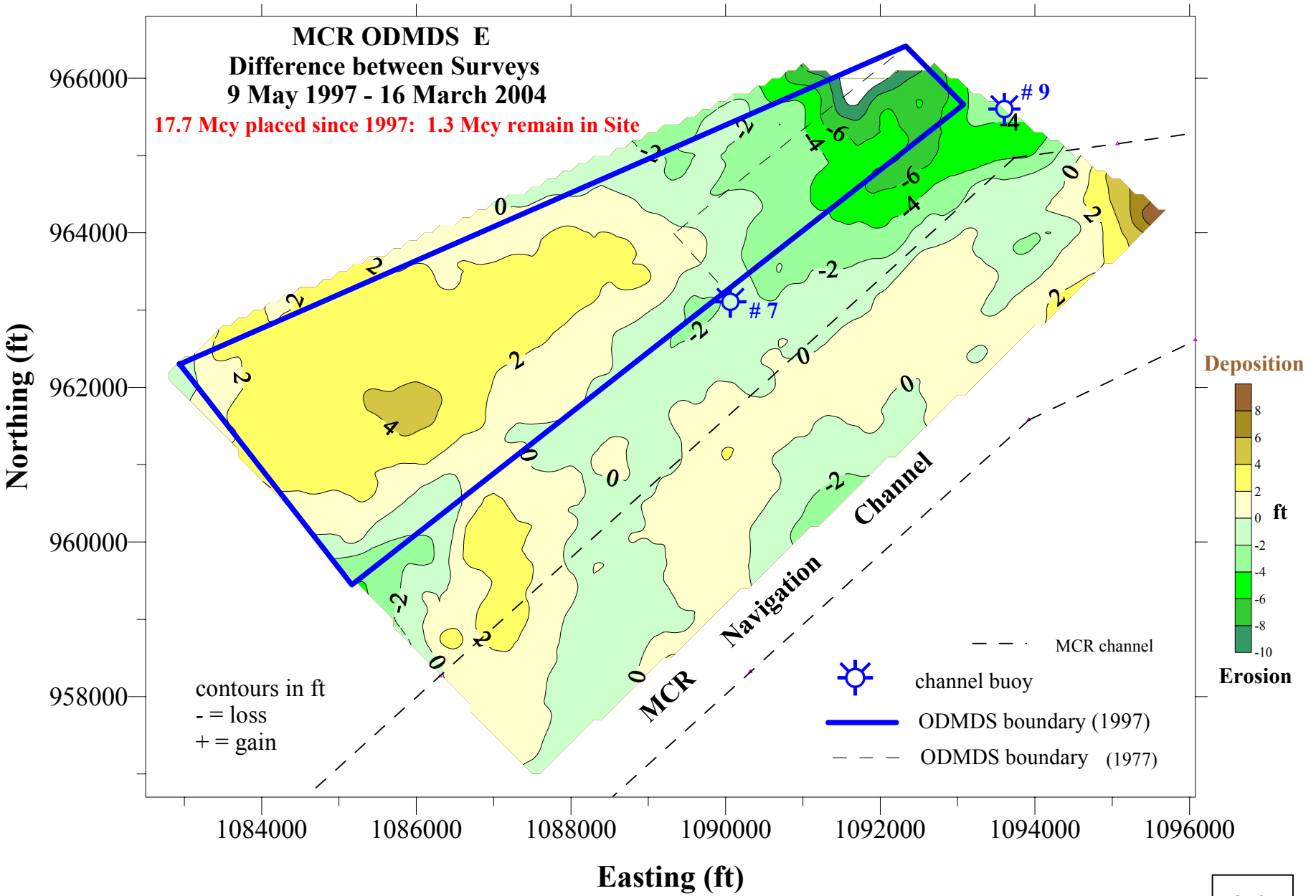


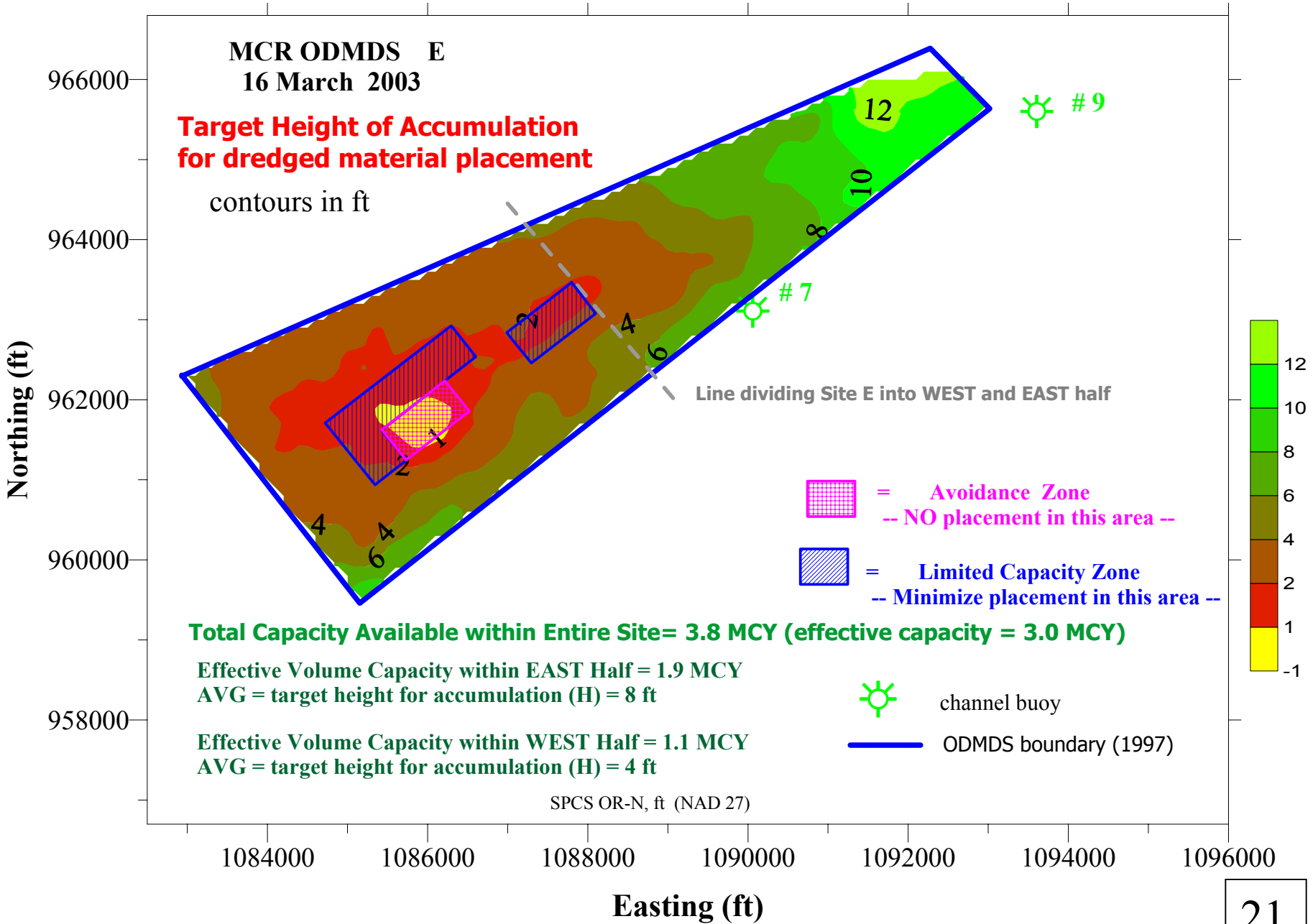

MCR ODMDS E
Difference between Surveys
29 APR - 13 NOV 2003
2.8 Mcy of dredged sand placed during 28 June - 15 Oct
Change on Seabed within
ODMDS E = 1.9 Mcy ACCUMULATION
9
7
MCR Navigation Channel
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
Deposition
ft
Erosion
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

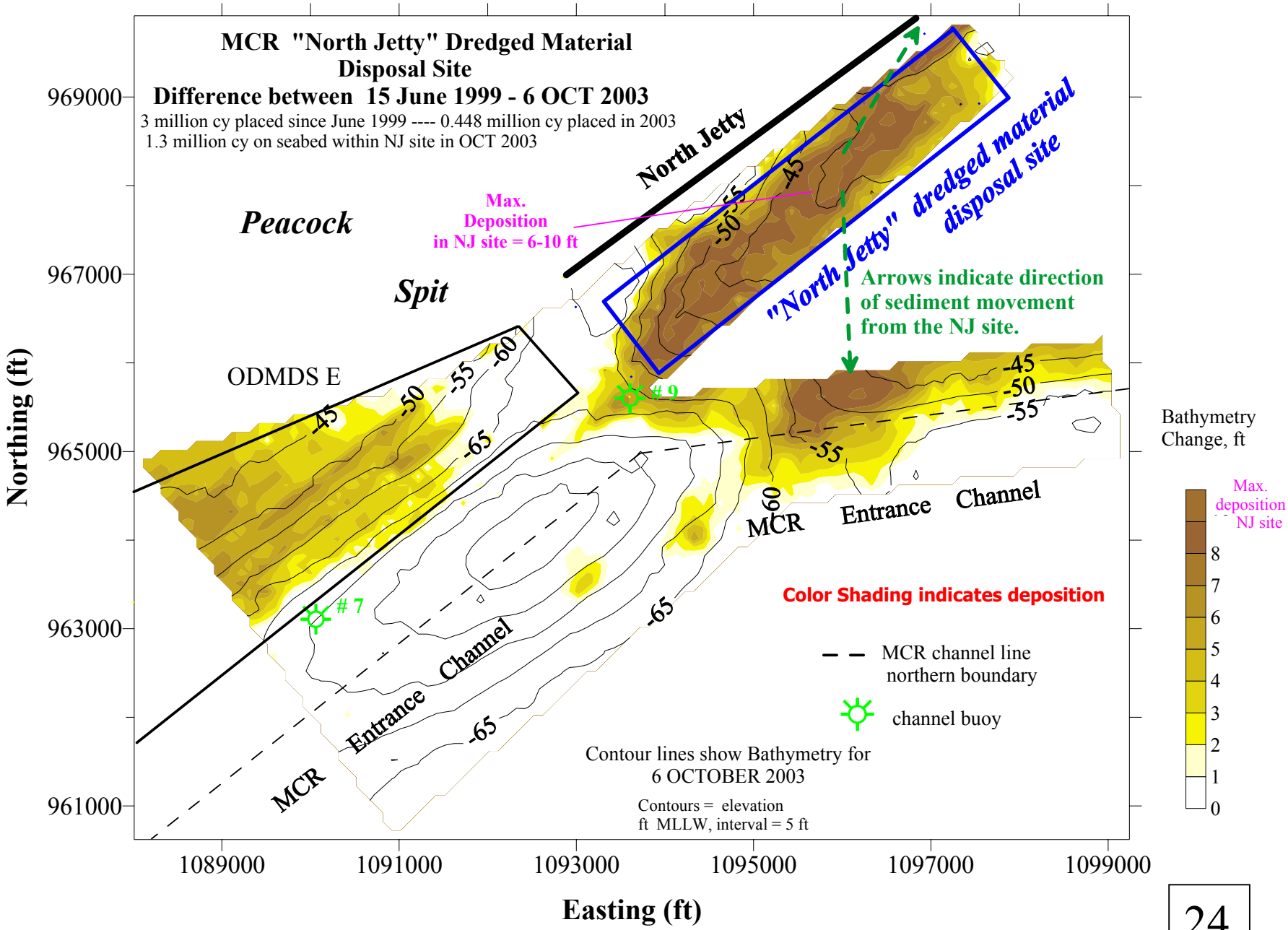

MCR ODMDS E
Difference between Surveys
9 May 1997 - 13 NOV 2003
17.7 Mcy placed since 1997: 2.0 Mcy remain in Site
2.85 Mcy placed during 2003
9
7
MCR Navigation Channel
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
Deposition
ft
Erosion
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000

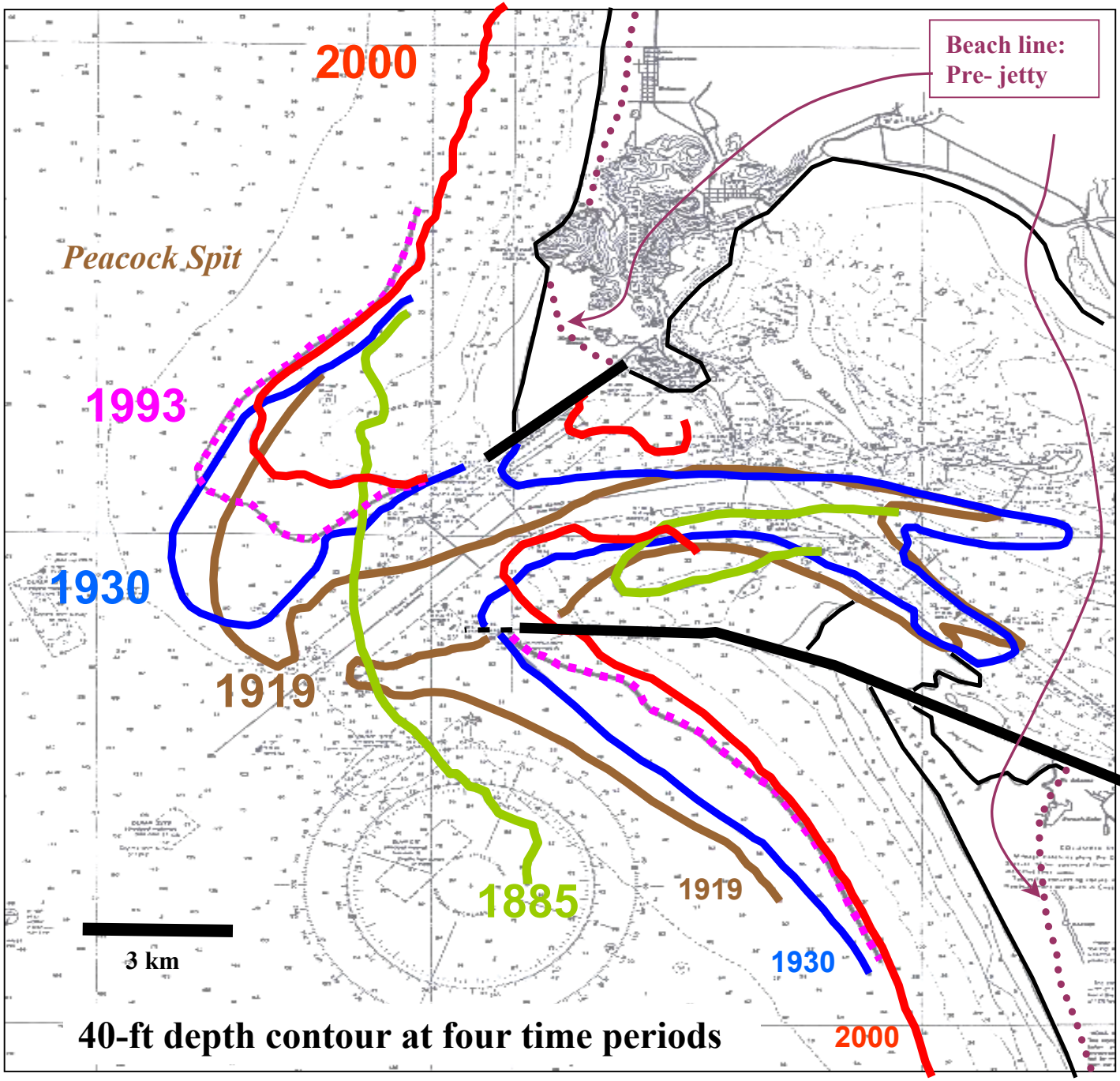

MCR ODMDS E
16 March 2004
9
7
-70
-80
-75
-65
-60
-55
-50
-47
-45
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
contours in ft MLLW
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000


MCR ODMDS E
Difference between Surveys
13 NOV 2003 - 16 MAR 2004
Net Change on Seabed within
ODMDS E = 0.94 Mcy EROSION
9
7
MCR Navigation Channel
MCR channel
channel buoy
ODMDS boundary (1997)
contours in ft
- = loss
+ = gain
Deposition
8
6
4
2
0
-2
-4
-6
-8
-10
ft
Erosion
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000


MCR ODMDS E
Difference between Surveys
9 May 1997 - 16 March 2004
17.7 Mcy placed since 1997: 1.3 Mcy remain in Site
9
7
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000
MCR
Navigation
Channel
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
Deposition
ft
Erosion
8
6
4
2
0
-2
-4
-6
-8
-10


MCR ODMDS E
16 March 2003
Target Height of Accumulation
for dredged material placement
contours in ft
9
7
12
10
8
6
4
2
1
Line dividing Site E into WEST and EAST half
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Total Capacity Available within Entire Site= 3.8 MCY (effective capacity = 3.0 MCY)
Effective Volume Capacity within EAST Half = 1.9 MCY
AVG = target height for accumulation (H) = 8 ft
Effective Volume Capacity within WEST Half = 1.1 MCY
AVG = target height for accumulation (H) = 4 ft
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
966000
964000
962000
960000
958000
Easting (ft)
1084000
1086000
1088000
1090000
1092000
1094000
1096000
12
10
8
6
4
2
1
-1

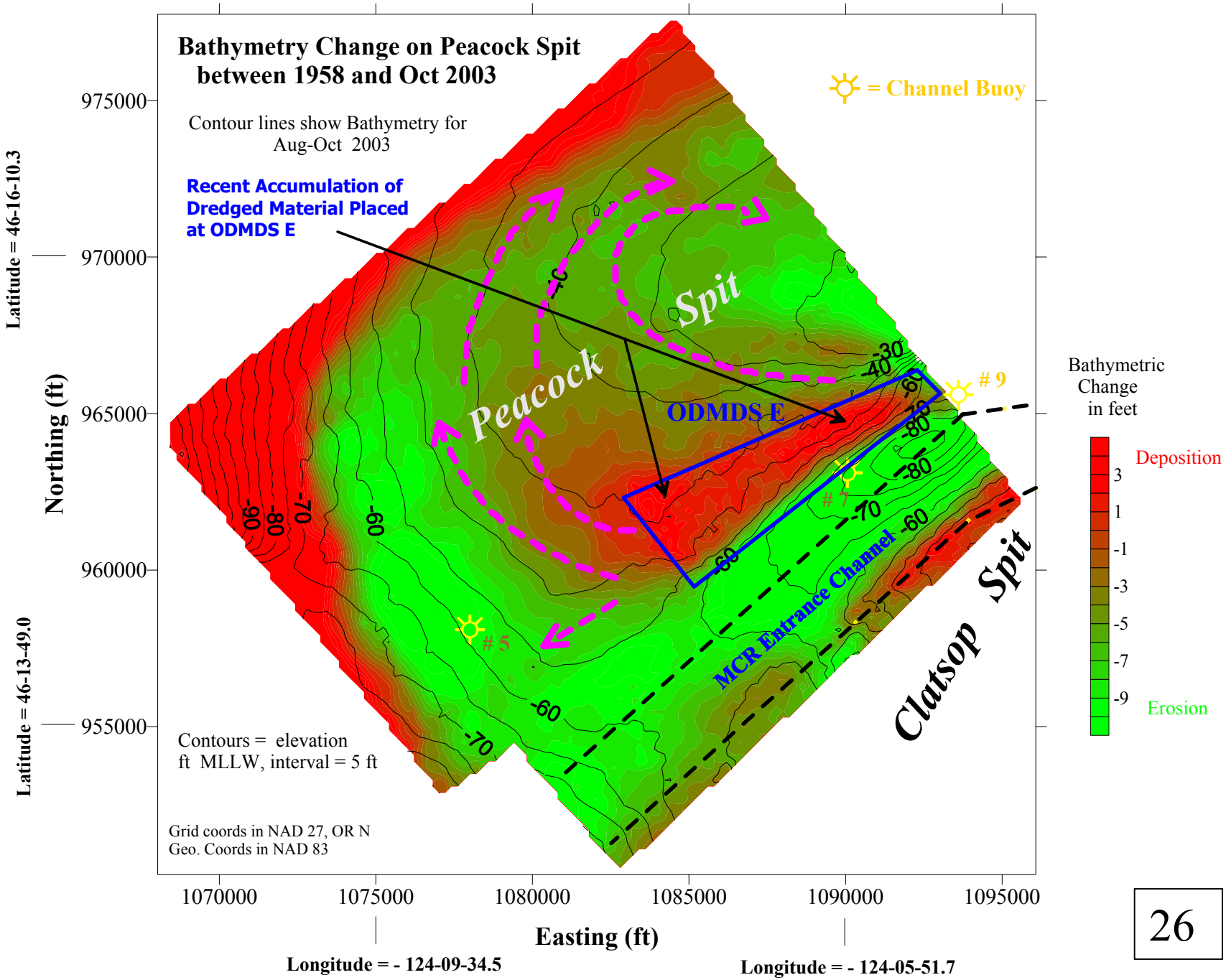

MCR "North Jetty" Dredged Material Disposal Site
Difference between 15 June 1999 - 6 OCT 2003
3 million cy placed since June 1999 ---- 0.448 million cy placed in 2003
1.3 million cy on seabed within NJ site in OCT 2003
Peacock Spit
North Jetty
Max. Deposition in NJ site = 6-10 ft
"North Jetty" dredged material disposal site
Arrows indicate direction of sediment movement from the NJ site.
ODMDS E
9
7
MCR Entrance Channel
Color Shading indicates deposition
MCR channel line northern boundary
channel buoy
Contour lines show Bathymetry for 6 OCTOBER 2003
Contours = elevation ft MLLW, interval = 5 ft
Bathymetry Change, ft
Max. deposition NJ site
Northing (ft)
Easting (ft)
969000
967000
965000
963000
961000
1089000
1091000
1093000
1095000
1097000
1099000



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 2003
= Channel Buoy
Contour lines show Bathymetry for
Aug-Oct 2003
Recent Accumulation of
Dredged Material Placed
at ODMDS E
Peacock
Spit
ODMDS E
MCR Entrance Channel
Clatsop Spit
# 5
# 7
# 9
Contours = elevation
ft MLLW, interval = 5 ft
Grid coords in NAD 27, OR N
Geo. Coords in NAD 83
Bathymetric
Change
in feet
Deposition
Erosion
3
1
-1
-3
-5
-7
-9
Latitude = 46-16-10.3
Latitude = 46-13-49.0
Northing (ft)
975000
970000
965000
960000
955000
1070000
1075000
1080000
1085000
1090000
1095000
Easting (ft)
Longitude = - 124-09-34.5
Longitude = - 124-05-51.7