

**LAVORI DI REALIZZAZIONE DEL DISTRETTO DELLA CANTIERISTICA  
DA REALIZZARSI NELL'AVAMPORTO EST DEL PORTO CANALE  
2° LOTTO FUNZIONALE: OPERE A MARE  
PERIZIA DI VARIANTE N°1**



**Responsabile Unico del Procedimento:** Dott. Ing. Alessandro BOGGIO

**Progettista della P.V. N°1:** il D.L. Ing. Alessandra MANNAI

**Impresa appaltatrice:**

Associazione temporanea imprese



Capogruppo



Mandante

**Progettazione esecutiva:**

Raggruppamento temporaneo professionisti



Capogruppo



Mandante



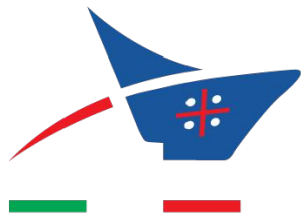
Mandante

Il responsabile della integrazione tra le prestazioni specialistiche:  
Ing. Marco DI STEFANO

Titolo elaborato :

**L- DRAGAGGI**  
Approfondimento fondali a -7,00 m s.l.m.m.: Sezioni di computo

Codice elaborato:		P	V	1	GL	0	4	Rev.	0	Scala:	-
05/2022	0	Prima emissione				A. Mannai	A. Mannai	A. Mannai			
Data	Rev.	DESCRIZIONE				Redatto:	Controllato:	Validato:			



Autorità di Sistema Portuale  
del Mare di Sardegna

**ADSP del Mare di Sardegna**

Autorità di Sistema Portuale del Mare di Sardegna

# Rilievo batimetrico Multibeam nell'avamposto est del Porto Canale di Cagliari

C.U.P.: D21J14000000007

**ELABORATO:**

**A**

**TITOLO:**

**Quaderno delle sezioni contabili**

Coordinate chilometriche UTM-ZONA 32N

Coordinate geografiche WGS1984

RIF. ELABORATO: 22-003

REVISIONI	DATA	OGGETTO
	00	11/05/2022
01		
02		
03		

RED.: EA VER.: FR APPR.: FR

**INCARICATI SVOLGIMENTO SERVIZIO:**



Viale Trieste, 65/I - 09123 Cagliari - Italy  
Tel. +39 070 6848202 - Fax +39 070  
6404743  
www.maritech.it e-mail: info@maritech.it

RESPONSABILE TECNICO:

**Dott. Ing. Francesco Ritossa**

COLLABORATORI ACQUISIZIONE E PROCESSING DATI:

**Dott. Ing. Enrico Arangino**



**COMMITTENTE:**



Autorità di Sistema Portuale  
del Mare di Sardegna

**ADSP del Mare di Sardegna**  
Autorità di Sistema Portuale del Mare di Sardegna

Responsabile Tecnico del cliente:

**Dott. Ing. Alessandra Mannai**

Il presente progetto, o parte di esso, non può essere riprodotto in alcuna forma, in alcun modo e per nessuno scopo, senza autorizzazione.  
Ogni infrazione sarà perseguita a termini di legge.

# Volume computation: Avamporto\_EST

Data file: Impresa + il nostro (Grid Models)

Reference file: Planimetria\_Escavi\_FINALE (Grid Models)

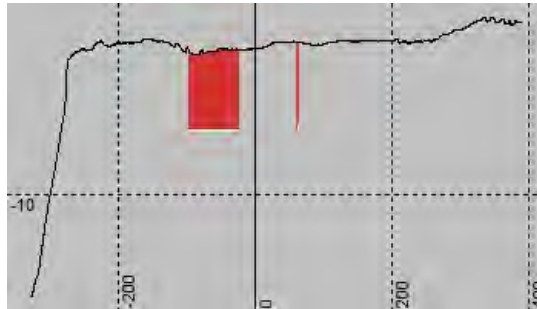
Totals	Volume		Vertical Area		Coverage
	Above	Below	Above	Below	[%]
Volume computation:	274016.89	75427.24	11013.74	2659.26	100
Runlines file:	274016.89	75427.24	11013.74	2659.26	100
Block: New Runline(1)	274016.89	75427.24	11013.74	2659.26	100

Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 1

Sections	Volume		Coverage [%]
	Above	Below	
Total	2873.96	0.00	100



Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 2

Sections	Volume		Coverage [%]
	Above	Below	
Total	14622.07	288.52	100



Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 3

Sections	Volume		Coverage [%]
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Total	12434.50	511.76	100

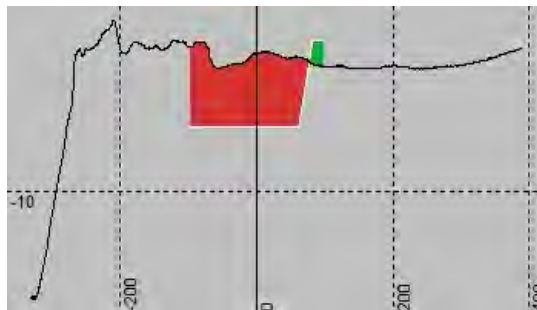


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 4

Sections	Volume		Coverage [%]
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Total	13555.95	470.85	100

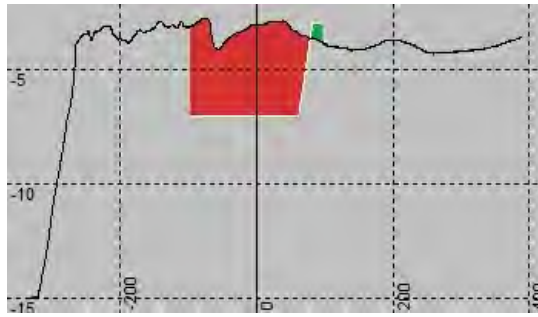


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 5

Sections	Volume		Coverage [%]
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<b>Total</b>	15681.11	267.79	100

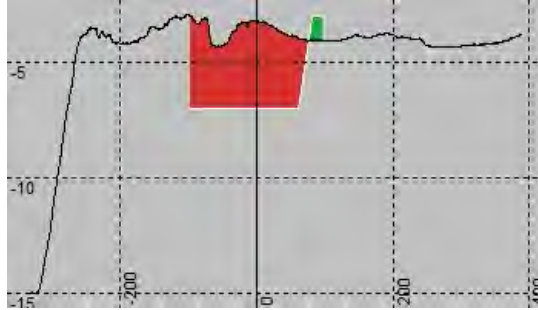


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 6

Sections	Volume		Coverage [%]
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<b>Total</b>	14007.50	418.61	100

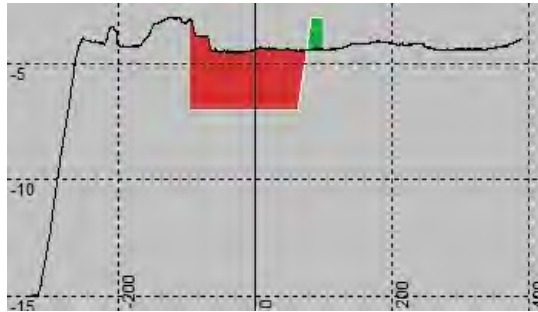


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 7

Sections	Volume		Coverage [%]
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<b>Total</b>	11086.46	584.70	100

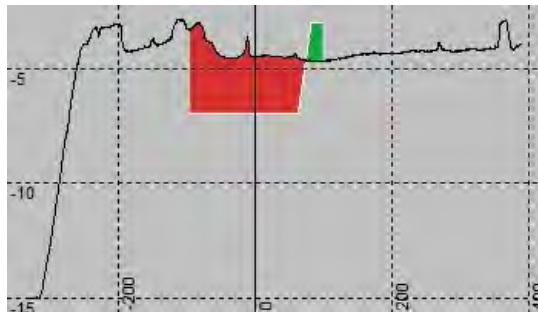


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 8

Sections	Volume		Coverage [%]
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<b>Total</b>	11235.45	756.51	100

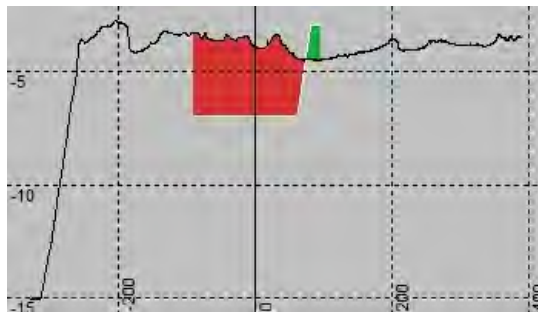


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 9

Sections	Volume		Coverage [%]
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<b>Total</b>	12909.48	658.26	100

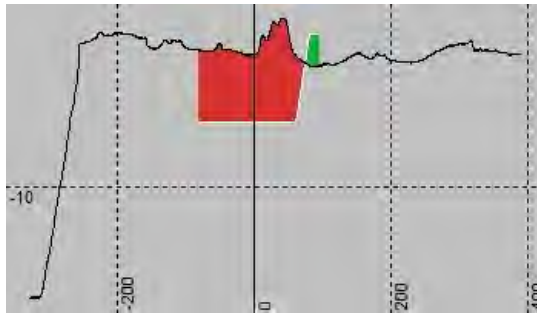


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 10

Sections	Volume		Coverage [%]
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<b>Total</b>	12979.20	636.02	100

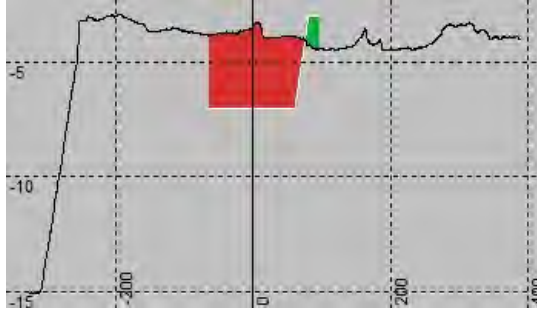


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 11

Sections	Volume		Coverage [%]
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<b>Total</b>	10737.36	571.04	100

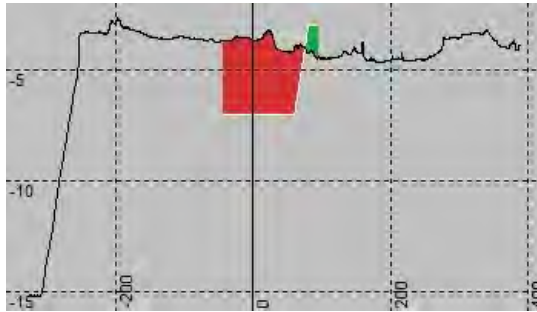


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 12

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	8999.91	518.48	100



Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 13

Sections	Volume		Coverage [%]
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<b>Total</b>	6513.51	787.92	98

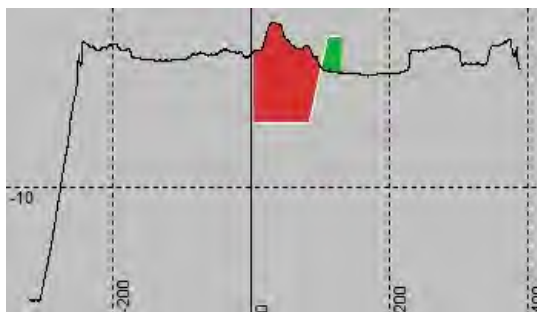


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 14

Sections	Volume		Coverage [%]
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<b>Total</b>	8534.28	949.34	100

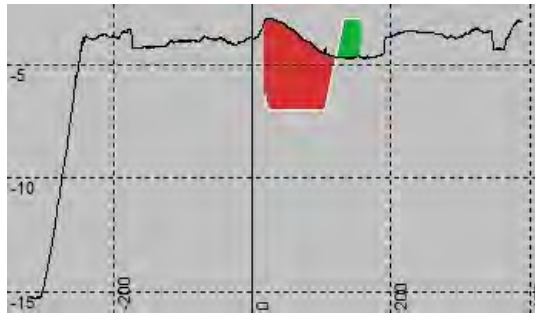


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 15

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	7693.30	1204.12	100



Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 16

Sections	Volume		Coverage [%]
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<b>Total</b>	7825.05	1605.76	100

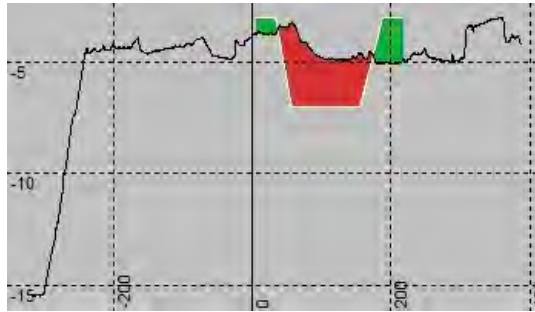


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 17

Sections	Volume		Coverage [%]
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<b>Total</b>	7462.22	2346.63	100

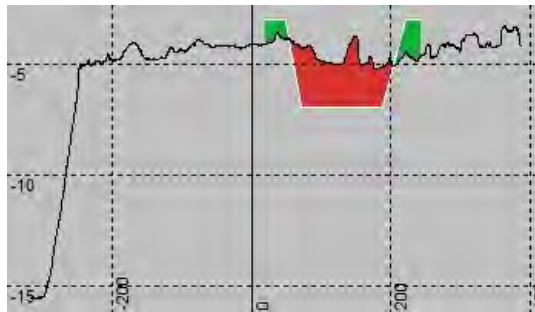


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 18

Sections	Volume		Coverage [%]
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<b>Total</b>	7606.39	1861.97	100

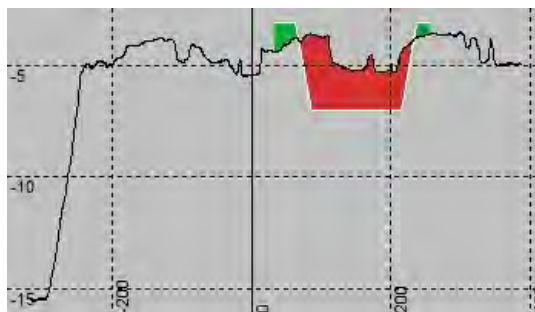


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 19

Sections	Volume		Coverage [%]
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<b>Total</b>	8631.44	1077.91	100

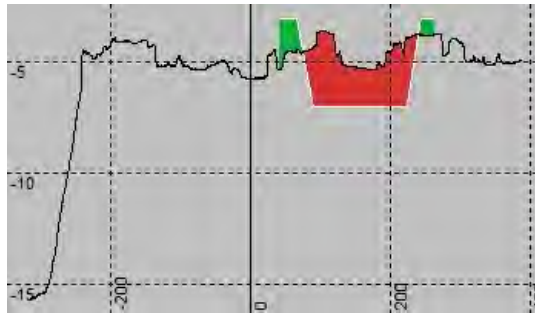


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 20

Sections	Volume		Coverage [%]
	Above	Below	
Total	9076.32	1620.46	100



Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 21

Sections	Volume		Coverage [%]
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Total	8829.91	2295.46	100

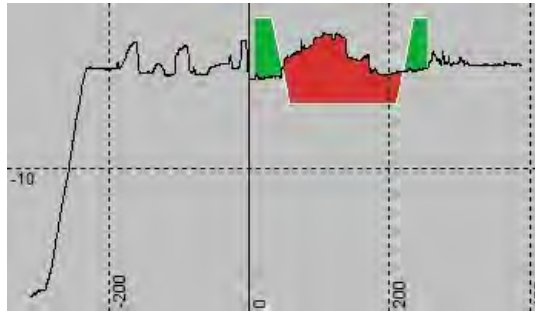


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 22

Sections	Volume		Coverage [%]
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Total	9289.43	3791.53	100

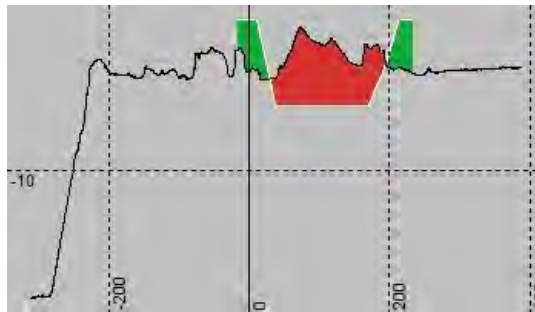


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 23

Sections	Volume		Coverage [%]
	Above	Below	
Total	9717.35	3619.52	100

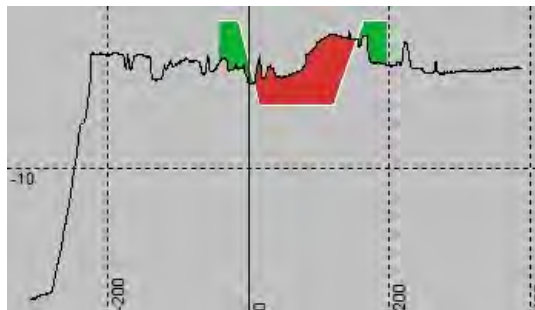


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 24

Sections	Volume		Coverage [%]
	Above	Below	
Total	6968.51	3584.45	100

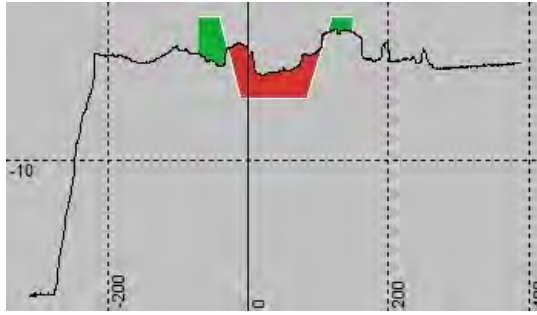


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 25

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	5039.62	2521.05	100

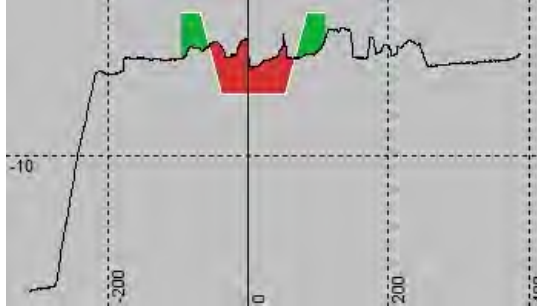


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 26

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	5238.81	3235.53	100

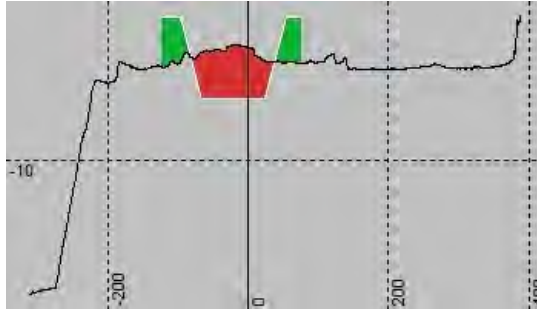


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 27

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	6088.05	3506.43	100

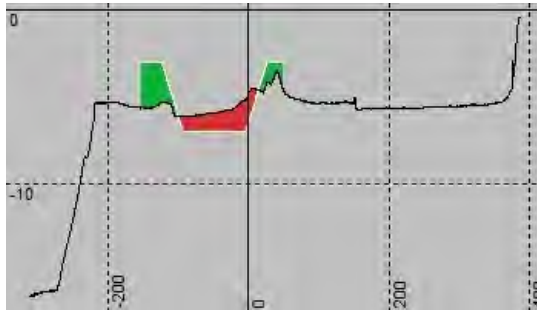


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 28

Sections	Volume		Coverage [%]
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<b>Total</b>	3122.73	3137.68	100

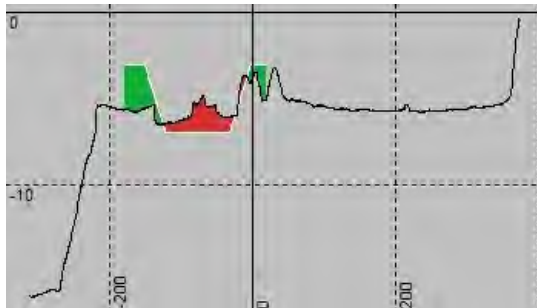


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 29

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	2856.99	3372.30	100



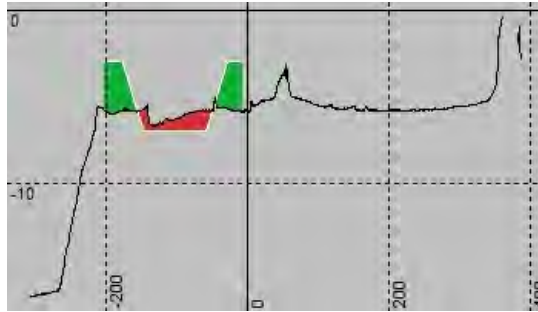


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 30

Sections	Volume		Coverage [%]
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Total	2144.45	4626.14	100

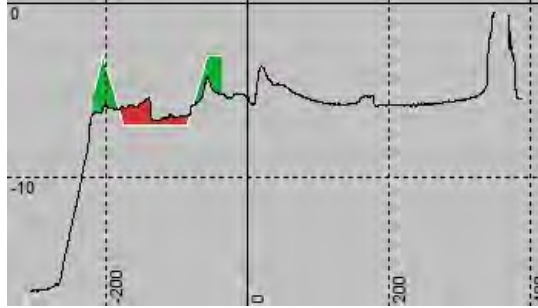


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 31

Sections	Volume		Coverage [%]
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Total	1857.28	2903.06	100

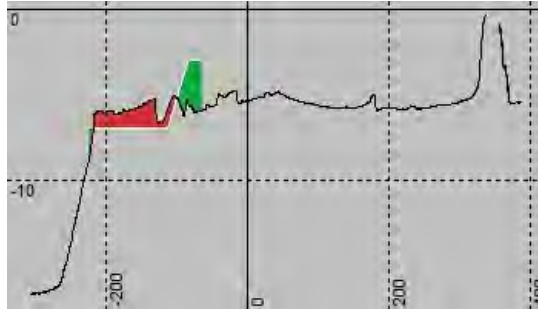


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 32

Sections	Volume		Coverage [%]
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Total	2999.61	2195.13	100

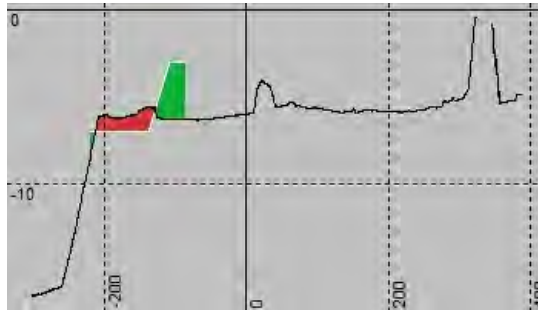


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 33

Sections	Volume		Coverage [%]
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Total	1888.42	2779.63	100

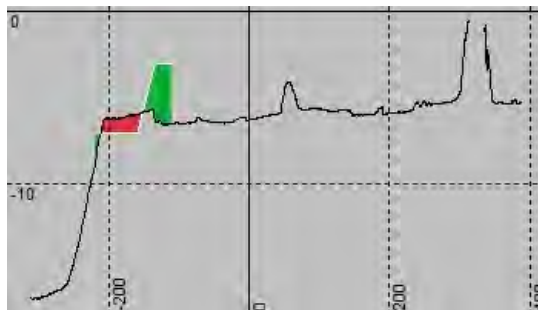


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 34

Sections	Volume		Coverage [%]
	Above	Below	
Total	1186.52	2616.52	100



Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 35

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	2295.38	7229.93	100

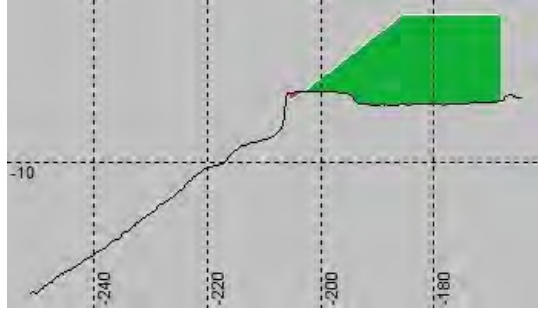


Runline File: SEZIONI\_ESCAVO\_1

Block: New Runline(1)

Line: 40

Sections	Volume		Coverage [%]
	Above	Below	
<b>Total</b>	28.37	6876.22	100



# Grid model volume computation: Rilievo\_Maggio\_2022\_FINALE\_025

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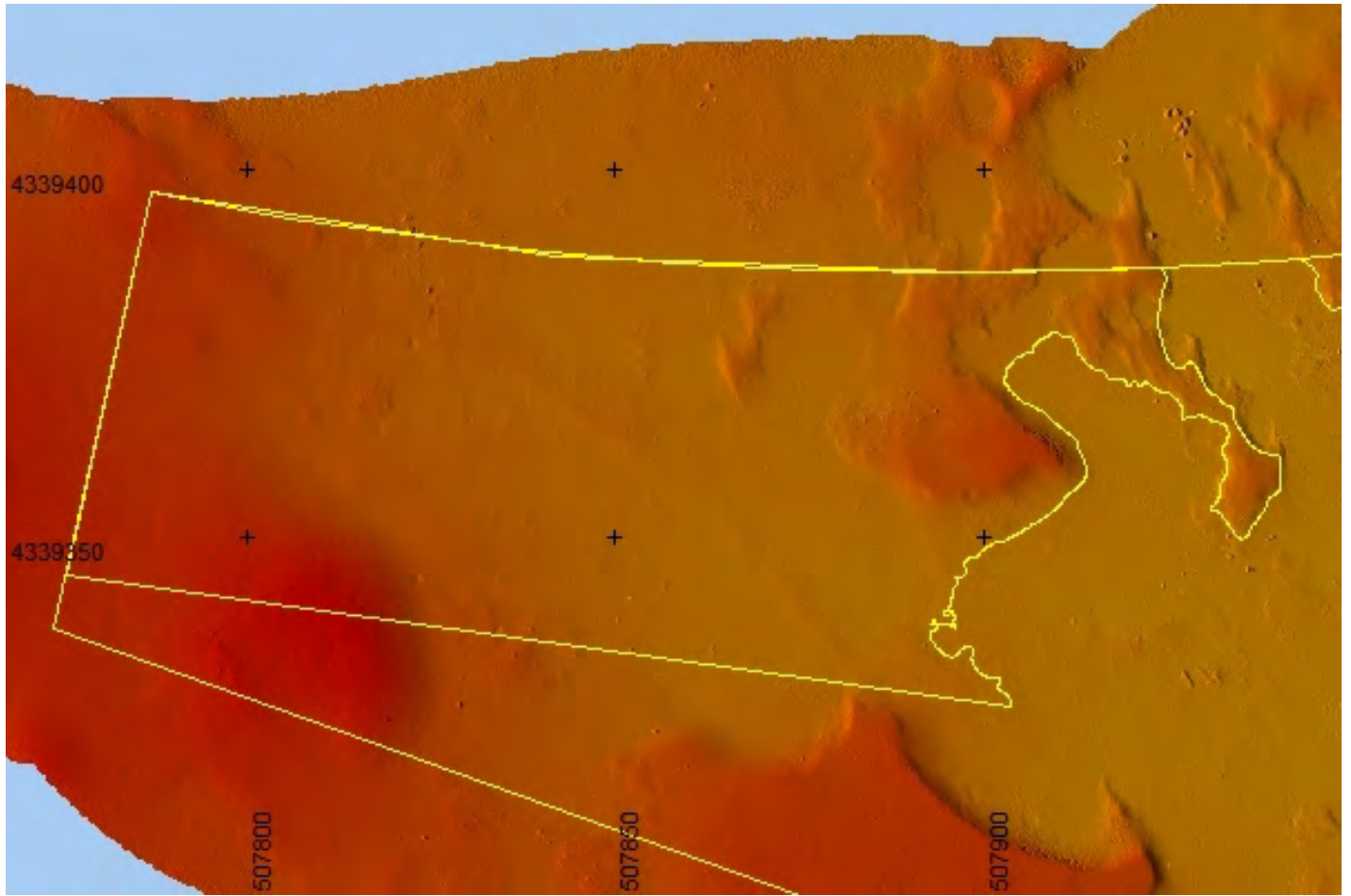
Project	AP Cagliari
Generated	24/05/2022 21:19:03
Grid model	Rilievo_Maggio_2022_FINALE_025
Clipping polygon	Area-5_1
Area of clipping polygon	7019.71 m <sup>2</sup>
Reference	Reference fixed level: -5.00 m
Reference offset	0.00 m
Volume above	3887.18 m <sup>3</sup>
Volume below	10.90 m <sup>3</sup>
Volume difference	3876.28 m <sup>3</sup>
Area above	6732.85 m <sup>2</sup> (95.91 %)
Area below	286.86 m <sup>2</sup> (4.09 %)
Area without data	0.00 m <sup>2</sup> (0.00 %)
Area without reference	0.00 m <sup>2</sup> (0.00 %)
Average layer thickness	0.55 m

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## Result:



**Model:**



# Grid model volume computation: Impresa + il nostro

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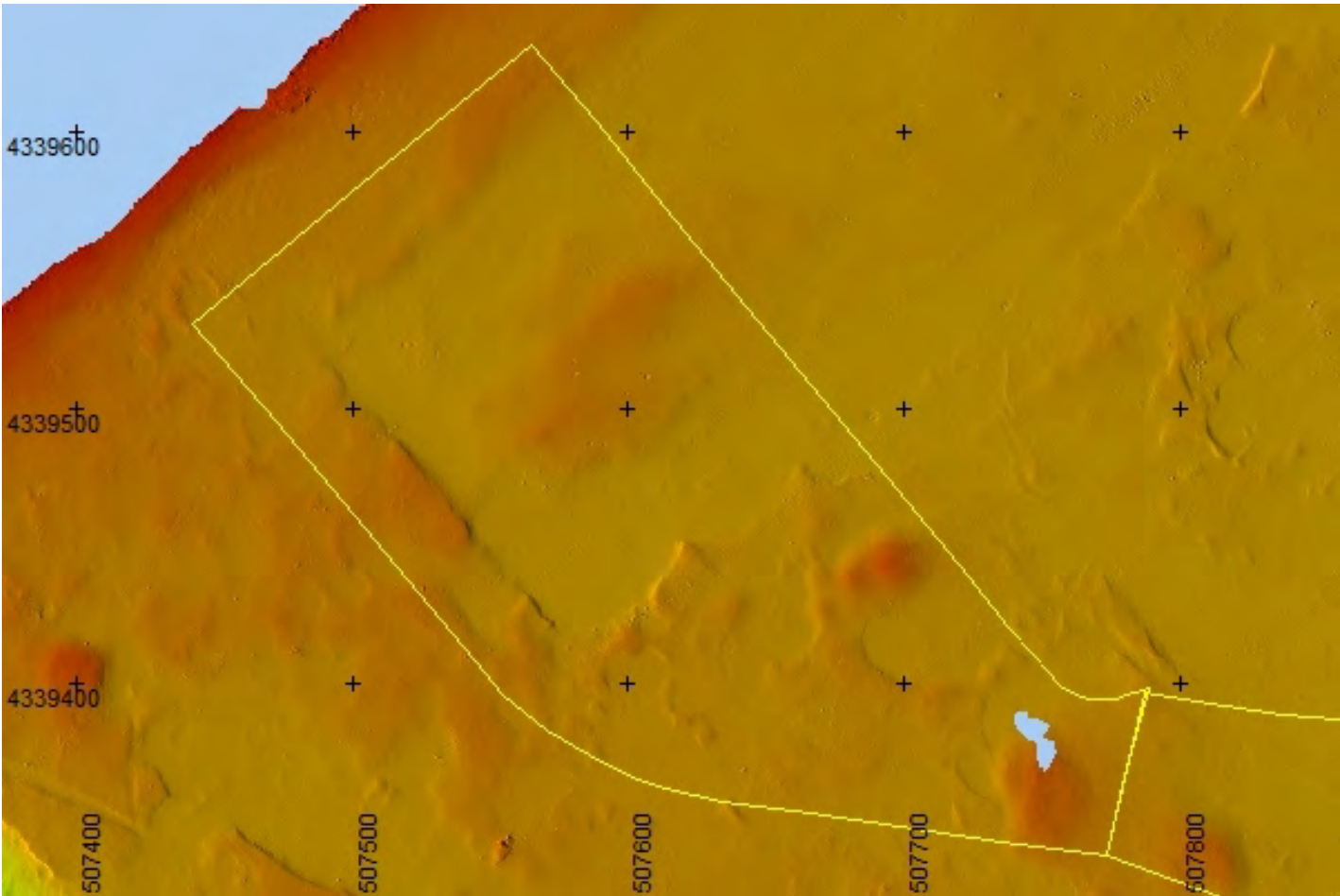
Project	AP Cagliari
Generated	24/05/2022 22:11:22
Grid model	Impresa + il nostro
Clipping polygon	Area_rilievo_avamporto_AGGIUNTIVA
Area of clipping polygon	47105.97 m <sup>2</sup>
Reference	Reference fixed level: -5.00 m
Reference offset	0.00 m
Volume above	60825.82 m <sup>3</sup>
Volume below	0.00 m <sup>3</sup>
Volume difference	60825.82 m <sup>3</sup>
Area above	46961.97 m <sup>2</sup> (99.69 %)
Area below	0.00 m <sup>2</sup> (0.00 %)
Area without data	144.00 m <sup>2</sup> (0.31 %)
Area without reference	0.00 m <sup>2</sup> (0.00 %)
Average layer thickness	1.30 m

---

## Result:



**Model:**



# Grid model volume computation: Rilievo\_Maggio\_2022\_FINALE\_025(1)

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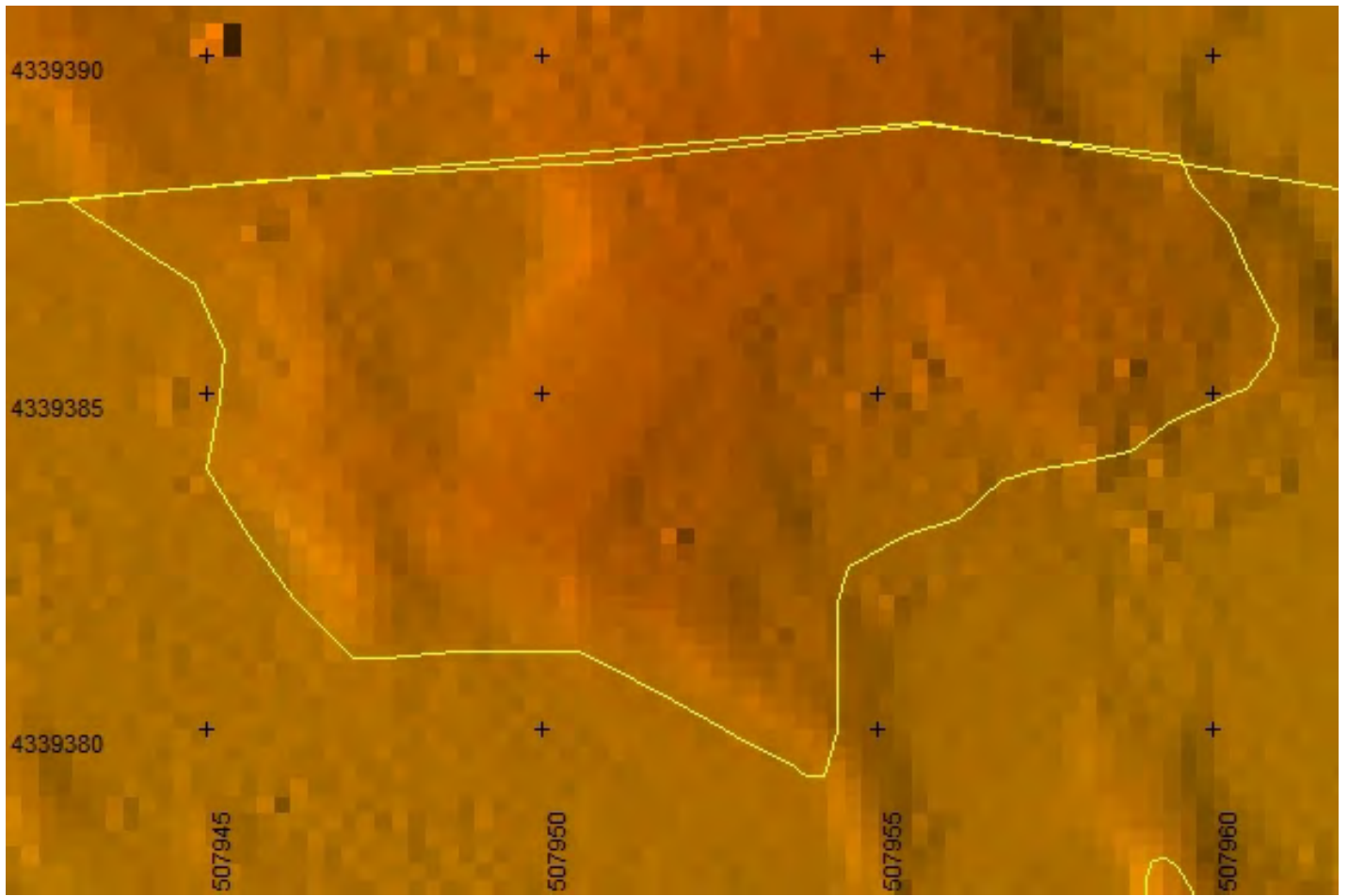
Project	AP Cagliari
Generated	24/05/2022 21:18:36
Grid model	Rilievo_Maggio_2022_FINALE_025
Clipping polygon	Area-5_1_1
Area of clipping polygon	100.86 m <sup>2</sup>
Reference	Reference fixed level: -5.00 m
Reference offset	0.00 m
Volume above	26.60 m <sup>3</sup>
Volume below	0.07 m <sup>3</sup>
Volume difference	26.53 m <sup>3</sup>
Area above	98.74 m <sup>2</sup> (97.90 %)
Area below	2.12 m <sup>2</sup> (2.10 %)
Area without data	0.00 m <sup>2</sup> (0.00 %)
Area without reference	0.00 m <sup>2</sup> (0.00 %)
Average layer thickness	0.26 m

---

## Result:



**Model:**





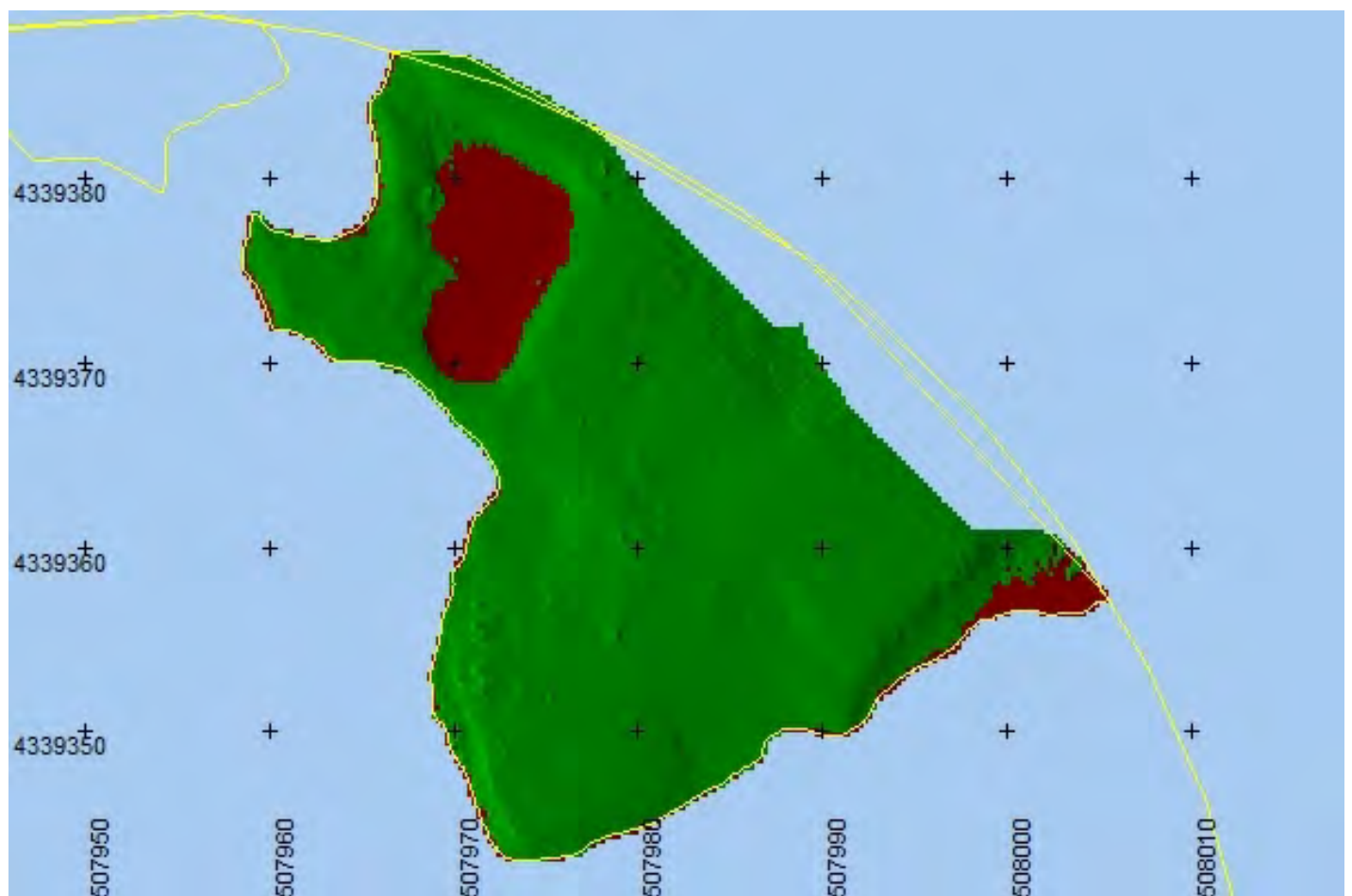
# Grid model volume computation: Rilievo\_Maggio\_2022\_FINALE\_025(2)

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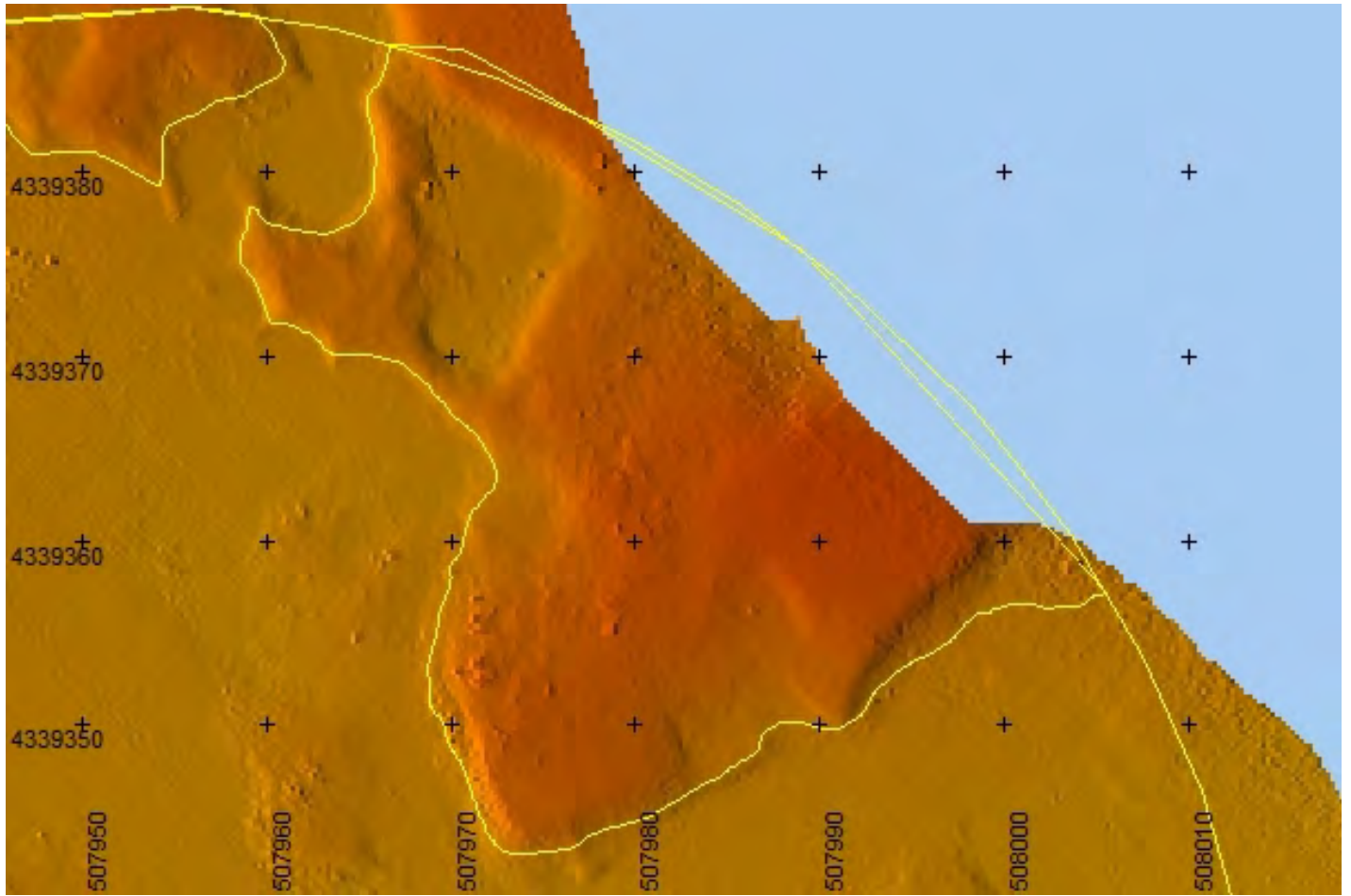
Project	AP Cagliari
Generated	24/05/2022 21:18:38
Grid model	Rilievo_Maggio_2022_FINALE_025
Clipping polygon	Area-5_2
Area of clipping polygon	996.89 m <sup>2</sup>
Reference	Reference fixed level: -5.00 m
Reference offset	0.00 m
Volume above	414.72 m <sup>3</sup>
Volume below	7.07 m <sup>3</sup>
Volume difference	407.65 m <sup>3</sup>
Area above	815.31 m <sup>2</sup> (81.79 %)
Area below	92.86 m <sup>2</sup> (9.32 %)
Area without data	88.71 m <sup>2</sup> (8.90 %)
Area without reference	0.00 m <sup>2</sup> (0.00 %)
Average layer thickness	0.45 m

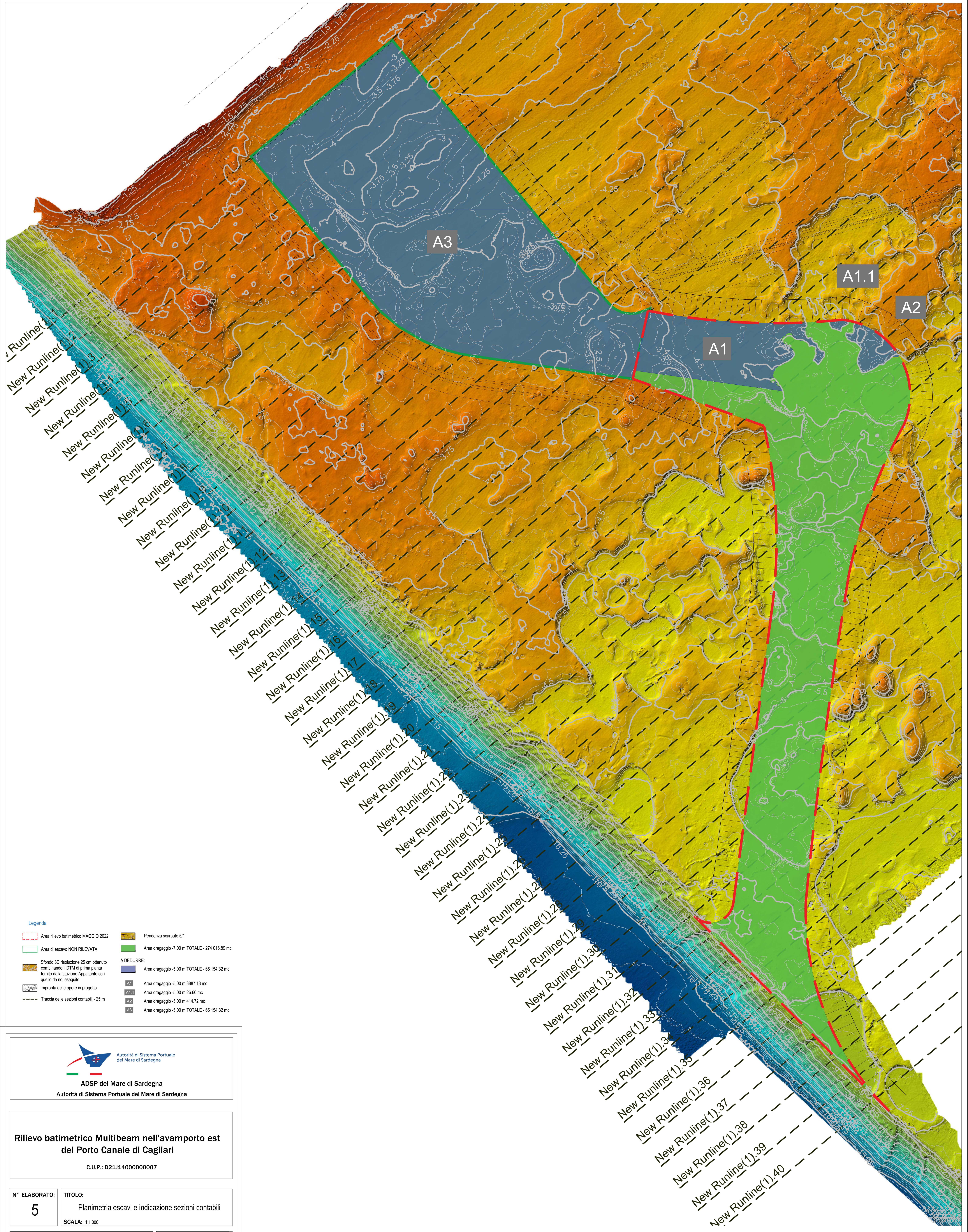
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## Result:



**Model:**





**Legenda**

Area rilievo batimetrico MAGGIO 2022	Pendenza scarpate 5/1
Area di escavo NON RILEVATA	Area dragaggio -7.00 m TOTALE - 274 016.89 mc
Sfondo 3D risoluzione 25 cm ottenuto combinando il DTM di prima pianta fornito dalla stazione Appaltante con quello da noi eseguito	<b>A DEDURRE:</b>
Impronta delle opere in progetto	Area dragaggio -5.00 m TOTALE - 65 154.32 mc
Traccia delle sezioni contabili - 25 m	Area dragaggio -5.00 m 3887.18 mc
	Area dragaggio -5.00 m 26.60 mc
	Area dragaggio -5.00 m 414.72 mc
	Area dragaggio -5.00 m TOTALE - 65 154.32 mc

**ADSP del Mare di Sardegna**  
 Autorità di Sistema Portuale del Mare di Sardegna

**Rilievo batimetrico Multibeam nell'avamposto est del Porto Canale di Cagliari**  
 C.U.P.: D21J1400000007

**N° ELABORATO:** 5  
**TITOLO:** Planimetria escavi e indicazione sezioni contabili  
**SCALA:** 1:1 000

REV.	DATA	OGGETTO
00	11/05/2022	ELABORATO FINALE
01		
02		
03		

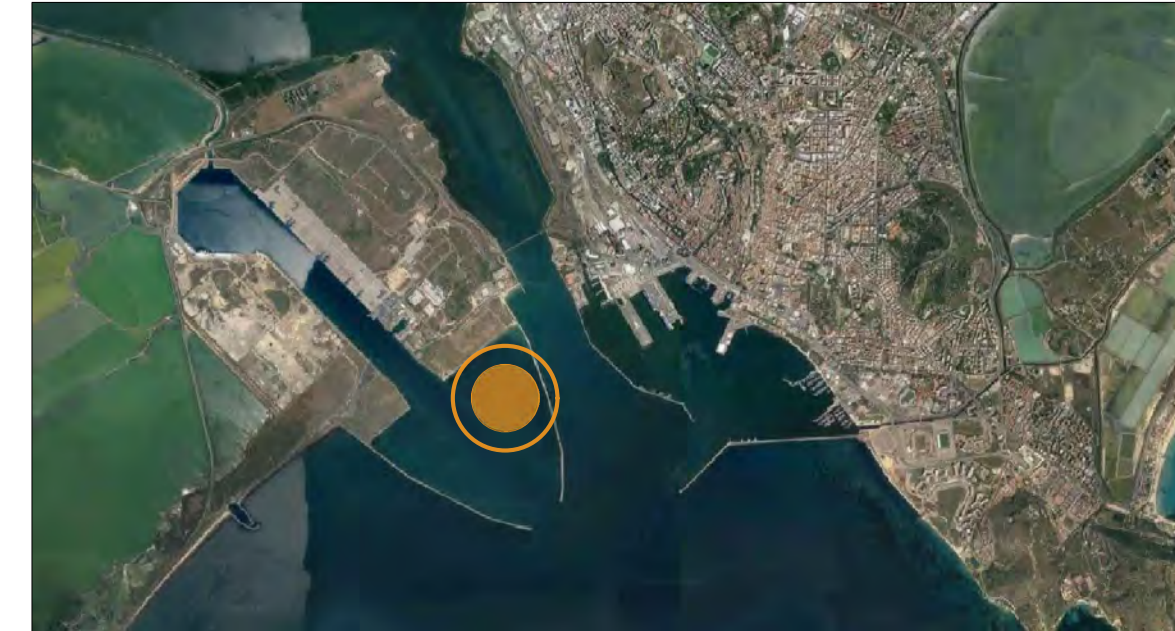
RED.: EA VER.: FR APPR.: FR

**INCARICATI SVOLGIMENTO SERVIZI:**

**COMITENTE:**

Responsabile Tecnico del cliente:  
 Dott. Ing. Alessandro Maresca

Key-plan inquadramento area rilievo



**Parametri geodetici**

SDR EPSG 32632 DATUM: WGS84 ELLIPSOIDE: WGS84  
 Semiasse Maggiore (a): 6 378 137.00 m  
 Semiasse minore (c): 6 358 702.314 m  
 Schiacciamento (f): 1/298 257223563  
 PROIEZIONE: UTM 32N  
 Meridiano Centrale: 9°00'00" Est  
 Latitudine di Origine: 0°00'00" Nord  
 Falso Est: 500 000m  
 Falso Nord: 10 000 000m  
 Fattore di Riduzione: 0.9996  
 DATUM VERTICALE: Livello Medio Mare (l.m.m.)

**Specifiche di rilievo**

Tipo di rilievo: Rilievo batimetrico Multibeam  
 Strumento:  
 - Multibeam: NORBIT Subsea iWBMSH  
 - Posizionamento MRU: GYRO: Applanix Ocean Master  
 - Sonda DVP: Valeport Bath Plus

Specifiche:  
 - Frequenza di acquisizione: 500 KHz  
 - (connessioni RTK in tempo reale in appoggio alla rete di stazioni permanenti della Sardegna SARNET VRS)

Software di acquisizione:  
 - PDS2000 Teledyne Marine

Datum verticale:  
 - Le profondità sono riferita al l.m.m. (Livello medio mare) - Mareografo Rete Mareografica Nazionale ISPRA Stazione di Cagliari

Il presente progetto, o parte di esso, non può essere riprodotto in alcuna forma, in alcun modo e per nessuno scopo, senza autorizzazione. Ogni violazione sarà perseguita a termine di legge.