

**Report on
Topographic and Bathymetric Survey of Reservoirs
for Water Resources Department, Govt. of Gujarat
at Saurashtra and Northern Gujarat Region, Gujarat**

Aji - 1 Reservoir

Owner



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2.	OSaS_P34320_WRD_Aji-1_CC_02	Contour Map Scale: 1:5000
3.	OSaS_P34320_WRD_Aji-1_03	Bathymetry and Topography Chart Scale: 1:5000; Grid: 25m X 25m
4.	OSaS_P34320_WRD_Aji-1_04	Bathymetry and Topography Chart Scale: 1:5000; Grid: 25m X 25m
5.	OSaS_P34320_WRD_Aji-1_LP_05	Longitudinal Profile Along Lowest Line Scale: 1:5000
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9.	OSaS_P34320_WRD_Aji-1_CP_09	Cross Section Profiles 37 - 55 Scale: 1:5000

ABBREVIATIONS

WRD	Water Resources Department
BM	Benchmark
C.M.	Central Meridian
CD	Chart Datum
cm	Centimetre
ddmm.mmm	Degrees minutes. decimal minutes
DGPS	Differential Global Positioning System
DTM	Digital Terrain Model
DSL	Dead Storage Level
FRL	Full reservoir Level
GPS	Global Positioning System
HSE	Health, Safety & Environment
ID	Identification name/number
IHO	International Hydrographic Organization
kHz	Kilohertz
km	Kilometre
KP	Kilometre Post
Lat	Latitude
LBM	Local Benchmark
Long	Longitude
m	Metre
MCum	Million Cubic Metre
MDDL	Minimum Drawdown Level
MSL	Mean Sea Level
MSqm	Million Square Metre
MV	Motor Vessel
NA	Not Applicable
NU	North Up
OSL	Outlet Sill Level
SOW	Scope of Work
SVP	Sound Velocity Profile
UTM	Universal Transverse Mercator projection
w.d.	Water depth
WGS84	World Geodetic System 1984

EXECUTIVE SUMMARY

Ocean Science & Surveying Pvt. Ltd. (OSaS) was contracted by Narmada Water Resources, Water Supply & Kalpsar Department (WRD) to carry out topographic and bathymetric surveys of thirteen reservoirs in the Saurashtra region; namely Bhadar-1, Bhadar-2, Brahmani-1, Und-1, Machhu-1, Machhu-2, Khodiyar, Aji-1, Nara, Tappar, Rudramata, Mitti and Fatehgadh.

This report describes the results of the topographic and bathymetric survey services provided by OSaS to the WRD for topographic and bathymetric mapping of the Aji-1 reservoir, Saurashtra region, Gujarat.

The vessel SMB Ocean, owned by OSaS, was used for conducting the survey. The mobilisation of equipment started on 27th March 2021. A DGPS consistency check was done on 26th March by establishing two reference stations (TBMs) using RTK systems. The topographic survey commenced on 27th March and bathymetric survey commenced on 28th March at Aji-1 reservoir.

Bathymetric survey was completed on 04th April and topographic survey was completed on 07th April 2021.

The survey data was processed on the site on a daily basis and reporting and charting was completed in the OSaS data processing centre in Navi-Mumbai after the survey.

All the co-ordinates in the report and charts are referenced to WGS 84 datum, UTM projection, CM 69° east, zone 42, northern hemisphere.

All bathymetric and topographic data has been reduced to M.S.L using the observed average water level of each day during the survey period.

The survey was carried out in daylight hours keeping in mind the safety of personnel and survey equipment.

The construction work of the dam at Aji-1 commenced in 1952 and was completed in 1954. Full Reservoir Level (F.R.L) of the Aji-1 reservoir is 147.52m above M.S.L over a catchment area of 142.45 km².

Details of a capacity survey conducted in 2000 were provided to us for comparison with the current survey. The gross storage (at F.R.L:147.52m) and dead storage (at D.S.L:138.69m) as per the 2000 survey are 26.430 M.Cu.m and 0.438 M.Cu.m respectively.

Bathymetric and topographic survey was restricted at some places due to the presence of bushes and trees, waterlogged areas, small streams with unsafe and inaccessible marshy ground, exposed rocks and forest area with thick vegetation.

In the current bathymetric and topographic survey, a minimum elevation of 137.4m was observed in the northwestern portion of the survey area within the bathymetric section. A maximum topographic elevation value of 165.29m is observed in the west-northwestern portion of the survey area.

Most of the outer survey area is observed above the 149m elevation contour. A major part of the reservoir water storage area exists below the 146m elevation contour. The reservoir bed in the central and western portion of the survey areas exhibits slightly irregular morphology between the 146m and 138m elevation contours. The northern portion shows irregular topography due to rocky areas and attains a maximum elevation contour of 165m.

In the southeastern portion of the survey area, the river channel shows a minimum elevation between 146m and 143m. The central portion exhibits a minimum elevation contour of 141m. Beyond this, the river channel further deepens towards the west, to a minimum elevation contour of 138m near the dam gate.

The gross storage (at F.R.L:147.52m) and dead storage (at D.S.L:138.69m) as per 2021 survey are 28.709 M.Cu.m and 0.107 M.Cu.m respectively.

The comparison between 2000 and 2021 (21 years) data results shows a rate of erosion at a rate of 7.6 Ha.m/100sq.km./year. Annual percentage increase of gross storage capacity and live storage capacity are 0.41% and 0.48% respectively. Annual percentage loss of dead storage capacity is 3.60%.

The comparison of the current and previous capacity data of the 2000 survey shows a decrease in capacity due to sediment deposition at the dead storage area and part of the live storage area up to 143.0m, possibly due to erosion in the higher levels of the reservoir or the abundant sediment inflow into the reservoir due to floods.

Above 143.0m, the comparison shows an increase in capacity at different levels of the live storage area up to F.R.L. The increase in capacity could be due to erosion of the reservoir bank at these levels or conversion of more irregular water spread areas around the F.R.L into levelled lands.

The capacity at D.S.L has reduced from 0.438 M.Cu.m to 0.107 M.Cu.m between the years 2000 and 2021 with a loss in capacity of about 75.57 percent. The amount of sediment deposited during this period at D.S.L is 0.331 M.Cu.m.

The capacity at F.R.L has increased from 26.430 M.Cu.m to 28.709 M.Cu.m between the years 2000 and 2021 with an increase in capacity of about 8.62 percent. The amount of sediment eroded during this period at F.R.L is 2.279 M.Cu.m.

The deposition or removal of the sediment within the reservoir results in a corresponding loss or increase of storage capacity.

1 INTRODUCTION

The Water Resources Department, Govt. of Gujarat is engaged in developing water reservoirs within the state of Gujarat, under a World Bank funding programme towards National Hydrology Projects of Govt. of India. Towards this end, the Water Resources Department, Govt. of Gujarat requires services for conducting bathymetric survey of reservoirs of Saurashtra and northern Gujarat regions under its National Hydrology Project.

Ocean Science & Surveying Pvt. Ltd. (OSaS) was contracted by Narmada Water Resources, Water Supply & Kalpsar Department (WRD) to carry out topographic and bathymetric surveys of thirteen reservoirs in the Saurashtra and northern Gujarat regions; namely Bhadar-1, Bhadar-2, Brahmani-1, Und-1, Machhu-1, Machhu-2, Khodiyar, Aji-1, Nara, Tappar, Rudramata, Mitti and Fatehgadh.

This report describes the results of the topographic and bathymetric survey services provided by OSaS to WRD for topographic and bathymetric mapping of the Aji-1 reservoir in Saurashtra, Gujarat.

1.1 Background of survey area

Aji river is located in the Saurashtra peninsula, in the western Indian state of Gujarat with a catchment area of 2130 Sq.km. Originating in the hilly areas of Sardhar and Hingolghadh near Atkot, it has a length of 250 km and flows into the Gulf of Kutch, Arabian sea. Some of the major tributaries of Aji are the Nyari, Khokaldadi, Bhankudi & Dondi rivers.

There are four dams on Aji river, the water from which is used for agriculture as well as drinking water supply.

The first dam was built by the government of Gujarat. The downstream area of Aj-1 dam is maintained by the Rajkot Municipal Corporation. The Aji river and the dam are situated just 8 kilometres from the city centre of Rajkot.

The average rainfall in the Aji basin is 653 mm. In winter, the temperature varies between 13°C and 15°C in different parts of the region. May is the hottest month. Maximum temperature varies between 35°C and 40°C.

Aji-1 dam was constructed in the year 1954. It is an earthen and brick type dam. This dam fulfils its operating purpose of water supply efficiently.

1.2 General Location

The reservoirs of Saurashtra and Northern Gujarat region, under study in this project, are shown on the Google Earth image in **Figure 1**.



Figure 1: Survey areas/reservoirs of Saurashtra and Northern Gujarat regions

This report specifically focuses on the results of topographic and bathymetric survey of the Aji-1 reservoir situated within the Saurashtra region, shown in the Google earth image below:



Figure 2: Survey area – Reservoir Aji-1

2 SCOPE OF WORK

The scope of work for the survey was:

- To mobilize requisite topographic equipment and personnel at the sites specified by the client.
- To mobilize a suitable vessel along with requisite bathymetric equipment and personnel at the sites specified by the client.
- To carry out topographic and single beam echo sounder bathymetric survey in the specified areas.
- To estimate and study the sedimentation behaviour of the reservoirs in different zones including horizontal zones throughout the reservoirs as well as vertical zones namely (a) dead storage (b) live storage (c) flood storage, if any.
- The integrated bathymetric system will be used to collect data on depth and bottom topography of the reservoirs and rivers. Primary application is reservoir sedimentation surveying; products will be reservoir capacity figures as a function of depth, depth contours and bottom topography change over time.
- To upgrade elevation-area-capacity tables /curves of the reservoirs.
- To prepare contour plan, Longitudinal profile (L-section), Cross section profiles...etc.

2.1 Salient features of Survey Area

The Aji-1 reservoir is situated across the Aji River in the Saurashtra peninsula, in the Western Indian state of Gujarat. The construction works of Aji-1 was commenced in 1952 and completed in 1954. Gated Ogy type spillway and gates were completed in 1954. A capacity table, provided by the client, documented that the data was acquired in the year 2000. Information at the time of impounding the reservoir is not available from any source. The salient features of Aji-1 reservoir, based on capacity table prepared after silt survey in 2000, are given below.

a. Location	
Latitude	: 22° – 15.74' N
Longitude	: 70° – 50.97' E
b. Catchment Area	: 142.45 km ²
c. Full Reservoir Level (F.R.L)	: 147.52 m
d. High Flood Level (H.F.L)	: 149.35 m
e. Dead Water Level (D.W.L/O.S.L)	: 138.69 m
f. Gross Storage	: 26.430 Mm ³
g. Dead Storage	: 0.438 Mm ³
h. Live Storage	: 25.991 Mm ³
i. Area at F.R.L	: 6.589 Sq.Km

2.2 Survey Design

The topographic and bathymetric survey lines were planned and executed at intervals of 25m throughout the area of survey. Topographic survey was conducted using RTK base and rover system. The limit of topographic survey was up to the H.F.L of the reservoir, which is 149.35m (489.99ft.) above MSL, as provided by the client. The bathymetric survey was conducted using RTK positioning system and single beam echo sounder. The topographic and bathymetric surveyed areas (in sq.km) for the Aji 1 reservoir are provided in **Table 1** below.

Name of Reservoir	Bathymetric area surveyed (sq. km.)	Topographic area surveyed (sq.km.)
Aji 1	5.95	3.53

Table 1: Surveyed areas for Aji 1 reservoir

3 SURVEY CONTROL

3.1 Geodesy

The survey operations were conducted in WGS 84 Spheroid, Universal Transverse Mercator projection system, based on the geodetic parameters as presented below. All co-ordinates given within this document are with reference to it.

GEODETTIC PARAMETERS	
Satellite Datum	
Datum, Spheroid	WGS-84
Semi-Major Axis	6378137.000 m
Semi Minor Axis	6356752.314 m
Inverse Flattening	298.2572
Projection Parameters	
Grid Projection	Universal Transverse Mercator
Latitude of Origin of Projection	0° (Equator)
Longitude of Origin of Projection	69° E, Zone 42 North
Hemisphere	North
False Easting (metres)	500000 E
False Northing (metres)	0
Scale Factor on CM	0.9996
Units	Metres

Table 2: Geodetic Parameters

3.2 Horizontal and vertical Control

3.2.1 Topographic survey

Two reference stations were established as temporary control points/temporary benchmarks (TBM). The levelling of these TBMs was carried out using an auto level with respect to the known level of F.R.L which is given as 147.52m (484.00ft.) above MSL, as provided by the client. The base stations of the RTK were set up at these positions and two-hour long continuous observations were conducted using a Hemisphere RTK positioning system to fix the consistency of the position for horizontal control. The system provides real time correction signals, providing centimetre level accuracy. Additional TBMs were established at various parts of the survey area to keep the rover in range with respect to the base station.

The details of the reference stations OSaS-TBM-AJ-01 and OSaS-TBM-AJ-02 are given in **Figure 3** and **Figure 4** respectively.

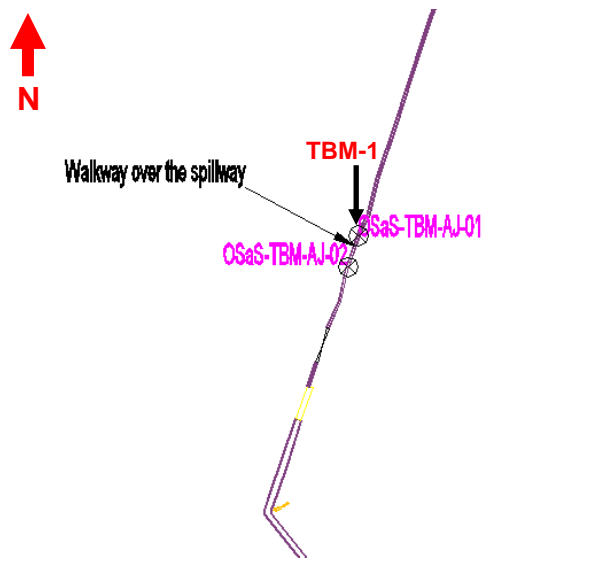



Station Number:	OSaS-TBM-AJ-01	Latitude:	22° 15' 58.221" N
Locality:	Rajkot, Gujarat	Longitude:	70° 50' 04.483" E
Geodetic Datum:	WGS84	Northing:	2463436.002 m N
Projection:	Mercator	Easting:	689034.528 m E
Date:	26 th March 2021	Elevation:	150.918m above MSL
Station Description:	A circle with text OSaS-TBM-AJ-1 is drawn with yellow paint on the walkway over the spillway, on the crest of the Dam.		
Access:	Road to the top of the reservoir. The TBM is situated on the walkway over the spillway, on the crest of the Dam, at the southwest end		
Sketch:	Map:		
			
Photo:	Photo:		
			

Figure 3: Details of OSaS-TBM-AJ-01

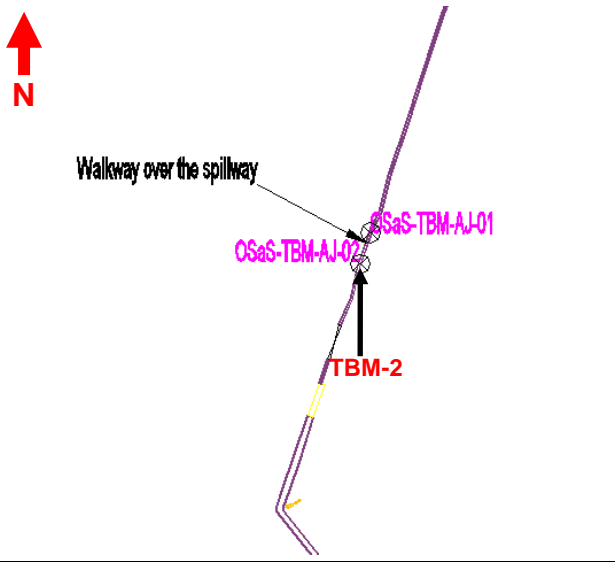


Station Number:	OSaS-TBM-AJ-02	Latitude:	22° 15' 57.760" N
Locality:	Rajkot, Gujarat	Longitude:	70° 50' 04.314" E
Geodetic Datum:	WGS84	Northing:	2463421.762 m N
Projection:	Mercator	Easting:	689029.848 m E
Date:	26 th March 2021	Elevation:	150.930m above MSL
Station Description:	A circle with text OSaS-TBM-AJ-2 is drawn with yellow paint on the walkway over the spillway, on the crest of the Dam.		
Access:	Road to the top of the reservoir. The TBM is situated on the walkway over the spillway, on the crest of the Dam, at the southwest end. TBM02 is situated 15m southwest of TBM01.		
Sketch:	Map:		
			
Photo:	Photo:		
			

Figure 4: Details of OSaS-TBM-AJ-02

Additional temporary control points were established in the field to maintain the moving rover within the range of the base reference point. The following table summarises the details of all the temporary control points (TBMs) established at the site during the survey.

Sr. No.	Station Name	Latitude (N)	Longitude (E)	Easting (m)	Northing (m)	Elevations (m) w.r.t MSL
1	OSaS-TBM-AJ-01	22° 15' 58.221"	70° 50' 04.483"	689034.528	2463436.002	150.918
2	OSaS-TBM-AJ-02	22° 15' 57.760"	70° 50' 04.314"	689029.848	2463421.762	150.930
3	OSaS-TBM-AJ-03	22° 15' 53.403"	70° 51' 50.777"	692079.473	2463325.044	153.940
4	OSaS-TBM-AJ-04	22° 14' 07.475"	70° 52' 30.822"	693266.357	2460080.981	151.620
5	OSaS-TBM-AJ-05	22° 14' 17.605"	70° 51' 53.735"	692200.488	2460379.460	155.368
6	OSaS-TBM-AJ-06	22° 14' 45.168"	70° 51' 38.995"	691767.976	2461222.068	151.359

Table 3: Details of TBMs

3.2.2 Bathymetric survey

The same two reference stations, established as temporary control points/temporary benchmark (TBM) for topographic survey were also used as the base stations for RTK positioning during the bathymetric survey. The rover fixed in the survey boat can receive calculated X Y Z of its position at any point with centimetre level accuracy with respect to the known base positions. The details of these reference stations are given in **Figure 3** and **Figure 4**.

The water level of the reservoir with respect to the known value of F.R.L (147.52m (484.00ft.) above MSL) was measured twice a day during the survey. The mean value of these two readings was taken as the datum for the day's work. The depths recorded by the echo sounder were deducted from these levels to obtain the bed levels with respect to M.S.L. The observed water levels are given in **Table 4**.

Date	Water level				Average level in metres (MSL, m)
	Start		End		
	Time (AM)	Level (MSL, m)	Time (PM)	Level (MSL, m)	
28-03-21	10:00	146.701	4:00	146.692	146.697
29-03-21	10:00	146.676	4:00	146.663	146.670
30-03-21	10:00	146.651	4:00	146.640	146.646
31-03-21	10:00	146.628	2:00	146.621	146.625
01-04-21	10:00	146.597	4:00	146.585	146.591
02-04-21	10:00	146.570	4:00	146.558	146.564
03-04-21	10:00	146.542	4:00	146.536	146.539

Table 4: Observed Water Levels

3.3 Survey Vessel

A company owned boat, SMB Ocean, was utilised for conducting the survey operations.

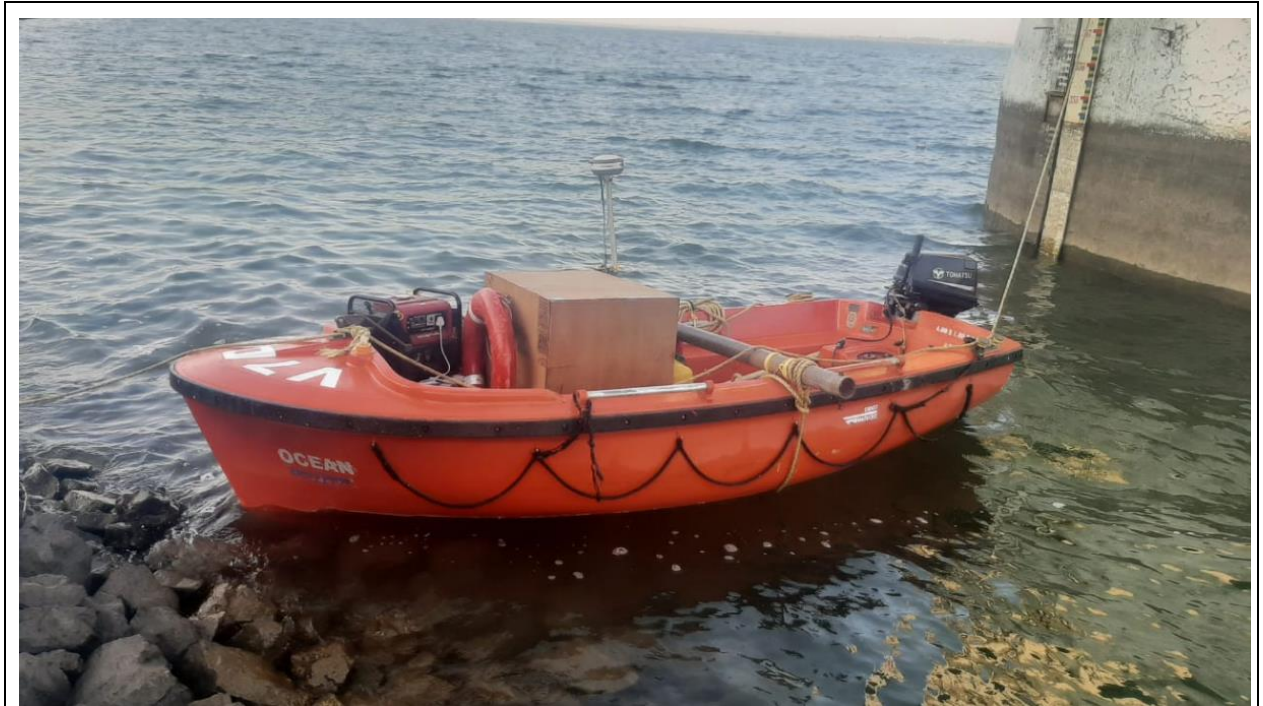


Figure 5: Survey vessel – SMB Ocean

4 PERSONNEL

The following survey personnel were involved during the survey period.

Name	Designation	Duration
Santokh Chand	Project Manager	Project Duration (In Navi-Mumbai office)
Gaurav Sharma	Party Chief / Survey Engineer	26 th March - 07 th April 2021
Amit Bhardwaj	Surveyor	26 th March - 07 th April 2021
Sanjeev Kumar	Survey Engineer	26 th March - 07 th April 2021
Rajesh Meghani	Client Representative	Project duration

Table 5: Survey Personnel

5 SURVEY EQUIPMENT DETAILS

5.1 General

The equipment used for the survey is described below.

Bathymetry:

- Hemisphere GPS S320 GNSS RTK Base and Rover system with accessories
- Odom MK III dual frequency single beam echo sounder system with accessories
- TSS HS50 heave sensor
- Hypack navigation system
- 2 x computers with associated accessories

Topography:

- Hemisphere GPS S320 GNSS RTK Base and Rover system with accessories
- Geomax Auto Level with accessories.

Adequate spares and back-ups for critical items will be carried on board the survey vessel to ensure that failure of any hardware unit does not adversely affect progress of field work.

5.2 RTK Positioning and Navigation

An RTK system was mobilised at the site to carry out the topographic and bathymetric survey. The system comprises the following:

- Hemisphere GPS R320 GNSS base station
- Hemisphere GPS R320 rover

The base station of the RTK was set up at the temporary benchmark. Real Time Kinematic (RTK) is a technique used to increase the accuracy of GPS signals by using a fixed base station which wirelessly sends out corrections to a moving receiver. By utilising these corrections, the GPS engine can fix the position of the antenna to within 1 - 2cm. GPS Real-Time Kinematic (RTK) operation provides centimetre-level accuracy by eliminating errors that are present in the GPS system. For obtaining corrected positions, a rover receiver and a source of corrections from a base station were used.

Vessel positioning was carried out by the RTK DGPS system and its heading determined by the course made good method (CMG). The positioning system was interfaced to the Hypack navigation software. Vessel track and offset positions were recorded digitally in the navigation software. DGPS positioning accuracy of the moving vessel was better than ± 1 m.

The vessel's computed position from the DGPS receiver was interfaced to the navigation computer system. Hypack navigation and data acquisition software was used to provide track guidance information for the survey crew and also output the vessel position to assist the helmsman in maintaining the selected track guidance line. The VDU displays the selected survey line, the vessel position in relation to that line and numerical data to assist the helmsman such as the along-line and off-line distances, vessel speed and course made good, gyro heading, distance and bearing to end of line and water depth. The position of each fix, together with other information such as fix numbers, depths, and down line distances were logged to the hard drive.

Sensor offsets on the survey vessel were accurately measured during mobilisation and are included in the mobilisation report.

5.3 Single Beam Echo Sounder System

Bathymetric data was acquired using a dual frequency 33/200 kHz Echotrac DF 3200 MK III single beam echo sounder. The SBES transducer assembly was side-mounted on a pole on the port side of the boat. A hard copy (paper) record was produced in real-time, annotated with line name, fix number, time and date. The digital output was logged by the navigation computer for post-processing.

Calibration

The echo sounder was calibrated at the survey location by conducting a bar-check. The bar-check is carried out by lowering a horizontal steel plate to known, fixed depths below the water surface directly below the echo sounder transducer. Acoustic reflections from the plate at different depths are then recorded and adjustments made to the settings for sound velocity and draft to get accurate results. A bar-check was carried out before commencing the survey and the average speed of sound obtained was entered into the unit.

5.4 Heave Sensor

An MRU-PD heave sensor was fixed on the deck of the boat about 0.2m ahead of the COG. Its output was given to the SBES unit.

5.5 Auto Level Geomax

Geomax Auto Level was used to establish the local benchmark by transfer and level the TBM with respect to the known level of F.R.L at 147.52m (484.0ft) above M.S.L, as provided by the client.

5.6 Real Time Kinematic (RTK) For Topographic Survey

A Hemisphere R320 GNSS RTK system with base station and rover was used to conduct the survey. Base stations were established with respect to F.R.L at the TBM and rover used to fix the positions. This is a positioning system which can measure and calculate the X Y Z of any given point with centimetre level accuracy with respect to the known base positions. An AutoCAD drawing can be generated with the help of the XYZ values obtained from this equipment.

5.7 HyPack Software

Navigation data was processed using the Hypack navigation software. Single beam data from the Echotrac DF 3200 MK III echo sounder was also processed using the Hypack software. Hypack provides all of the tools necessary to complete the hydrographic survey requirements. It provides a tool to design a survey, collect data, apply corrections to soundings, remove outliers, plot field sheets, export data to CAD, compute volume quantities, generate contours, create side scan mosaics and create/modify electronic charts.

6 DATA PROCESSING AND INTERPRETATION

This section explains the established terminology and standards for the project and how they were applied to the survey data.

6.1 Navigation Data

Raw DGPS and gyro data were processed and merged to form an edited vessel track file. The final navigation data was reviewed in AutoCAD to confirm the validity of the vessel's position and to aid in the correlation between navigation data and chart location.

The survey track plots were then used for data interpretation and generation of the survey charts.

6.2 Bathymetric Data

Single beam data from the Echotrac DF 3200 MK III echo sounder was processed using the Hypack navigation package. The vertical datum for all bathymetric measurements was the known MSL value of F.R.L. The depth soundings obtained from the single beam echo sounder were reduced to MSL with the help of the observed water level in the reservoir.

Recorded depth data was adjusted for transducer draft and changes in water mass acoustic velocity as measured during the bar-check.

Lakebed Gradient Classification

The following terms were used to describe the lakebed gradients.

CLASSIFICATION	GRADIENT (in terms of Degrees and Slope Interval)	
Very Gentle	<1°	< 1 in 57
Gentle	1° – 4.9°	1 in 57 to 1 in 11.7
Moderate	5° – 9.9°	1 in 11.7 to 1 in 5.7
Steep	10° – 14.9°	1 in 5.7 to 1 in 3.7
Very Steep	>15°	> 1 in 3.7

Table 6: Classification of gradients

Gradients documented in the report should be taken as an indication of general slopes for the area. The localised gradients, particularly near features such as depressions or trenches may occasionally be steeper.

Following the data processing and interpretation phase, the charts were prepared at the OSaS data processing centre, in Navi Mumbai. A team comprising a bathymetry data processor, CAD processor and geophysicist prepared the report and accompanying charts to WRD's specifications.

6.3 Topographic Data

A Hemisphere R320 GNSS RTK system with base station and rover was used to conduct the survey. This is a positioning system which can measure and calculate the X Y Z of any given point with centimetre level accuracy with respect to the known base positions. The data is downloaded from the controller system, processed in the OSaS Data Processing Centre in Navi Mumbai and formatted to a compatible ASCII format for plotting in AutoCAD.

6.4 Charting

The results of this survey conducted during March and April 2021 are presented in nine charts, plotted in 1:5000 scale in a 25m x 25m grid. They consist of the following:

- One overview chart displaying a 2-dimensional image of bathymetry and topography
- One contour map displaying elevation contours at 1m intervals
- Two charts showing topography and bathymetry of the surveyed area
- One longitudinal profile along the lowest elevation line within the surveyed area
- Four charts showing cross section profiles at 100m interval within the surveyed area.

Their details are listed after the List of Annexures at the beginning of this report.

7 SURVEY RESULTS

7.1 Overview and Contour Charts

One chart each has been prepared for an overview of the surveyed area as well as elevation contours at 1m intervals, as described in Section 6.4 **Charting**. These charts also show the boundary between the bathymetric and topographic surveys.

7.2 Bathymetry and Topography

The elevations mentioned in this report and associated charts have been reduced to Mean Sea Level (M.S.L) using the observed average water level of the Aji-1 reservoir for the corresponding survey day. Thus all the bathymetric and topographic values mentioned in this report are with respect to M.S.L

The M.S.L reduced bathymetric and topographic data are plotted in a 1:5000 scale in a 25m X 25m grid. A total of two charts were created for the purpose of plotting bathymetric and topographic data. For more details refer to **Charting**

The RTK positioning accuracy is metric, resulting in a similar positioning accuracy of single beam echo sounder data since the sensor was side-mounted on the vessel.

The following observations are obtained after the processing and interpretation of the bathymetric and topographic data acquired during the survey.

Aji-1 reservoir is constructed across Aji river, which is the primary source of water in the reservoir. In addition, a number of medium and small sized rivers bring water to the dam area. Most of these rivers flow from south to north whereas Aji river flows generally from southeast to northwest.

A minimum elevation of 137.4m was observed in the northwestern portion of the survey area within the bathymetric section. A maximum topographic elevation value of 165.29m is observed in the west-northwestern portion of the survey area.

Within the survey area, the Aji river channel generally heads from southeast to northwest. In the northwestern portion of the survey area, the river channel alters to the west and is obstructed by the dam walls. In the central and western portions of the survey area, the reservoir occupies a large area of the reservoir bed to store its water. The average elevation change within the bathymetric area is between 137.4m and 146.8m.

The processed topographic data shows the land is sloping from all the sides of the survey area towards the river channel and dam area. The average elevation change within the topographic area is between 140.47m and 165.29m. An elevated area, associated with rocky areas, is observed in the extreme west-northwestern portion of the survey area. Features like temples, wells, waterlogged areas, rocky areas, forest and houses were observed within the topographic survey area. An under-construction bridge and part of the road connecting the area to the Bhavnagar-Rajkot highway, was mapped across the survey area in the southeastern portion.

Most of the outer survey area is observed above the 149m elevation contour. Some places of the survey areas exhibit maximum elevation contours of 152m and 165m. Further downslope towards the bathymetric area, the river and reservoir bank exhibit an irregular topography with steep slopes from 165m to 149m and moderate to steep slopes between 149 and 146m contours.

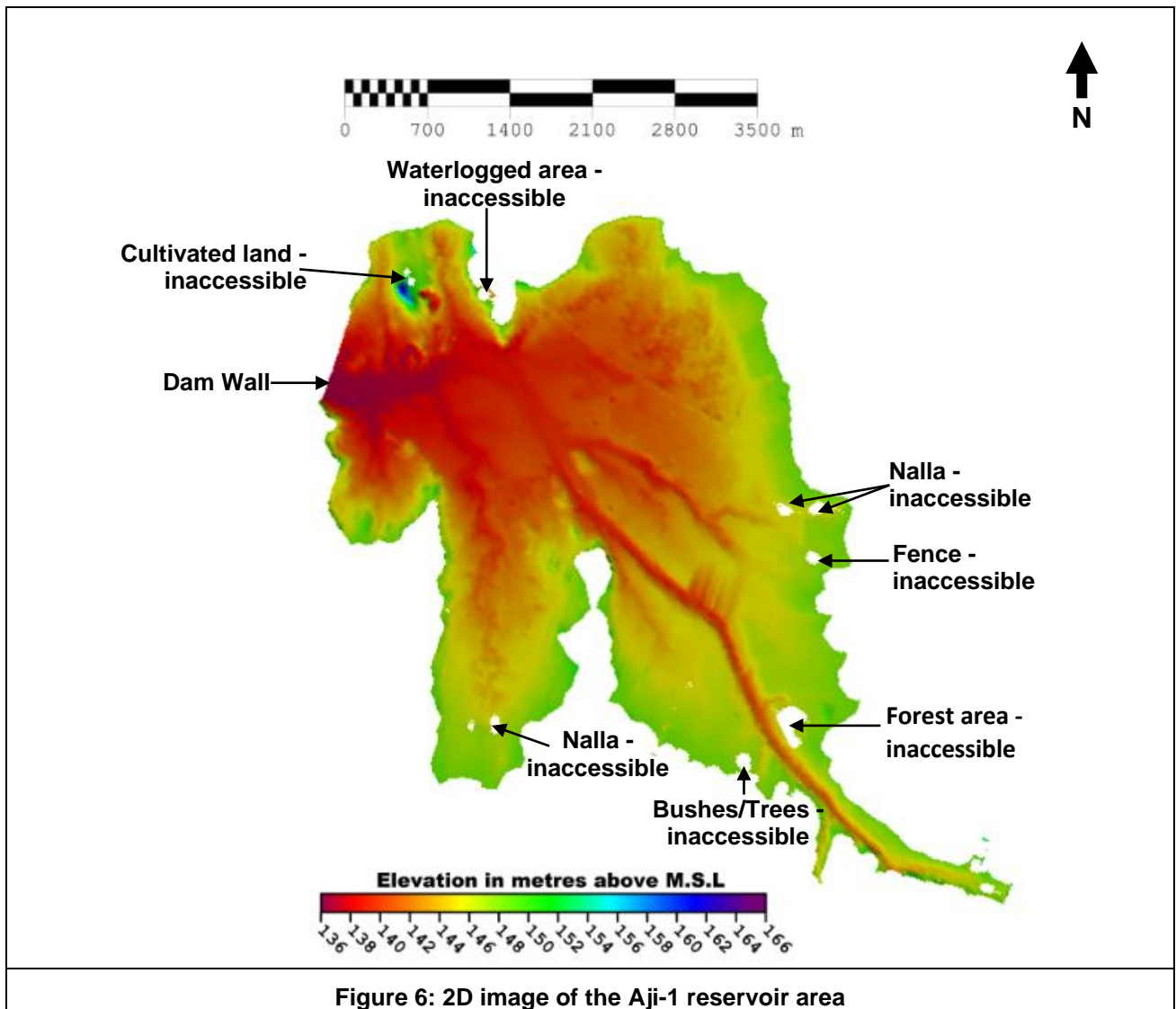
A major part of the water storage area within the reservoir is below 146m elevation contour in the central and western portion of the survey area. Within this area the reservoir bed is slightly irregular with change in elevation contour between 146m and 138m. In the northern portion, rocky areas, cultivated land and waterlogged areas makes the topography more irregular with a change in elevation contour between 145m and 165m. A maximum contour of 165m is observed in the west-northwestern portion of the survey area, associated with rocky areas.

In the southeastern portion of the survey area is observed a change in elevation contours between 143m

to 152m, associated with the river channel. Further northwestwards, the river channel exhibits a minimum elevation contour of 141m in the central portion. Then the river deepens further towards the west till the dam gates, significantly marking the maximum river bed depth within the survey area about an elevation contour of 138m in the extreme northwestern portion.

Bathymetric and topographic survey was restricted at some places due to the presence of bushes and trees, waterlogged areas, small streams with unsafe and inaccessible marshy ground, exposed rocks and forest area with thick vegetation.

The following **Figure 6** shows a 2-dimensional image of the Aji-1 reservoir area using the gridded bathymetric and topographic data.



7.3 Longitudinal Profile

A longitudinal profile of the reservoir was prepared from the line created by connecting the lowest bed level for each survey line. For more details refer to the charts listed in the section on **Charting**.

7.4 Cross Section Profiles

Cross section profiles consist of the bed levels along the survey lines at 100m intervals. The cross-section profiles will also be provided in a Compact Disk/USB as per the instructions mentioned for deliverables. For more details refer to the charts listed in the section on **Charting**.

8 CAPACITY SURVEY RESULTS

8.1 General

It is natural for lakes and reservoirs to trap a major part of the sediment brought into them by the streams in the catchment. Sedimentation of reservoirs is therefore a natural process resulting from the geologic and geo-morphologic processes of water borne erosion.

Sedimentation of reservoirs leads to a gradual loss of their storage capacities available for regulation of supplies. Apart from this, it can cause operational problems created by the entry of large volumes of sediments in the canals or in the turbines, as also due to jamming of hydraulic gates. Reservoir sedimentation can also cause ecological problems due to turbidity, and due to gradual delta formation at the upstream end of the reservoirs. Therefore, sedimentation of reservoirs is a matter of vital concern in all water resources development projects.

The two dominant factors which influence the rate of silting in any storage reservoir are: (i) the relationship of capacity to inflow and (ii) the content of sediment in the inflow. The other factors that modify the long-term loss of storage capacities are (a) the trap efficiency of the reservoir, (b) the character of the sediment, and (c) the method of reservoir operation. Basically, these three factors mentioned are modifiers and do not usually have a major effect as compared to the capacity-inflow ratio and the sediment content in the inflow.

It is generally recommended to carry out capacity survey of reservoirs periodically so that the quantity of sedimentation taking place can be assessed and timely remedial measures taken. This also serves as a guide for proper sedimentation planning of future reservoirs to ensure that the reservoir sedimentation does not cause unexpected problems in the useful operation of the reservoir.

The capacity surveys in general, show that the observed rate of sedimentation is higher than the rate of sedimentation adopted in the original designs. However, it is observed that the rate of sedimentation decreases with the passage of time and the useful life of the reservoir may not get unduly reduced in most cases.

8.2 Effect of Sedimentation in Planning of Reservoirs

It is important to note that storage reservoirs built across rivers and streams lose their capacity on account of deposition of sediment. This deposition, which takes place progressively in time, reduces the active capacity of the reservoir to provide the outputs of water through the passage of time. Accumulation of sediment at or near the dam may interfere with the future functioning of water intakes and hence affects decisions regarding location and height of various outlets. It may also result in greater flow of water into canals / water conveyance systems drawing water from the reservoir. Problems of rise in flood levels in the head reaches and unsightly deposition of sediment from a recreation point of view may also crop up in the course of time.

In this regard, the Bureau of Indian Standards code IS: 12182 - 1987 "Guidelines for determination of effects of sedimentation in planning and performance of reservoir" is an important document which discusses some of the aspects of sedimentation that have to be considered while planning reservoirs. Some of the important points from the code are as follows:

While planning a reservoir, the degree of seriousness and the effect of sedimentation at the proposed location have to be judged from studies, which normally consist of a combination of:

1. Performance Assessment (Simulation) Studies with varying rate of sedimentation.
2. Likely effects of sedimentation at the dam face.

In special cases, where the effects of sedimentation on backwater levels are likely to be significant, backwater studies would be useful to understand the size of river water levels. The steps to be followed

for performance assessment studies with varying rates of sedimentation are as follows:

- a. Estimation of annual sediment yields into the reservoir or the average annual sediment yield and of trap efficiency expected.
- b. Distribution of sediment within the reservoir to obtain a sediment elevation and capacity curve at any appropriate time.

8.3 Earlier Capacity Survey

8.3.1 Capacity survey of 2000

A capacity table was provided by the client, which was prepared after the silt survey conducted in the year 2000. Information at the time of impounding the reservoir is not available from any of the source. The salient features of Aji-1 reservoir based on the capacity table prepared in 2000 are given below.

a. Location	
Latitude	: 22 ⁰ – 15.74' N
Longitude	: 70 ⁰ – 50.97' E
b. Catchment Area	: 142.45 km ²
c. Full Reservoir Level (F.R.L)	: 147.52 m
d. High Flood Level (H.F.L)	: 149.35 m
e. Dead Water Level (D.W.L/O.S.L)	: 138.69 m
f. Gross Storage	: 26.430 M.Cu.m
g. Dead Storage	: 0.438 M.Cu.m
h. Live Storage	: 25.991 M.Cu.m
i. Area at F.R.L	: 6.589 Sq.Km

The old report that was provided had capacity data at intervals of 0.01m and the documented F.R.L at 147.52m. For the ease of further calculations and preparation of Elevation-Area-capacity curve, the data has been extracted at regular intervals of approximately 0.5m. **Table 7** shows the Elevation-Area-capacity of 2005 data at these intervals. The complete details of the old survey are given in **Annexure 3**.

8.3.2 Capacity survey of 2021

The water spread area and its corresponding capacity has been calculated from the acquired bathymetry and topographic data. Hypack software's TIN (Triangulated Irregular Network) MODEL package was used to calculate the Area and Capacity of the Aji-1 reservoir at intervals of 0.01m with respect to the corresponding elevation above MSL. Within the survey area a few places were not accessible to the survey personnel due to the existing marshy streams, waterlogged areas, houses and rocky areas and forests with thick vegetation. However, these areas with elevations below F.R.L were taken into account while calculating the water spread area by assigning interpolated values with respect to the acquired values around the restricted areas. The detailed Elevation-Area-Capacity data at 0.01m is available in **Annexure 1**. The F.R.L is considered at 147.52m according to the information from the silt survey in the year 2000. For ease of further calculations and preparation of Elevation-Area-capacity curve, the data has been selected at regular intervals of approximately 0.5m. **Table 7** shows the Elevation-Area-capacity at these intervals.

8.4 Elevation-Area-Capacity Curves

One of the most important physical characteristics of dams and their reservoirs are Elevation-Area-Capacity curves. These curves are important for defining the storage capacity of the reservoir and thereby can be used in reservoir operation, reservoir flood routing, determination of capacity and water spread corresponding to each elevation. Area-capacity data is available at intervals of 0.01m from the capacity survey conducted in 2000. The current survey was conducted in 2021 and the data was provided at intervals of 0.01m. For ease of further calculations and preparation of Elevation-Area-capacity curve, the data has been selected at regular intervals of approximately 0.5m. The following **Table 7** shows the comparative statement of data between 2000 and 2021 at intervals of approximately 0.5m.

Elevation (Above MSL, m)	As per 2000 survey		As per 2021 survey		Remarks
	Gross Capacity (M.Cu.m)	Area (M.Sq.m or Sq.Km)	Gross Capacity (M.Cu.m)	Area (M.Sq.m or Sq.Km)	
137.69	0.162	0.234	0.000	0.004	D.S.L
138.00	0.228	0.288	0.006	0.050	
138.50	0.376	0.378	0.067	0.192	
138.69 (D.S.L)	0.438	0.410	0.107	0.226	
139.00	0.579	0.554	0.186	0.295	
139.50	0.921	0.742	0.371	0.453	
140.00	1.329	0.934	0.654	0.686	
140.50	1.853	1.122	1.060	0.955	
141.00	2.466	1.353	1.641	1.366	
141.50	3.221	1.723	2.417	1.739	
142.00	4.142	1.909	3.382	2.139	
142.50	5.163	2.212	4.575	2.627	
143.00	6.321	2.529	5.994	3.036	
143.50	7.535	2.906	7.607	3.416	
144.00	9.248	3.185	9.411	3.800	
144.50	10.807	3.737	11.414	4.211	
145.00	12.898	4.214	13.624	4.631	
145.50	15.099	4.697	16.050	5.075	
146.00	17.622	5.221	18.704	5.557	
146.50	20.288	5.770	21.642	6.327	
147.00	23.319	6.172	24.982	6.940	
147.50	26.313	6.578	28.562	7.368	
147.52 (F.R.L)	26.430	6.589	28.709	7.386	F.R.L

Table 7: Comparative statement of Aji-1 reservoir

The above data were used for the preparation of Elevation-Area-Capacity curves. The following figure shows the Elevation-Area-Capacity curves of 2021 superimposed on the 2000 Elevation-Area-Capacity curve.

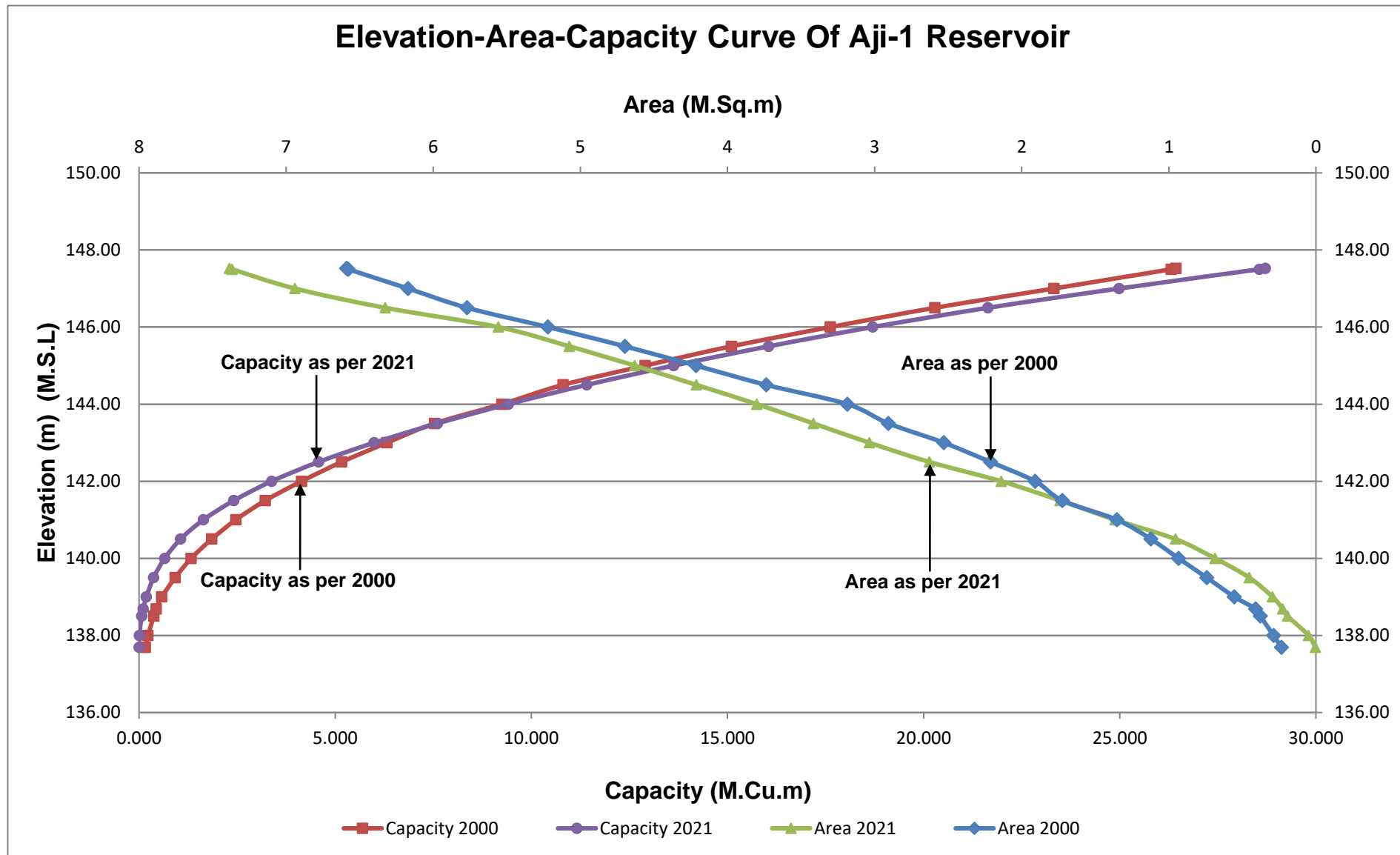


Figure 7: Elevation-Area-Capacity Curves

8.5 Data comparison between 2000 and 2021

Definitions

Full Reservoir Level: Denoted by F.R.L this level corresponds to the storage which includes both inactive and active storage and also the flood storage, it is the highest reservoir level that can be maintained without spillway discharge.

Minimum Drawdown Level (M.D.D.L): This is the level below which the water from the reservoir will not be drawn down to maintain a minimum head required in power projects.

Maximum Water Level (MWL): This is the water level that is likely to be attained during the passage of the design flood. This level is also called the highest reservoir level or the highest flood level.

Live storage: This is the volume of water actually available at any time between the Dead Storage Level and the Full Reservoir Level.

Outlet Sill Level (O.S.L) / Dead Storage Level (D.S.L): This is the level below which there are no outlets to drain the water in the reservoir by gravity.

Dead storage: This is the total storage below the invert level of the lowest discharge outlet from the reservoir. It may be available to contain sedimentation, provided the sediment does not adversely affect the lowest discharge.

8.5.1 Rate of Erosion

Capacity at F.R.L (147.52m) as per as per the 2000 survey	= 26.430 M.Cu.m
Capacity at F.R.L (147.52m) as per 2021 survey	= 28.709 M.Cu.m
Erosion in 21 years (2000-2021)	= 28.709 – 26.430 = 2.279 M.Cu.m
Annual Erosion	= 2.279/21= 0.109 M.Cu.m/yr
Rate of Erosion	= (0.109/142.45) x 1000 = 0.76 Th.Cu.m/sq.km/year = 7.6 Ha.m/100sq.km./year

8.5.2 Increase of gross storage capacity at F.R.L

Capacity at F.R.L (147.52m) as per as per the 2000 survey	= 26.430 M.Cu.m
Capacity at F.R.L (147.52m) as per 2021 survey	= 28.709 M.Cu.m
Increase of storage capacity in 21 years (2000-2021)	= 28.709 – 26.430 = 2.279 M.Cu.m
Percentage increase of Gross storage capacity up to F.R.L in 21 years	= (2.279/26.430) x 100 = 8.62%
Annual percentage increase	= 8.62/21 = 0.41%

8.5.3 Loss of dead storage capacity

Capacity at D.S.L (138.69m) as per as per the 2000 survey	= 0.438 M.Cu.m
Capacity at D.S.L (138.69m) as per 2021 survey	= 0.107 M.Cu.m
Loss of storage capacity in 21 years (2000-2021)	= 0.438 – 0.107 = 0.331 M.Cu.m
Percentage loss of Dead storage capacity up to O.S.L in 21 years	= (0.331/0.438) x 100

	= 75.57%
Annual percentage loss	= 75.57/21
	= 3.60%
8.5.4 Loss of live storage capacity	
Live storage capacity as per as per the 2000 survey	= 26.430 – 0.438
	= 25.992 M.Cu.m
Live storage capacity as per 2021 survey	= 28.709 – 0.107
	= 28.602 M.Cu.m
Increase of Live storage capacity in 21 years (2000-2021)	= 28.602 – 25.992
	= 2.610 M.Cu.m
Percentage increase of live storage capacity in 21 years	= (2.610/25.992) x 100
	= 10.04%
Annual percentage increase	= 10.04/21
	= 0.48%

8.6 Summary Of Capacity Surveys (2000 and 2021)

Reservoir Data as per 2000 Silt Survey:

Year of impounding	: 1954
Year of Silt Survey	: 2000
Catchment Area	: 142.45 Sq.Km
Spread area at F.R.L (147.52m)	: 6.589 Sq.Km
Gross storage at F.R.L (147.52m)	: 26.430 M.Cu.m
Dead storage at D.S.L (138.69m)	: 0.438 M.Cu.m
Live storage at F.R.L (147.52m)	: 25.991 M.Cu.m

Rate of siltation/erosion (at F.R.L 147.52m) with respect to the silt survey data in the year 2000													
Sr. No	Year of Survey	Capacity in M.Cu.m			Erosion in M.Cu.M	Period in years	Erosion Rate in M.Cu.m/Year	Increase/Loss in Capacity in M.Cu.m and percentage			Erosion index ham/100 Sq.Km/Yr	Annual % increase of capacity	Remarks
		Dead	Live	Gross				Dead	Live	Gross			
1	2000	0.438	25.992	26.430	-	-	-	-	-	-	-	-	-
2	2021	0.107	28.602	28.709	2.279	21	0.109	0.331* 75.57%**	2.610 10.04%	2.279 8.62%	7.6	0.41	-

Table 8: Rate of Erosion at F.R.L (147.52m)

According to IS-12182 (1987)

Annual % loss - Class of Reservoir

Up to 0.1	-	Insignificant
0.1 to 0.5	-	Significant
Above 0.5	-	Serious

Rate of Erosion	-	Increase in Gross Capacity/No of Years
Erosion Index	-	(Erosion rate/Catchment area) x 10000
Annual % Increase	-	Increase in % of Gross Capacity/No. of years

Note:

- Values highlighted with single asterisks (*) represents the volume of sediment deposited.
- Values highlighted with double asterisks (**) represents the percentage (%) loss of storage capacity.

8.7 Loss Of Storage Due to Sediment Deposit

Reservoirs, created by dams on rivers, lose their storage capacity due to sedimentation. A large proportion of the transported silt eventually gets deposited at different levels of a reservoir and causes reduction not only in dead storage but also in live storage capacities. The consequence of loss in storage due to sediment accumulation may even cause operational problems. Periodic capacity survey of a reservoir is thus essential to ascertain the rate of sedimentation and reduction in storage capacity for efficient and productive management of water resources. Reservoir siltation affects the safety of an old reservoir since the sediment in the reservoirs increases the load on the wall of the dam.

For ease of reporting, the previous capacity data in 2000 survey and current capacity data in 2021 survey were selected at regular intervals.

For Aji-1 reservoir, the detailed comparison of current capacity data at different levels to the previous capacity data of 2000 survey shows decrease in capacity due to sediment deposit at the dead storage area and part of live storage area up to 143.0m. The increase of sediment deposit and the corresponding reduction in capacity could be due to the erosion in the higher levels of the reservoir or the abundant sediment inflow into the reservoir due to floods. The capacity at D.S.L reduced from 0.438 M.Cu.m to 0.107 M.Cu.m between the years 2000 and 2021 with a loss in capacity of about 75.57 percent. The amount of sediment deposited during this period at D.S.L is 0.331 M.Cu.m. The average cumulative sediment deposited between the elevations 137.69m (Reservoir bed) and 143.0m is 6.74 M.Cu.m.

Above 143.0m, the comparison shows increase in capacity at different levels of live storage area up to F.R.L. The increase in capacity could be due to erosion of the reservoir bank at these levels or conversion of more irregular water spread areas around the F.R.L into levelled cultivation fields. Another possibility is that the conversion the higher elevations in to lower elevations below F.R.L due to the operations of rock quarries. The capacity at F.R.L increased from 26.430 M.Cu.m to 28.709 M.Cu.m between the years 2000 and 2021 with an increase in capacity of about 8.62 percent. The amount of sediment eroded during this period at F.R.L is 2.279 M.Cu.m. The average cumulative sediment erosion between the elevations 143.0m and 147.52m (F.R.L) is 11.15 M.Cu.m.

The loss or increase in capacity within the reservoir is directly proportional to the amount of sediment deposited or eroded within the reservoir. This sediment deposition or removal can occur at any level of the reservoir throughout the live and dead storage area. For Aji-1, the comparison reveals that the sediment gets deposited below 143.0m and above this level the sediment gets eroded. This deposition or erosion of the sediment within the reservoir results in a corresponding loss or increase of capacity.

The following **Table 9** shows the amount of deposition and erosion of sediment at different levels from the reservoir bed to F.R.L and corresponding percentage loss and increase in capacity at different levels.

Elevation (Above MSL, m)	Capacity 2000 (M.Cu.m)	Area 2021 (M.Sq.m or Sq.km)	Capacity 2021 (M.Cu.m)	Erosion / Deposition of Sediment (M.Cu.m)	% Increase / Loss of Capacity
137.69 (Reservoir bed)	0.162	0.004	0.000	0.162	100.00
138.00	0.228	0.050	0.006	0.222	97.37
138.50	0.376	0.192	0.067	0.309	82.18
138.69 (D.SL)	0.438	0.226	0.107	0.331	75.57
139.00	0.579	0.295	0.186	0.393	67.88
139.50	0.921	0.453	0.371	0.550	59.72

Elevation (Above MSL, m)	Capacity 2000 (M.Cu.m)	Area 2021 (M.Sq.m or Sq.km)	Capacity 2021 (M.Cu.m)	Erosion / Deposition of Sediment (M.Cu.m)	% Increase / Loss of Capacity
140.00	1.329	0.686	0.654	0.675	50.79
140.50	1.853	0.955	1.06	0.793	42.80
141.00	2.466	1.366	1.641	0.825	33.45
141.50	3.221	1.739	2.417	0.804	24.96
142.00	4.142	2.139	3.382	0.760	18.35
142.50	5.163	2.627	4.575	0.588	11.39
143.00	6.321	3.036	5.994	0.327	5.17
143.50	7.535	3.416	7.607	0.072*	0.96**
144.00	9.248	3.800	9.411	0.163*	1.76**
144.50	10.807	4.211	11.414	0.607*	5.62**
145.00	12.898	4.631	13.624	0.726*	5.63**
145.50	15.099	5.075	16.05	0.951*	6.30**
146.00	17.622	5.557	18.704	1.082*	6.14**
146.50	20.288	6.327	21.642	1.354*	6.67**
147.00	23.319	6.940	24.982	1.663*	7.13**
147.50	26.313	7.368	28.562	2.249*	8.55**
147.52 (F.R.L)	26.430	7.386	28.709	2.279*	8.62**

Table 9: Loss/increase of storage capacity between 2000 and 2021

Note:

- Values highlighted with single asterisks (*) represents the volume of sediment eroded.
- Values highlighted with double asterisks (**) represents the percentage (%) increase of storage capacity.

The amount of silt present in any reservoir is attributed to the geological nature of the area surrounding the reservoir. If the area is rich in silt, definitely any reservoir located within the area will have a greater proportion of silt in any sediment transported into it. Since sedimentation due to upstream erosion is a serious problem in different parts of the world today resulting in several reservoirs becoming completely silted over, designers should aim at the following mitigation measures of soil erosion and sediment transport processes:

- Prevention of further land degradation in any catchment to reduce siltation
- Prevention of soil erosion from catchment to reduce siltation of reservoir
- Ensuring adequate irrigation water to the demand area
- Improving land capability moisture regime in the watershed
- Improving land use to match capability
- Maintaining ecological balance in a catchment area
- Educating people in the management of a catchment

8.8 Control Of Sedimentation in Reservoirs

Sedimentation in a reservoir is a natural process which affects the capacity of the reservoir. Excess deposition of sediment directly affects the useful capacity of the reservoir based on the project requirements like irrigation, hydroelectric power, flood control etc. The rate of deposition of sediment largely depends on the annual sediment load carried by the streams and up to what extent the sediment is retained in the reservoir. This, in turn, depends upon a number of factors such as the area and nature of the catchment, level use pattern (cultivation practices, grazing, logging, construction activities and conservation practices), rainfall pattern, storage capacity, period of storage in relation to the sediment load of the stream, particle size distribution in the suspended sediment, channel hydraulics, location and sizes of sluices, outlet works, configuration of the reservoir, and the method and purpose of releases through the dam. An appropriate approach to these factors mentioned above is essential for efficient control of sedimentation and therefore to extend the life of the reservoir.

There are numerous techniques developed to control the sedimentation in reservoirs, broadly classified as

- I. Suitable design of reservoir
- II. Restrict the sediment inflow
- III. Limit the sediment deposition
- IV. Regular removal of deposited sediment

8.8.1 *Suitable design of reservoir*

The volume of discharge directly affects the rate of sedimentation. The rate of sedimentation increases with the volume of discharge. The higher deposition of sediment within a reservoir increases the surface area of the water, thereby resulting in greater loss of water by evaporation. This will ultimately result in decrease of storage capacity which in turn lowers the trap efficiency of the reservoir.

The capacity of the reservoir and the size and characteristics of the reservoir and its drainage area are the most important factors governing the annual rate of accumulation of sediment. Periodic reservoir sediment surveys provide information about the rate of sediment deposited, and hence can enable us to make necessary steps to limit the same. The sedimentation may take place not only in the dead storage area of a reservoir; reservoir studies have revealed significant deposition of sediment in the live storage area of a reservoir as well.

The capacity of reservoirs largely depends on various factors. Hence the following points need to be considered for their optimum design.

- Topographical, geological and geomorphological factors which directly affect the sediment yield
- Sediment delivery characteristics of the channel system
- The efficiency of the reservoir as a sediment trap
- The ratio of capacity of the reservoir to the inflow
- Configuration of the reservoir
- Method of operation of the reservoir
- Provisions for silt exclusion

8.8.2 *Restrict the sediment inflow*

The sediment inflow to the reservoirs can be controlled by proper watershed management and soil conservation measures to check production and transport of sediment to the catchment area. Also adopt adequate preventive measures to check the inflow of sediment into the reservoir. Soil conservation involves the prevention of loss of the topmost layer of the soil from erosion or prevention of reduced fertility caused by over usage, acidification, salinization or other chemical soil contamination. The soil conservation measures are further sub-divided as

- Engineering
- Agronomy
- Forestry

Engineering methods

Check dams

One of the methods of soil conservation is the use of check dams. A check dam is a small dam which can be either temporary or permanent, built across a minor channel, swale, or drainage ditch. They are used to slow the velocity of concentrated water flows, a practice that helps reduce erosion.

Contour trenching and bunding

In the contour trenching method, the surrounding area of the reservoir is ploughed, like contour lines. These contour lines create a water break which reduces the formation of rills and gullies during times of heavy precipitation, allowing more time for the water to settle into the soil. Also, trenches can be artificially dug along the contour lines. Water flowing down the hill is retained by the trenches, and infiltrates the soil below. Manually dug trenches are smaller, machine dug trenches can be deeper. The dimensions and the format of the trenches should correspond to the local climate and soil conditions.

A similar practice is contour bunding where stones are placed around the contours of slopes. Contour bunding or contour bundling, and contour farming involves the placement of lines of stones along the natural rises of a landscape. These techniques help to capture and hold rainfall before it can become runoff. Contour bunds also help to control soil erosion.

Gully Plugging

A gully plug is a small, temporary or permanent dam constructed across a drainage ditch, swale, or channel to lower the speed of concentrated flows. These dams can be constructed using locally available materials. These small dams reduce the speed of water flow and minimise the erosive power of runoff. They also promote the deposition of eroded materials to further stabilise the gullies.

Agronomy methods

Agronomic conservation measures function by reducing the impact of raindrops through interception and thus reducing soil erosion and increasing infiltration rates, and also reducing surface runoff and soil erosion. The major agronomic soil and water conservation practices are strip cropping, mixed cropping, intercropping, fallowing, mulching, contour ploughing, crop rotation, conservation tillage, and agroforestry.

Forestry methods

Forestry measures include forest conservancy, control on grazing, lumbering operations and forest fires along with management and protection of forest plantations.

8.8.3 *Limit sediment deposition*

The amount of suspended sediment is comparatively large during and just after flood flow. The settlement of sediment in the reservoir can be controlled by adequate operation of outlets in such a manner as to permit selective withdrawals of water having a higher-than-average sediment content. Thus, more water wasted at peak time of inflow will result a low level of sediment to deposit in the reservoir. There are two methods:

Density Current

Water at various levels of a reservoir often contains radically different concentrations of suspended sediment, particularly during and after flood flows and if all waste-water could be withdrawn at those levels where the concentration is highest, a significant amount of sediment might be removed from the reservoir. The density differences between the sediment-laden inflow and the clear water in the reservoir leads to a turbidity current which plunges beneath the clear water and moves towards the dam as a

submerged current. The proper allocation of gates or sluices can remove a significant amount of sediment-saturated water and therefore can reduce the amount of sedimentation.

Waste-Water Release

This method is applicable only when a reservoir is of such a size that a small part of large flood flows will fill it. A series of outlets at various elevations can eject sediment-saturated water. This method, which can remove considerable amount of sediment from the reservoir through proper gate control, will differ greatly with different locations. The drawback of this method is that waste-water release is only possible when water can be or should be wasted.

8.8.4 Regular removal of deposited sediment

Removal of accumulated sediment is considered as the last resort as the operations are very expensive unless the excavated sediment is economically usable. The removal of sediment deposits may be accomplished by a variety of mechanical and hydraulic methods, such as excavation, dredging, draining and flushing, sluicing aided by such measures as hydraulic or mechanical agitation or blasting of the sediment.

Excavation

Excavation is the removal of the sediment by hand or power operated shovel, dragline scraper or other mechanical means after draining most of the water. The excavation of silt and clay which constitute most of the material in larger reservoirs is more difficult than the excavation of sand and gravel. Fine-textured sediment cannot be excavated easily from larger reservoirs unless it is relatively fluid or relatively compact.

Dredging

In this method, the deposit is removed from the bottom of the reservoir irrespective of the level of storage using mechanical or hydraulic equipment. The various types of dredging are mechanical dredging by bucket, suction dredging with floating pipeline and a pump on a barge and siphon dredging with a floating pipe extending over the dam or connected to an opening in the dam and with a pump on a barge.

Draining and flushing

This method, also called flood sluicing, involves a relatively slow release of all stored water in a reservoir through gates or valves located near the bottom of the dam and the maintenance thereafter of open outlets for a shorter or longer period during which normal stream flow cuts into or is directed against the sediment deposits.

Sluicing with Controlled Water

In this method the controlled water supply permits choosing the time of sluicing more advantageously and the water may be directed more effectively against the sediment deposits. While the flood sluicing depends either on the occurrence of flood or on being able to release rapidly all of a full or nearly full supply of water in the main reservoir. The advantage of this method is that generally more sediment can be removed per unit of water used than in flood scouring or draining and flushing.

Sluicing with Hydraulics and Mechanical Agitation

In this method, stirring up, breaking up or moving deposits of a sediment into a stream current moving through a drained reservoir basin or into a full reservoir will tend to make the removal of sediment from the reservoir more complete. Wherever draining, flushing or sluicing appear to be warranted, the additional use of hydraulic means for stirring up the sediment deposits, or sloughing them off, into a stream flowing through the reservoir basin should be considered.

9 CONCLUSIONS

- The construction work of Aji-1 dam commenced in 1952 and was completed in 1954. Full Reservoir Level (F.R.L) of the Aji-1 reservoir is 147.52m above M.S.L over a catchment area of 142.45 km². The gross storage (at F.R.L:147.52m) and dead storage (at D.S.L:138.69m) as per 2000 survey are 26.430 M.Cu.m and 0.438 M.Cu.m respectively.
- Bathymetric and topographic survey was restricted at some places due to the presence of bushes and trees, waterlogged areas, small streams with unsafe and inaccessible marshy ground, exposed rocks and forest area with thick vegetation.
- In the current bathymetric and topographic survey, a minimum elevation of 137.4m was observed in the northwestern portion of the survey area within the bathymetric section. A maximum topographic elevation value of 165.29m is observed in the west-northwestern portion of the survey area.
- Most of the outer survey area is observed above the 149m elevation contour. A major part of the reservoir water storage area exists below 146m elevation contour. The reservoir bed in the central and western portions of the survey areas exhibits slightly irregular morphology between 146m and 138m elevation contours. The northern portion exhibits irregular topography due to rocky areas, with a maximum elevation contour of 165m.
- In the southeastern portion of the survey area, the river channel shows a minimum elevation between 146m and 143m. The central portion exhibits a minimum elevation contour of 141m. Beyond this the river channel further deepens towards west about a minimum elevation contour of 138m near the dam gate.
- Results of a capacity survey conducted in 2000 was provided for comparison with the current survey.
- The gross storage (at F.R.L:147.52m) and dead storage (at D.S.L:138.69m) as per 2021 survey are 28.709 M.Cu.m and 0.107 M.Cu.m respectively.
- The comparison between 2000 and 2021 (21 years) data results shows a rate of erosion of 7.6 Ha.m/100sq.km./year. Annual percentage increase of gross storage capacity and live storage capacity are 0.41% and 0.48% respectively. Annual percentage loss of dead storage capacity is 3.60%.
- The comparison of current and previous capacity data of 2000 survey shows a decrease in capacity due to sediment deposit at the dead storage area and part of live storage area up to 143.0m, possibly due to erosion in the higher levels of the reservoir or the abundant sediment inflow into the reservoir due to floods.
- Above 143.0m, the comparison shows increase in capacity at different levels of live storage area up to F.R.L. The increase in capacity could be due to erosion of the reservoir bank at these levels or conversion of more irregular water spread areas around the F.R.L into levelled lands.
- The capacity at D.S.L reduced from 0.438 M.Cu.m to 0.107 M.Cu.m between the years 2000 and 2021 with a loss in capacity of about 75.57 percent. The amount of sediment deposited during this period at D.S.L is 0.331 M.Cu.m.
- The capacity at F.R.L increased from 26.430 M.Cu.m to 28.709 M.Cu.m between the years 2000 and 2021 with an increase in capacity of about 8.62 percent. The amount of sediment eroded during this period at F.R.L is 2.279 M.Cu.m.

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Annexure - 1
Elevation-Area-Capacity (2021)
Aji-1 Reservoir

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
451.74	137.69	0.000	0.000	0.044	0.004	0.000	0.000	0.017	0.000
451.77	137.70	0.000	0.000	0.047	0.004	0.000	0.000	0.019	0.001
451.80	137.71	0.000	0.000	0.054	0.005	0.000	0.000	0.035	0.001
451.84	137.72	0.000	0.000	0.054	0.005	0.000	0.000	0.035	0.001
451.87	137.73	0.000	0.000	0.054	0.005	0.000	0.000	0.035	0.001
451.90	137.74	0.000	0.000	0.065	0.006	0.000	0.000	0.035	0.001
451.94	137.75	0.000	0.000	0.065	0.006	0.000	0.000	0.035	0.001
451.97	137.76	0.000	0.000	0.075	0.007	0.000	0.000	0.035	0.001
452.00	137.77	0.000	0.000	0.075	0.007	0.000	0.000	0.035	0.001
452.03	137.78	0.000	0.000	0.086	0.008	0.000	0.000	0.035	0.001
452.07	137.79	0.000	0.000	0.097	0.009	0.000	0.000	0.035	0.001
452.10	137.80	0.000	0.000	0.108	0.010	0.000	0.000	0.035	0.001
452.13	137.81	0.000	0.000	0.118	0.011	0.000	0.000	0.035	0.001
452.17	137.82	0.000	0.000	0.129	0.012	0.000	0.000	0.035	0.001
452.20	137.83	0.000	0.000	0.140	0.013	0.000	0.000	0.071	0.002
452.23	137.84	0.000	0.000	0.151	0.014	0.000	0.000	0.071	0.002
452.26	137.85	0.000	0.000	0.172	0.016	0.000	0.000	0.071	0.002
452.30	137.86	0.000	0.000	0.183	0.017	0.000	0.000	0.071	0.002
452.33	137.87	0.000	0.000	0.205	0.019	0.000	0.000	0.071	0.002
452.36	137.88	0.000	0.000	0.226	0.021	0.000	0.000	0.071	0.002
452.40	137.89	0.000	0.000	0.248	0.023	0.000	0.000	0.106	0.003
452.43	137.90	0.000	0.000	0.269	0.025	0.000	0.000	0.106	0.003
452.46	137.91	0.000	0.000	0.280	0.026	0.000	0.000	0.106	0.003
452.49	137.92	0.000	0.000	0.312	0.029	0.000	0.000	0.106	0.003

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
452.53	137.93	0.000	0.000	0.334	0.031	0.000	0.000	0.141	0.004
452.56	137.94	0.000	0.000	0.366	0.034	0.000	0.000	0.141	0.004
452.59	137.95	0.000	0.000	0.398	0.037	0.000	0.000	0.141	0.004
452.62	137.96	0.000	0.000	0.431	0.040	0.000	0.000	0.177	0.005
452.66	137.97	0.000	0.000	0.452	0.042	0.000	0.000	0.177	0.005
452.69	137.98	0.000	0.000	0.484	0.045	0.000	0.000	0.212	0.006
452.72	137.99	0.000	0.000	0.506	0.047	0.000	0.000	0.212	0.006
452.76	138.00	0.000	0.000	0.538	0.050	0.000	0.000	0.212	0.006
452.79	138.01	0.000	0.000	0.570	0.053	0.000	0.000	0.247	0.007
452.82	138.02	0.000	0.000	0.603	0.056	0.000	0.000	0.283	0.008
452.85	138.03	0.000	0.000	0.635	0.059	0.000	0.000	0.283	0.008
452.89	138.04	0.000	0.000	0.657	0.061	0.000	0.000	0.318	0.009
452.92	138.05	0.000	0.000	0.678	0.063	0.000	0.000	0.318	0.009
452.95	138.06	0.000	0.000	0.700	0.065	0.000	0.000	0.353	0.010
452.99	138.07	0.000	0.000	0.721	0.067	0.000	0.000	0.388	0.011
453.02	138.08	0.000	0.000	0.743	0.069	0.000	0.000	0.388	0.011
453.05	138.09	0.000	0.000	0.764	0.071	0.000	0.000	0.424	0.012
453.08	138.10	0.000	0.000	0.786	0.073	0.000	0.000	0.459	0.013
453.12	138.11	0.000	0.000	0.807	0.075	0.000	0.000	0.494	0.014
453.15	138.12	0.000	0.000	0.829	0.077	0.000	0.000	0.494	0.014
453.18	138.13	0.000	0.000	0.850	0.079	0.000	0.000	0.530	0.015
453.22	138.14	0.000	0.000	0.872	0.081	0.000	0.000	0.565	0.016
453.25	138.15	0.000	0.000	0.893	0.083	0.000	0.000	0.600	0.017
453.28	138.16	0.000	0.000	0.926	0.086	0.000	0.000	0.636	0.018

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
453.31	138.17	0.000	0.000	0.958	0.089	0.000	0.000	0.636	0.018
453.35	138.18	0.000	0.000	0.990	0.092	0.000	0.000	0.671	0.019
453.38	138.19	0.000	0.000	1.023	0.095	0.000	0.000	0.706	0.020
453.41	138.20	0.000	0.000	1.055	0.098	0.000	0.000	0.742	0.021
453.44	138.21	0.000	0.000	1.087	0.101	0.000	0.000	0.777	0.022
453.48	138.22	0.000	0.000	1.119	0.104	0.000	0.000	0.812	0.023
453.51	138.23	0.000	0.000	1.163	0.108	0.000	0.000	0.848	0.024
453.54	138.24	0.000	0.000	1.206	0.112	0.000	0.000	0.883	0.025
453.58	138.25	0.000	0.000	1.249	0.116	0.000	0.000	0.953	0.027
453.61	138.26	0.000	0.000	1.302	0.121	0.000	0.000	0.989	0.028
453.64	138.27	0.000	0.000	1.345	0.125	0.000	0.000	1.024	0.029
453.67	138.28	0.000	0.000	1.410	0.131	0.000	0.000	1.059	0.030
453.71	138.29	0.000	0.000	1.485	0.138	0.000	0.000	1.130	0.032
453.74	138.30	0.000	0.000	1.539	0.143	0.000	0.000	1.165	0.033
453.77	138.31	0.000	0.000	1.572	0.146	0.000	0.000	1.201	0.034
453.81	138.32	0.000	0.000	1.604	0.149	0.000	0.000	1.271	0.036
453.84	138.33	0.000	0.000	1.647	0.153	0.000	0.000	1.307	0.037
453.87	138.34	0.000	0.000	1.679	0.156	0.000	0.000	1.377	0.039
453.90	138.35	0.000	0.000	1.711	0.159	0.000	0.000	1.448	0.041
453.94	138.36	0.000	0.000	1.744	0.162	0.000	0.000	1.483	0.042
453.97	138.37	0.000	0.000	1.776	0.165	0.000	0.000	1.554	0.044
454.00	138.38	0.000	0.000	1.798	0.167	0.000	0.000	1.589	0.045
454.04	138.39	0.000	0.000	1.819	0.169	0.000	0.000	1.660	0.047
454.07	138.40	0.000	0.000	1.851	0.172	0.000	0.000	1.730	0.049

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
454.10	138.41	0.000	0.000	1.873	0.174	0.000	0.000	1.801	0.051
454.13	138.42	0.000	0.000	1.894	0.176	0.000	0.000	1.836	0.052
454.17	138.43	0.000	0.000	1.916	0.178	0.000	0.000	1.907	0.054
454.20	138.44	0.000	0.000	1.938	0.180	0.000	0.000	1.978	0.056
454.23	138.45	0.000	0.000	1.959	0.182	0.000	0.000	2.048	0.058
454.27	138.46	0.000	0.000	1.981	0.184	0.000	0.000	2.084	0.059
454.30	138.47	0.000	0.000	2.002	0.186	0.000	0.000	2.154	0.061
454.33	138.48	0.000	0.000	2.024	0.188	0.000	0.000	2.225	0.063
454.36	138.49	0.000	0.000	2.045	0.190	0.000	0.000	2.295	0.065
454.40	138.50	0.000	0.000	2.067	0.192	0.000	0.000	2.366	0.067
454.43	138.51	0.000	0.000	2.088	0.194	0.000	0.000	2.437	0.069
454.46	138.52	0.000	0.000	2.110	0.196	0.000	0.000	2.507	0.071
454.49	138.53	0.000	0.000	2.120	0.197	0.000	0.000	2.578	0.073
454.53	138.54	0.000	0.000	2.142	0.199	0.000	0.000	2.649	0.075
454.56	138.55	0.000	0.000	2.164	0.201	0.000	0.000	2.719	0.077
454.59	138.56	0.000	0.000	2.185	0.203	0.000	0.000	2.790	0.079
454.63	138.57	0.000	0.000	2.207	0.205	0.000	0.000	2.860	0.081
454.66	138.58	0.000	0.000	2.228	0.207	0.000	0.000	2.931	0.083
454.69	138.59	0.000	0.000	2.239	0.208	0.000	0.000	3.002	0.085
454.72	138.60	0.000	0.000	2.260	0.210	0.000	0.000	3.072	0.087
454.76	138.61	0.000	0.000	2.282	0.212	0.000	0.000	3.143	0.089
454.79	138.62	0.000	0.000	2.303	0.214	0.000	0.000	3.214	0.091
454.82	138.63	0.000	0.000	2.314	0.215	0.000	0.000	3.284	0.093
454.86	138.64	0.000	0.000	2.336	0.217	0.000	0.000	3.390	0.096

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
454.89	138.65	0.000	0.000	2.357	0.219	0.000	0.000	3.461	0.098
454.92	138.66	0.000	0.000	2.379	0.221	0.000	0.000	3.531	0.100
454.95	138.67	0.000	0.000	2.400	0.223	0.000	0.000	3.602	0.102
454.99	138.68	0.000	0.000	2.411	0.224	0.000	0.000	3.673	0.104
455.02	138.69	0.00	0.00	2.433	0.226	0.000	0.000	3.779	0.107
455.05	138.70	0.03	0.01	2.454	0.228	0.071	0.002	3.849	0.109
455.09	138.71	0.07	0.02	2.465	0.229	0.177	0.005	3.920	0.111
455.12	138.72	0.10	0.03	2.486	0.231	0.247	0.007	4.026	0.114
455.15	138.73	0.13	0.04	2.508	0.233	0.318	0.009	4.097	0.116
455.18	138.74	0.16	0.05	2.530	0.235	0.424	0.012	4.167	0.118
455.22	138.75	0.20	0.06	2.551	0.237	0.494	0.014	4.273	0.121
455.25	138.76	0.23	0.07	2.562	0.238	0.565	0.016	4.344	0.123
455.28	138.77	0.26	0.08	2.583	0.240	0.671	0.019	4.414	0.125
455.31	138.78	0.30	0.09	2.605	0.242	0.742	0.021	4.520	0.128
455.35	138.79	0.33	0.10	2.626	0.244	0.812	0.023	4.591	0.130
455.38	138.80	0.36	0.11	2.648	0.246	0.918	0.026	4.697	0.133
455.41	138.81	0.39	0.12	2.669	0.248	0.989	0.028	4.767	0.135
455.45	138.82	0.43	0.13	2.691	0.250	1.095	0.031	4.873	0.138
455.48	138.83	0.46	0.14	2.713	0.252	1.165	0.033	4.944	0.140
455.51	138.84	0.49	0.15	2.734	0.254	1.271	0.036	5.050	0.143
455.54	138.85	0.52	0.16	2.756	0.256	1.342	0.038	5.121	0.145
455.58	138.86	0.56	0.17	2.777	0.258	1.448	0.041	5.227	0.148
455.61	138.87	0.59	0.18	2.809	0.261	1.554	0.044	5.297	0.150
455.64	138.88	0.62	0.19	2.831	0.263	1.624	0.046	5.403	0.153

D.S.L

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
455.68	138.89	0.66	0.20	2.863	0.266	1.730	0.049	5.509	0.156
455.71	138.90	0.69	0.21	2.885	0.268	1.836	0.052	5.580	0.158
455.74	138.91	0.72	0.22	2.917	0.271	1.907	0.054	5.686	0.161
455.77	138.92	0.75	0.23	2.939	0.273	2.013	0.057	5.792	0.164
455.81	138.93	0.79	0.24	2.971	0.276	2.119	0.060	5.862	0.166
455.84	138.94	0.82	0.25	3.003	0.279	2.225	0.063	5.968	0.169
455.87	138.95	0.85	0.26	3.035	0.282	2.295	0.065	6.074	0.172
455.91	138.96	0.89	0.27	3.057	0.284	2.401	0.068	6.180	0.175
455.94	138.97	0.92	0.28	3.089	0.287	2.507	0.071	6.286	0.178
455.97	138.98	0.95	0.29	3.122	0.290	2.613	0.074	6.392	0.181
456.00	138.99	0.98	0.30	3.143	0.292	2.719	0.077	6.498	0.184
456.04	139.00	1.02	0.31	3.175	0.295	2.825	0.080	6.569	0.186
456.07	139.01	1.05	0.32	3.208	0.298	2.931	0.083	6.674	0.189
456.10	139.02	1.08	0.33	3.229	0.300	3.037	0.086	6.780	0.192
456.14	139.03	1.12	0.34	3.261	0.303	3.143	0.089	6.886	0.195
456.17	139.04	1.15	0.35	3.294	0.306	3.249	0.092	6.992	0.198
456.20	139.05	1.18	0.36	3.315	0.308	3.355	0.095	7.134	0.202
456.23	139.06	1.21	0.37	3.348	0.311	3.461	0.098	7.240	0.205
456.27	139.07	1.25	0.38	3.380	0.314	3.567	0.101	7.345	0.208
456.30	139.08	1.28	0.39	3.412	0.317	3.673	0.104	7.451	0.211
456.33	139.09	1.31	0.40	3.434	0.319	3.779	0.107	7.557	0.214
456.36	139.10	1.35	0.41	3.466	0.322	3.920	0.111	7.663	0.217
456.40	139.11	1.38	0.42	3.498	0.325	4.026	0.114	7.805	0.221
456.43	139.12	1.41	0.43	3.531	0.328	4.132	0.117	7.910	0.224

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
456.46	139.13	1.44	0.44	3.563	0.331	4.238	0.120	8.016	0.227
456.50	139.14	1.48	0.45	3.595	0.334	4.379	0.124	8.122	0.230
456.53	139.15	1.51	0.46	3.627	0.337	4.485	0.127	8.264	0.234
456.56	139.16	1.54	0.47	3.660	0.340	4.591	0.130	8.370	0.237
456.59	139.17	1.57	0.48	3.681	0.342	4.732	0.134	8.511	0.241
456.63	139.18	1.61	0.49	3.714	0.345	4.838	0.137	8.617	0.244
456.66	139.19	1.64	0.50	3.746	0.348	4.979	0.141	8.723	0.247
456.69	139.20	1.67	0.51	3.778	0.351	5.085	0.144	8.864	0.251
456.73	139.21	1.71	0.52	3.810	0.354	5.227	0.148	9.005	0.255
456.76	139.22	1.74	0.53	3.843	0.357	5.333	0.151	9.111	0.258
456.79	139.23	1.77	0.54	3.875	0.360	5.474	0.155	9.252	0.262
456.82	139.24	1.80	0.55	3.907	0.363	5.615	0.159	9.358	0.265
456.86	139.25	1.84	0.56	3.940	0.366	5.721	0.162	9.500	0.269
456.89	139.26	1.87	0.57	3.972	0.369	5.862	0.166	9.641	0.273
456.92	139.27	1.90	0.58	4.015	0.373	6.003	0.170	9.747	0.276
456.96	139.28	1.94	0.59	4.047	0.376	6.109	0.173	9.888	0.280
456.99	139.29	1.97	0.60	4.080	0.379	6.251	0.177	10.029	0.284
457.02	139.30	2.00	0.61	4.112	0.382	6.392	0.181	10.171	0.288
457.05	139.31	2.03	0.62	4.144	0.385	6.533	0.185	10.277	0.291
457.09	139.32	2.07	0.63	4.176	0.388	6.674	0.189	10.418	0.295
457.12	139.33	2.10	0.64	4.219	0.392	6.816	0.193	10.559	0.299
457.15	139.34	2.13	0.65	4.252	0.395	6.922	0.196	10.700	0.303
457.19	139.35	2.17	0.66	4.284	0.398	7.063	0.200	10.842	0.307
457.22	139.36	2.20	0.67	4.316	0.401	7.204	0.204	10.983	0.311

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
457.25	139.37	2.23	0.68	4.359	0.405	7.345	0.208	11.124	0.315
457.28	139.38	2.26	0.69	4.392	0.408	7.487	0.212	11.265	0.319
457.32	139.39	2.30	0.70	4.435	0.412	7.663	0.217	11.407	0.323
457.35	139.40	2.33	0.71	4.467	0.415	7.805	0.221	11.548	0.327
457.38	139.41	2.36	0.72	4.510	0.419	7.946	0.225	11.724	0.332
457.41	139.42	2.40	0.73	4.542	0.422	8.087	0.229	11.866	0.336
457.45	139.43	2.43	0.74	4.585	0.426	8.228	0.233	12.007	0.340
457.48	139.44	2.46	0.75	4.618	0.429	8.405	0.238	12.148	0.344
457.51	139.45	2.49	0.76	4.661	0.433	8.546	0.242	12.325	0.349
457.55	139.46	2.53	0.77	4.704	0.437	8.687	0.246	12.466	0.353
457.58	139.47	2.56	0.78	4.747	0.441	8.864	0.251	12.607	0.357
457.61	139.48	2.59	0.79	4.790	0.445	9.005	0.255	12.784	0.362
457.64	139.49	2.62	0.80	4.833	0.449	9.182	0.260	12.925	0.366
457.68	139.50	2.66	0.81	4.876	0.453	9.323	0.264	13.102	0.371
457.71	139.51	2.69	0.82	4.930	0.458	9.500	0.269	13.243	0.375
457.74	139.52	2.72	0.83	4.973	0.462	9.641	0.273	13.420	0.380
457.78	139.53	2.76	0.84	5.016	0.466	9.817	0.278	13.596	0.385
457.81	139.54	2.79	0.85	5.059	0.470	9.994	0.283	13.737	0.389
457.84	139.55	2.82	0.86	5.102	0.474	10.135	0.287	13.914	0.394
457.87	139.56	2.85	0.87	5.156	0.479	10.312	0.292	14.091	0.399
457.91	139.57	2.89	0.88	5.199	0.483	10.488	0.297	14.267	0.404
457.94	139.58	2.92	0.89	5.242	0.487	10.665	0.302	14.408	0.408
457.97	139.59	2.95	0.90	5.285	0.491	10.842	0.307	14.585	0.413
458.01	139.60	2.99	0.91	5.328	0.495	11.018	0.312	14.762	0.418

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
458.04	139.61	3.02	0.92	5.371	0.499	11.159	0.316	14.938	0.423
458.07	139.62	3.05	0.93	5.414	0.503	11.371	0.322	15.115	0.428
458.10	139.63	3.08	0.94	5.468	0.508	11.548	0.327	15.291	0.433
458.14	139.64	3.12	0.95	5.522	0.513	11.724	0.332	15.468	0.438
458.17	139.65	3.15	0.96	5.565	0.517	11.901	0.337	15.680	0.444
458.20	139.66	3.18	0.97	5.619	0.522	12.078	0.342	15.856	0.449
458.23	139.67	3.22	0.98	5.673	0.527	12.254	0.347	16.033	0.454
458.27	139.68	3.25	0.99	5.726	0.532	12.466	0.353	16.209	0.459
458.30	139.69	3.28	1.00	5.780	0.537	12.643	0.358	16.421	0.465
458.33	139.70	3.31	1.01	5.834	0.542	12.819	0.363	16.598	0.470
458.37	139.71	3.35	1.02	5.888	0.547	13.031	0.369	16.774	0.475
458.40	139.72	3.38	1.03	5.942	0.552	13.208	0.374	16.986	0.481
458.43	139.73	3.41	1.04	5.985	0.556	13.420	0.380	17.198	0.487
458.46	139.74	3.44	1.05	6.039	0.561	13.596	0.385	17.375	0.492
458.50	139.75	3.48	1.06	6.092	0.566	13.808	0.391	17.587	0.498
458.53	139.76	3.51	1.07	6.135	0.570	14.020	0.397	17.763	0.503
458.56	139.77	3.54	1.08	6.189	0.575	14.197	0.402	17.975	0.509
458.60	139.78	3.58	1.09	6.232	0.579	14.408	0.408	18.187	0.515
458.63	139.79	3.61	1.10	6.275	0.583	14.620	0.414	18.399	0.521
458.66	139.80	3.64	1.11	6.329	0.588	14.832	0.420	18.611	0.527
458.69	139.81	3.67	1.12	6.372	0.592	15.044	0.426	18.787	0.532
458.73	139.82	3.71	1.13	6.426	0.597	15.256	0.432	18.999	0.538
458.76	139.83	3.74	1.14	6.469	0.601	15.468	0.438	19.211	0.544
458.79	139.84	3.77	1.15	6.523	0.606	15.680	0.444	19.423	0.550

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
458.83	139.85	3.81	1.16	6.566	0.610	15.892	0.450	19.670	0.557
458.86	139.86	3.84	1.17	6.620	0.615	16.104	0.456	19.882	0.563
458.89	139.87	3.87	1.18	6.674	0.620	16.315	0.462	20.094	0.569
458.92	139.88	3.90	1.19	6.727	0.625	16.527	0.468	20.306	0.575
458.96	139.89	3.94	1.20	6.781	0.630	16.774	0.475	20.518	0.581
458.99	139.90	3.97	1.21	6.846	0.636	16.986	0.481	20.765	0.588
459.02	139.91	4.00	1.22	6.900	0.641	17.198	0.487	20.977	0.594
459.06	139.92	4.04	1.23	6.953	0.646	17.445	0.494	21.189	0.600
459.09	139.93	4.07	1.24	7.007	0.651	17.657	0.500	21.436	0.607
459.12	139.94	4.10	1.25	7.050	0.655	17.905	0.507	21.648	0.613
459.15	139.95	4.13	1.26	7.104	0.660	18.116	0.513	21.895	0.620
459.19	139.96	4.17	1.27	7.158	0.665	18.364	0.520	22.142	0.627
459.22	139.97	4.20	1.28	7.212	0.670	18.611	0.527	22.354	0.633
459.25	139.98	4.23	1.29	7.276	0.676	18.823	0.533	22.601	0.640
459.28	139.99	4.27	1.30	7.330	0.681	19.070	0.540	22.849	0.647
459.32	140.00	4.30	1.31	7.384	0.686	19.317	0.547	23.096	0.654
459.35	140.01	4.33	1.32	7.438	0.691	19.564	0.554	23.343	0.661
459.38	140.02	4.36	1.33	7.492	0.696	19.812	0.561	23.590	0.668
459.42	140.03	4.40	1.34	7.545	0.701	20.059	0.568	23.837	0.675
459.45	140.04	4.43	1.35	7.599	0.706	20.306	0.575	24.085	0.682
459.48	140.05	4.46	1.36	7.653	0.711	20.553	0.582	24.332	0.689
459.51	140.06	4.49	1.37	7.696	0.715	20.800	0.589	24.579	0.696
459.55	140.07	4.53	1.38	7.750	0.720	21.048	0.596	24.826	0.703
459.58	140.08	4.56	1.39	7.804	0.725	21.295	0.603	25.073	0.710

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
459.61	140.09	4.59	1.40	7.847	0.729	21.577	0.611	25.321	0.717
459.65	140.10	4.63	1.41	7.901	0.734	21.824	0.618	25.603	0.725
459.68	140.11	4.66	1.42	7.955	0.739	22.072	0.625	25.850	0.732
459.71	140.12	4.69	1.43	8.008	0.744	22.354	0.633	26.133	0.740
459.74	140.13	4.72	1.44	8.062	0.749	22.601	0.640	26.380	0.747
459.78	140.14	4.76	1.45	8.105	0.753	22.884	0.648	26.663	0.755
459.81	140.15	4.79	1.46	8.159	0.758	23.131	0.655	26.910	0.762
459.84	140.16	4.82	1.47	8.213	0.763	23.414	0.663	27.192	0.770
459.88	140.17	4.86	1.48	8.267	0.768	23.696	0.671	27.440	0.777
459.91	140.18	4.89	1.49	8.320	0.773	23.943	0.678	27.722	0.785
459.94	140.19	4.92	1.50	8.374	0.778	24.226	0.686	28.005	0.793
459.97	140.20	4.95	1.51	8.428	0.783	24.508	0.694	28.287	0.801
460.01	140.21	4.99	1.52	8.482	0.788	24.791	0.702	28.534	0.808
460.04	140.22	5.02	1.53	8.547	0.794	25.073	0.710	28.817	0.816
460.07	140.23	5.05	1.54	8.590	0.798	25.356	0.718	29.099	0.824
460.11	140.24	5.09	1.55	8.643	0.803	25.638	0.726	29.382	0.832
460.14	140.25	5.12	1.56	8.697	0.808	25.921	0.734	29.664	0.840
460.17	140.26	5.15	1.57	8.751	0.813	26.204	0.742	29.982	0.849
460.20	140.27	5.18	1.58	8.805	0.818	26.486	0.750	30.265	0.857
460.24	140.28	5.22	1.59	8.859	0.823	26.769	0.758	30.547	0.865
460.27	140.29	5.25	1.60	8.923	0.829	27.051	0.766	30.830	0.873
460.30	140.30	5.28	1.61	8.977	0.834	27.369	0.775	31.112	0.881
460.33	140.31	5.31	1.62	9.031	0.839	27.651	0.783	31.430	0.890
460.37	140.32	5.35	1.63	9.085	0.844	27.934	0.791	31.713	0.898

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
460.40	140.33	5.38	1.64	9.139	0.849	28.252	0.800	32.030	0.907
460.43	140.34	5.41	1.65	9.203	0.855	28.534	0.808	32.313	0.915
460.47	140.35	5.45	1.66	9.257	0.860	28.852	0.817	32.631	0.924
460.50	140.36	5.48	1.67	9.322	0.866	29.170	0.826	32.913	0.932
460.53	140.37	5.51	1.68	9.386	0.872	29.452	0.834	33.231	0.941
460.56	140.38	5.54	1.69	9.451	0.878	29.770	0.843	33.549	0.950
460.60	140.39	5.58	1.70	9.515	0.884	30.088	0.852	33.867	0.959
460.63	140.40	5.61	1.71	9.591	0.891	30.406	0.861	34.185	0.968
460.66	140.41	5.64	1.72	9.655	0.897	30.724	0.870	34.467	0.976
460.70	140.42	5.68	1.73	9.731	0.904	31.042	0.879	34.785	0.985
460.73	140.43	5.71	1.74	9.795	0.910	31.359	0.888	35.138	0.995
460.76	140.44	5.74	1.75	9.860	0.916	31.677	0.897	35.456	1.004
460.79	140.45	5.77	1.76	9.924	0.922	31.995	0.906	35.774	1.013
460.83	140.46	5.81	1.77	10.000	0.929	32.313	0.915	36.092	1.022
460.86	140.47	5.84	1.78	10.064	0.935	32.666	0.925	36.409	1.031
460.89	140.48	5.87	1.79	10.140	0.942	32.984	0.934	36.763	1.041
460.93	140.49	5.91	1.80	10.204	0.948	33.337	0.944	37.080	1.050
460.96	140.50	5.94	1.81	10.280	0.955	33.655	0.953	37.434	1.060
460.99	140.51	5.97	1.82	10.366	0.963	34.008	0.963	37.751	1.069
461.02	140.52	6.00	1.83	10.452	0.971	34.326	0.972	38.105	1.079
461.06	140.53	6.04	1.84	10.538	0.979	34.679	0.982	38.458	1.089
461.09	140.54	6.07	1.85	10.624	0.987	35.032	0.992	38.811	1.099
461.12	140.55	6.10	1.86	10.710	0.995	35.385	1.002	39.164	1.109
461.15	140.56	6.14	1.87	10.807	1.004	35.738	1.012	39.517	1.119

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
461.19	140.57	6.17	1.88	10.904	1.013	36.092	1.022	39.870	1.129
461.22	140.58	6.20	1.89	10.990	1.021	36.445	1.032	40.223	1.139
461.25	140.59	6.23	1.90	11.076	1.029	36.798	1.042	40.577	1.149
461.29	140.60	6.27	1.91	11.173	1.038	37.186	1.053	40.930	1.159
461.32	140.61	6.30	1.92	11.270	1.047	37.540	1.063	41.318	1.170
461.35	140.62	6.33	1.93	11.356	1.055	37.928	1.074	41.671	1.180
461.38	140.63	6.36	1.94	11.453	1.064	38.281	1.084	42.060	1.191
461.42	140.64	6.40	1.95	11.539	1.072	38.670	1.095	42.448	1.202
461.45	140.65	6.43	1.96	11.625	1.080	39.058	1.106	42.801	1.212
461.48	140.66	6.46	1.97	11.711	1.088	39.411	1.116	43.190	1.223
461.52	140.67	6.50	1.98	11.808	1.097	39.800	1.127	43.578	1.234
461.55	140.68	6.53	1.99	11.894	1.105	40.188	1.138	43.967	1.245
461.58	140.69	6.56	2.00	11.980	1.113	40.577	1.149	44.355	1.256
461.61	140.70	6.59	2.01	12.066	1.121	41.000	1.161	44.744	1.267
461.65	140.71	6.63	2.02	12.163	1.130	41.389	1.172	45.168	1.279
461.68	140.72	6.66	2.03	12.249	1.138	41.777	1.183	45.556	1.290
461.71	140.73	6.69	2.04	12.335	1.146	42.201	1.195	45.944	1.301
461.75	140.74	6.73	2.05	12.422	1.154	42.590	1.206	46.368	1.313
461.78	140.75	6.76	2.06	12.508	1.162	43.013	1.218	46.757	1.324
461.81	140.76	6.79	2.07	12.605	1.171	43.402	1.229	47.180	1.336
461.84	140.77	6.82	2.08	12.691	1.179	43.826	1.241	47.604	1.348
461.88	140.78	6.86	2.09	12.788	1.188	44.249	1.253	48.028	1.360
461.91	140.79	6.89	2.10	12.874	1.196	44.673	1.265	48.452	1.372
461.94	140.80	6.92	2.11	12.960	1.204	45.097	1.277	48.876	1.384

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
461.98	140.81	6.96	2.12	13.046	1.212	45.521	1.289	49.299	1.396
462.01	140.82	6.99	2.13	13.132	1.220	45.944	1.301	49.723	1.408
462.04	140.83	7.02	2.14	13.218	1.228	46.368	1.313	50.147	1.420
462.07	140.84	7.05	2.15	13.304	1.236	46.827	1.326	50.571	1.432
462.11	140.85	7.09	2.16	13.390	1.244	47.251	1.338	51.030	1.445
462.14	140.86	7.12	2.17	13.476	1.252	47.710	1.351	51.454	1.457
462.17	140.87	7.15	2.18	13.563	1.260	48.134	1.363	51.913	1.470
462.20	140.88	7.19	2.19	13.649	1.268	48.593	1.376	52.372	1.483
462.24	140.89	7.22	2.20	13.746	1.277	49.052	1.389	52.795	1.495
462.27	140.90	7.25	2.21	13.832	1.285	49.476	1.401	53.255	1.508
462.30	140.91	7.28	2.22	13.928	1.294	49.935	1.414	53.714	1.521
462.34	140.92	7.32	2.23	14.015	1.302	50.394	1.427	54.173	1.534
462.37	140.93	7.35	2.24	14.101	1.310	50.853	1.440	54.632	1.547
462.40	140.94	7.38	2.25	14.198	1.319	51.312	1.453	55.091	1.560
462.43	140.95	7.41	2.26	14.284	1.327	51.807	1.467	55.550	1.573
462.47	140.96	7.45	2.27	14.370	1.335	52.266	1.480	56.044	1.587
462.50	140.97	7.48	2.28	14.456	1.343	52.725	1.493	56.504	1.600
462.53	140.98	7.51	2.29	14.531	1.350	53.219	1.507	56.998	1.614
462.57	140.99	7.55	2.30	14.617	1.358	53.678	1.520	57.457	1.627
462.60	141.00	7.58	2.31	14.703	1.366	54.173	1.534	57.951	1.641
462.63	141.01	7.61	2.32	14.779	1.373	54.667	1.548	58.411	1.654
462.66	141.02	7.64	2.33	14.865	1.381	55.126	1.561	58.905	1.668
462.70	141.03	7.68	2.34	14.940	1.388	55.621	1.575	59.399	1.682
462.73	141.04	7.71	2.35	15.026	1.396	56.115	1.589	59.894	1.696

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
462.76	141.05	7.74	2.36	15.113	1.404	56.609	1.603	60.388	1.710
462.80	141.06	7.78	2.37	15.199	1.412	57.104	1.617	60.883	1.724
462.83	141.07	7.81	2.38	15.296	1.421	57.598	1.631	61.377	1.738
462.86	141.08	7.84	2.39	15.382	1.429	58.128	1.646	61.871	1.752
462.89	141.09	7.87	2.40	15.457	1.436	58.622	1.660	62.401	1.767
462.93	141.10	7.91	2.41	15.543	1.444	59.117	1.674	62.895	1.781
462.96	141.11	7.94	2.42	15.618	1.451	59.647	1.689	63.425	1.796
462.99	141.12	7.97	2.43	15.694	1.458	60.141	1.703	63.920	1.810
463.02	141.13	8.01	2.44	15.769	1.465	60.671	1.718	64.449	1.825
463.06	141.14	8.04	2.45	15.844	1.472	61.200	1.733	64.944	1.839
463.09	141.15	8.07	2.46	15.920	1.479	61.695	1.747	65.473	1.854
463.12	141.16	8.10	2.47	15.995	1.486	62.225	1.762	66.003	1.869
463.16	141.17	8.14	2.48	16.071	1.493	62.754	1.777	66.533	1.884
463.19	141.18	8.17	2.49	16.146	1.500	63.284	1.792	67.063	1.899
463.22	141.19	8.20	2.50	16.221	1.507	63.814	1.807	67.592	1.914
463.25	141.20	8.23	2.51	16.297	1.514	64.343	1.822	68.122	1.929
463.29	141.21	8.27	2.52	16.372	1.521	64.873	1.837	68.652	1.944
463.32	141.22	8.30	2.53	16.447	1.528	65.438	1.853	69.181	1.959
463.35	141.23	8.33	2.54	16.523	1.535	65.968	1.868	69.747	1.975
463.39	141.24	8.37	2.55	16.609	1.543	66.498	1.883	70.276	1.990
463.42	141.25	8.40	2.56	16.684	1.550	67.063	1.899	70.841	2.006
463.45	141.26	8.43	2.57	16.770	1.558	67.592	1.914	71.371	2.021
463.48	141.27	8.46	2.58	16.846	1.565	68.157	1.930	71.936	2.037
463.52	141.28	8.50	2.59	16.932	1.573	68.722	1.946	72.466	2.052

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
463.55	141.29	8.53	2.60	17.007	1.580	69.287	1.962	73.031	2.068
463.58	141.30	8.56	2.61	17.082	1.587	69.817	1.977	73.596	2.084
463.62	141.31	8.60	2.62	17.158	1.594	70.382	1.993	74.161	2.100
463.65	141.32	8.63	2.63	17.244	1.602	70.947	2.009	74.726	2.116
463.68	141.33	8.66	2.64	17.319	1.609	71.512	2.025	75.291	2.132
463.71	141.34	8.69	2.65	17.405	1.617	72.077	2.041	75.856	2.148
463.75	141.35	8.73	2.66	17.481	1.624	72.678	2.058	76.421	2.164
463.78	141.36	8.76	2.67	17.567	1.632	73.243	2.074	77.021	2.181
463.81	141.37	8.79	2.68	17.653	1.640	73.808	2.090	77.586	2.197
463.85	141.38	8.83	2.69	17.728	1.647	74.408	2.107	78.151	2.213
463.88	141.39	8.86	2.70	17.814	1.655	74.973	2.123	78.752	2.230
463.91	141.40	8.89	2.71	17.900	1.663	75.573	2.140	79.352	2.247
463.94	141.41	8.92	2.72	17.986	1.671	76.138	2.156	79.917	2.263
463.98	141.42	8.96	2.73	18.073	1.679	76.739	2.173	80.518	2.280
464.01	141.43	8.99	2.74	18.148	1.686	77.339	2.190	81.118	2.297
464.04	141.44	9.02	2.75	18.234	1.694	77.940	2.207	81.718	2.314
464.07	141.45	9.06	2.76	18.320	1.702	78.540	2.224	82.319	2.331
464.11	141.46	9.09	2.77	18.396	1.709	79.140	2.241	82.919	2.348
464.14	141.47	9.12	2.78	18.471	1.716	79.741	2.258	83.519	2.365
464.17	141.48	9.15	2.79	18.557	1.724	80.341	2.275	84.120	2.382
464.21	141.49	9.19	2.80	18.643	1.732	80.977	2.293	84.720	2.399
464.24	141.50	9.22	2.81	18.718	1.739	81.577	2.310	85.356	2.417
464.27	141.51	9.25	2.82	18.805	1.747	82.177	2.327	85.956	2.434
464.30	141.52	9.28	2.83	18.891	1.755	82.813	2.345	86.592	2.452

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
464.34	141.53	9.32	2.84	18.966	1.762	83.413	2.362	87.192	2.469
464.37	141.54	9.35	2.85	19.052	1.770	84.049	2.380	87.828	2.487
464.40	141.55	9.38	2.86	19.127	1.777	84.685	2.398	88.463	2.505
464.44	141.56	9.42	2.87	19.214	1.785	85.320	2.416	89.064	2.522
464.47	141.57	9.45	2.88	19.289	1.792	85.956	2.434	89.699	2.540
464.50	141.58	9.48	2.89	19.375	1.800	86.592	2.452	90.335	2.558
464.53	141.59	9.51	2.90	19.461	1.808	87.227	2.470	90.971	2.576
464.57	141.60	9.55	2.91	19.536	1.815	87.863	2.488	91.606	2.594
464.60	141.61	9.58	2.92	19.612	1.822	88.499	2.506	92.277	2.613
464.63	141.62	9.61	2.93	19.687	1.829	89.134	2.524	92.913	2.631
464.67	141.63	9.65	2.94	19.763	1.836	89.770	2.542	93.549	2.649
464.70	141.64	9.68	2.95	19.849	1.844	90.441	2.561	94.220	2.668
464.73	141.65	9.71	2.96	19.924	1.851	91.077	2.579	94.855	2.686
464.76	141.66	9.74	2.97	19.999	1.858	91.748	2.598	95.526	2.705
464.80	141.67	9.78	2.98	20.075	1.865	92.383	2.616	96.162	2.723
464.83	141.68	9.81	2.99	20.150	1.872	93.054	2.635	96.833	2.742
464.86	141.69	9.84	3.00	20.236	1.880	93.725	2.654	97.504	2.761
464.90	141.70	9.88	3.01	20.311	1.887	94.396	2.673	98.140	2.779
464.93	141.71	9.91	3.02	20.387	1.894	95.067	2.692	98.811	2.798
464.96	141.72	9.94	3.03	20.473	1.902	95.738	2.711	99.482	2.817
464.99	141.73	9.97	3.04	20.559	1.910	96.409	2.730	100.152	2.836
465.03	141.74	10.01	3.05	20.634	1.917	97.080	2.749	100.859	2.856
465.06	141.75	10.04	3.06	20.721	1.925	97.751	2.768	101.530	2.875
465.09	141.76	10.07	3.07	20.807	1.933	98.422	2.787	102.201	2.894

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
465.12	141.77	10.10	3.08	20.893	1.941	99.128	2.807	102.872	2.913
465.16	141.78	10.14	3.09	20.979	1.949	99.799	2.826	103.578	2.933
465.19	141.79	10.17	3.10	21.065	1.957	100.506	2.846	104.249	2.952
465.22	141.80	10.20	3.11	21.151	1.965	101.177	2.865	104.955	2.972
465.26	141.81	10.24	3.12	21.237	1.973	101.883	2.885	105.662	2.992
465.29	141.82	10.27	3.13	21.323	1.981	102.589	2.905	106.333	3.011
465.32	141.83	10.30	3.14	21.420	1.990	103.295	2.925	107.039	3.031
465.35	141.84	10.33	3.15	21.506	1.998	104.002	2.945	107.745	3.051
465.39	141.85	10.37	3.16	21.603	2.007	104.708	2.965	108.451	3.071
465.42	141.86	10.40	3.17	21.689	2.015	105.414	2.985	109.158	3.091
465.45	141.87	10.43	3.18	21.786	2.024	106.121	3.005	109.899	3.112
465.49	141.88	10.47	3.19	21.883	2.033	106.827	3.025	110.606	3.132
465.52	141.89	10.50	3.20	21.980	2.042	107.569	3.046	111.312	3.152
465.55	141.90	10.53	3.21	22.066	2.050	108.275	3.066	112.054	3.173
465.58	141.91	10.56	3.22	22.163	2.059	109.016	3.087	112.760	3.193
465.62	141.92	10.60	3.23	22.260	2.068	109.723	3.107	113.501	3.214
465.65	141.93	10.63	3.24	22.357	2.077	110.464	3.128	114.243	3.235
465.68	141.94	10.66	3.25	22.443	2.085	111.206	3.149	114.949	3.255
465.72	141.95	10.70	3.26	22.540	2.094	111.948	3.170	115.691	3.276
465.75	141.96	10.73	3.27	22.636	2.103	112.689	3.191	116.433	3.297
465.78	141.97	10.76	3.28	22.733	2.112	113.431	3.212	117.174	3.318
465.81	141.98	10.79	3.29	22.830	2.121	114.172	3.233	117.951	3.340
465.85	141.99	10.83	3.30	22.927	2.130	114.914	3.254	118.693	3.361
465.88	142.00	10.86	3.31	23.024	2.139	115.656	3.275	119.434	3.382

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
465.91	142.01	10.89	3.32	23.121	2.148	116.433	3.297	120.211	3.404
465.94	142.02	10.93	3.33	23.218	2.157	117.174	3.318	120.953	3.425
465.98	142.03	10.96	3.34	23.325	2.167	117.951	3.340	121.730	3.447
466.01	142.04	10.99	3.35	23.422	2.176	118.728	3.362	122.471	3.468
466.04	142.05	11.02	3.36	23.530	2.186	119.505	3.384	123.248	3.490
466.08	142.06	11.06	3.37	23.638	2.196	120.247	3.405	124.025	3.512
466.11	142.07	11.09	3.38	23.745	2.206	121.023	3.427	124.802	3.534
466.14	142.08	11.12	3.39	23.864	2.217	121.836	3.450	125.579	3.556
466.17	142.09	11.15	3.40	23.971	2.227	122.613	3.472	126.391	3.579
466.21	142.10	11.19	3.41	24.079	2.237	123.390	3.494	127.168	3.601
466.24	142.11	11.22	3.42	24.197	2.248	124.202	3.517	127.945	3.623
466.27	142.12	11.25	3.43	24.305	2.258	124.979	3.539	128.757	3.646
466.31	142.13	11.29	3.44	24.423	2.269	125.791	3.562	129.534	3.668
466.34	142.14	11.32	3.45	24.531	2.279	126.568	3.584	130.347	3.691
466.37	142.15	11.35	3.46	24.639	2.289	127.380	3.607	131.159	3.714
466.40	142.16	11.38	3.47	24.757	2.300	128.192	3.630	131.971	3.737
466.44	142.17	11.42	3.48	24.865	2.310	129.005	3.653	132.783	3.760
466.47	142.18	11.45	3.49	24.972	2.320	129.817	3.676	133.596	3.783
466.50	142.19	11.48	3.50	25.069	2.329	130.664	3.700	134.408	3.806
466.54	142.20	11.52	3.51	25.177	2.339	131.477	3.723	135.255	3.830
466.57	142.21	11.55	3.52	25.284	2.349	132.289	3.746	136.068	3.853
466.60	142.22	11.58	3.53	25.392	2.359	133.136	3.770	136.915	3.877
466.63	142.23	11.61	3.54	25.489	2.368	133.984	3.794	137.727	3.900
466.67	142.24	11.65	3.55	25.597	2.378	134.796	3.817	138.575	3.924

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
466.70	142.25	11.68	3.56	25.704	2.388	135.644	3.841	139.422	3.948
466.73	142.26	11.71	3.57	25.812	2.398	136.491	3.865	140.270	3.972
466.77	142.27	11.75	3.58	25.919	2.408	137.339	3.889	141.118	3.996
466.80	142.28	11.78	3.59	26.027	2.418	138.186	3.913	141.965	4.020
466.83	142.29	11.81	3.60	26.135	2.428	139.069	3.938	142.813	4.044
466.86	142.30	11.84	3.61	26.232	2.437	139.917	3.962	143.696	4.069
466.90	142.31	11.88	3.62	26.339	2.447	140.764	3.986	144.543	4.093
466.93	142.32	11.91	3.63	26.436	2.456	141.647	4.011	145.426	4.118
466.96	142.33	11.94	3.64	26.544	2.466	142.495	4.035	146.273	4.142
466.99	142.34	11.98	3.65	26.641	2.475	143.378	4.060	147.156	4.167
467.03	142.35	12.01	3.66	26.748	2.485	144.261	4.085	148.039	4.192
467.06	142.36	12.04	3.67	26.856	2.495	145.143	4.110	148.922	4.217
467.09	142.37	12.07	3.68	26.964	2.505	146.026	4.135	149.805	4.242
467.13	142.38	12.11	3.69	27.060	2.514	146.909	4.160	150.688	4.267
467.16	142.39	12.14	3.70	27.168	2.524	147.792	4.185	151.571	4.292
467.19	142.40	12.17	3.71	27.276	2.534	148.675	4.210	152.454	4.317
467.22	142.41	12.20	3.72	27.383	2.544	149.593	4.236	153.336	4.342
467.26	142.42	12.24	3.73	27.480	2.553	150.476	4.261	154.255	4.368
467.29	142.43	12.27	3.74	27.588	2.563	151.394	4.287	155.173	4.394
467.32	142.44	12.30	3.75	27.696	2.573	152.277	4.312	156.056	4.419
467.36	142.45	12.34	3.76	27.792	2.582	153.195	4.338	156.974	4.445
467.39	142.46	12.37	3.77	27.889	2.591	154.113	4.364	157.892	4.471
467.42	142.47	12.40	3.78	27.986	2.600	155.032	4.390	158.810	4.497
467.45	142.48	12.43	3.79	28.083	2.609	155.950	4.416	159.728	4.523

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
467.49	142.49	12.47	3.80	28.180	2.618	156.868	4.442	160.647	4.549
467.52	142.50	12.50	3.81	28.277	2.627	157.786	4.468	161.565	4.575
467.55	142.51	12.53	3.82	28.374	2.636	158.740	4.495	162.518	4.602
467.59	142.52	12.57	3.83	28.460	2.644	159.658	4.521	163.436	4.628
467.62	142.53	12.60	3.84	28.557	2.653	160.611	4.548	164.355	4.654
467.65	142.54	12.63	3.85	28.654	2.662	161.529	4.574	165.308	4.681
467.68	142.55	12.66	3.86	28.740	2.670	162.483	4.601	166.262	4.708
467.72	142.56	12.70	3.87	28.836	2.679	163.436	4.628	167.180	4.734
467.75	142.57	12.73	3.88	28.933	2.688	164.390	4.655	168.133	4.761
467.78	142.58	12.76	3.89	29.030	2.697	165.308	4.681	169.087	4.788
467.81	142.59	12.80	3.90	29.127	2.706	166.262	4.708	170.040	4.815
467.85	142.60	12.83	3.91	29.213	2.714	167.250	4.736	170.994	4.842
467.88	142.61	12.86	3.92	29.299	2.722	168.204	4.763	171.947	4.869
467.91	142.62	12.89	3.93	29.396	2.731	169.157	4.790	172.936	4.897
467.95	142.63	12.93	3.94	29.482	2.739	170.111	4.817	173.890	4.924
467.98	142.64	12.96	3.95	29.568	2.747	171.100	4.845	174.878	4.952
468.01	142.65	12.99	3.96	29.665	2.756	172.053	4.872	175.832	4.979
468.04	142.66	13.02	3.97	29.762	2.765	173.042	4.900	176.821	5.007
468.08	142.67	13.06	3.98	29.859	2.774	174.031	4.928	177.774	5.034
468.11	142.68	13.09	3.99	29.945	2.782	174.984	4.955	178.763	5.062
468.14	142.69	13.12	4.00	30.042	2.791	175.973	4.983	179.752	5.090
468.18	142.70	13.16	4.01	30.139	2.800	176.962	5.011	180.741	5.118
468.21	142.71	13.19	4.02	30.225	2.808	177.951	5.039	181.729	5.146
468.24	142.72	13.22	4.03	30.322	2.817	178.940	5.067	182.718	5.174

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
468.27	142.73	13.25	4.04	30.408	2.825	179.964	5.096	183.707	5.202
468.31	142.74	13.29	4.05	30.494	2.833	180.953	5.124	184.731	5.231
468.34	142.75	13.32	4.06	30.591	2.842	181.941	5.152	185.720	5.259
468.37	142.76	13.35	4.07	30.666	2.849	182.965	5.181	186.709	5.287
468.41	142.77	13.39	4.08	30.752	2.857	183.954	5.209	187.733	5.316
468.44	142.78	13.42	4.09	30.839	2.865	184.978	5.238	188.757	5.345
468.47	142.79	13.45	4.10	30.925	2.873	186.003	5.267	189.746	5.373
468.50	142.80	13.48	4.11	31.011	2.881	186.991	5.295	190.770	5.402
468.54	142.81	13.52	4.12	31.097	2.889	188.015	5.324	191.794	5.431
468.57	142.82	13.55	4.13	31.183	2.897	189.040	5.353	192.818	5.460
468.60	142.83	13.58	4.14	31.269	2.905	190.064	5.382	193.842	5.489
468.64	142.84	13.62	4.15	31.355	2.913	191.088	5.411	194.867	5.518
468.67	142.85	13.65	4.16	31.441	2.921	192.112	5.440	195.891	5.547
468.70	142.86	13.68	4.17	31.527	2.929	193.171	5.470	196.915	5.576
468.73	142.87	13.71	4.18	31.624	2.938	194.196	5.499	197.974	5.606
468.77	142.88	13.75	4.19	31.710	2.946	195.220	5.528	198.998	5.635
468.80	142.89	13.78	4.20	31.786	2.953	196.279	5.558	200.058	5.665
468.83	142.90	13.81	4.21	31.872	2.961	197.303	5.587	201.082	5.694
468.86	142.91	13.85	4.22	31.958	2.969	198.363	5.617	202.141	5.724
468.90	142.92	13.88	4.23	32.033	2.976	199.422	5.647	203.201	5.754
468.93	142.93	13.91	4.24	32.119	2.984	200.482	5.677	204.225	5.783
468.96	142.94	13.94	4.25	32.195	2.991	201.506	5.706	205.284	5.813
469.00	142.95	13.98	4.26	32.270	2.998	202.565	5.736	206.344	5.843
469.03	142.96	14.01	4.27	32.356	3.006	203.625	5.766	207.403	5.873

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
469.06	142.97	14.04	4.28	32.432	3.013	204.719	5.797	208.463	5.903
469.09	142.98	14.07	4.29	32.518	3.021	205.779	5.827	209.522	5.933
469.13	142.99	14.11	4.30	32.593	3.028	206.838	5.857	210.617	5.964
469.16	143.00	14.14	4.31	32.679	3.036	207.898	5.887	211.676	5.994
469.19	143.01	14.17	4.32	32.765	3.044	208.992	5.918	212.736	6.024
469.23	143.02	14.21	4.33	32.851	3.052	210.052	5.948	213.831	6.055
469.26	143.03	14.24	4.34	32.938	3.060	211.147	5.979	214.890	6.085
469.29	143.04	14.27	4.35	33.024	3.068	212.206	6.009	215.985	6.116
469.32	143.05	14.30	4.36	33.110	3.076	213.301	6.040	217.079	6.147
469.36	143.06	14.34	4.37	33.196	3.084	214.396	6.071	218.174	6.178
469.39	143.07	14.37	4.38	33.282	3.092	215.490	6.102	219.234	6.208
469.42	143.08	14.40	4.39	33.357	3.099	216.585	6.133	220.328	6.239
469.46	143.09	14.44	4.40	33.433	3.106	217.680	6.164	221.423	6.270
469.49	143.10	14.47	4.41	33.519	3.114	218.775	6.195	222.553	6.302
469.52	143.11	14.50	4.42	33.594	3.121	219.869	6.226	223.648	6.333
469.55	143.12	14.53	4.43	33.680	3.129	220.964	6.257	224.743	6.364
469.59	143.13	14.57	4.44	33.756	3.136	222.094	6.289	225.838	6.395
469.62	143.14	14.60	4.45	33.842	3.144	223.189	6.320	226.968	6.427
469.65	143.15	14.63	4.46	33.917	3.151	224.284	6.351	228.062	6.458
469.69	143.16	14.67	4.47	34.003	3.159	225.414	6.383	229.192	6.490
469.72	143.17	14.70	4.48	34.079	3.166	226.544	6.415	230.287	6.521
469.75	143.18	14.73	4.49	34.165	3.174	227.639	6.446	231.417	6.553
469.78	143.19	14.76	4.50	34.251	3.182	228.769	6.478	232.547	6.585
469.82	143.20	14.80	4.51	34.326	3.189	229.899	6.510	233.677	6.617

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
469.85	143.21	14.83	4.52	34.412	3.197	231.029	6.542	234.807	6.649
469.88	143.22	14.86	4.53	34.488	3.204	232.159	6.574	235.938	6.681
469.91	143.23	14.90	4.54	34.574	3.212	233.289	6.606	237.068	6.713
469.95	143.24	14.93	4.55	34.649	3.219	234.419	6.638	238.198	6.745
469.98	143.25	14.96	4.56	34.724	3.226	235.549	6.670	239.328	6.777
470.01	143.26	14.99	4.57	34.810	3.234	236.714	6.703	240.458	6.809
470.05	143.27	15.03	4.58	34.886	3.241	237.845	6.735	241.623	6.842
470.08	143.28	15.06	4.59	34.972	3.249	238.975	6.767	242.753	6.874
470.11	143.29	15.09	4.60	35.058	3.257	240.140	6.800	243.919	6.907
470.14	143.30	15.12	4.61	35.133	3.264	241.305	6.833	245.049	6.939
470.18	143.31	15.16	4.62	35.219	3.272	242.435	6.865	246.214	6.972
470.21	143.32	15.19	4.63	35.295	3.279	243.601	6.898	247.379	7.005
470.24	143.33	15.22	4.64	35.381	3.287	244.766	6.931	248.545	7.038
470.28	143.34	15.26	4.65	35.456	3.294	245.932	6.964	249.710	7.071
470.31	143.35	15.29	4.66	35.542	3.302	247.097	6.997	250.876	7.104
470.34	143.36	15.32	4.67	35.618	3.309	248.262	7.030	252.041	7.137
470.37	143.37	15.35	4.68	35.704	3.317	249.428	7.063	253.206	7.170
470.41	143.38	15.39	4.69	35.790	3.325	250.593	7.096	254.372	7.203
470.44	143.39	15.42	4.70	35.865	3.332	251.758	7.129	255.537	7.236
470.47	143.40	15.45	4.71	35.951	3.340	252.959	7.163	256.738	7.270
470.51	143.41	15.49	4.72	36.027	3.347	254.125	7.196	257.903	7.303
470.54	143.42	15.52	4.73	36.113	3.355	255.325	7.230	259.069	7.336
470.57	143.43	15.55	4.74	36.199	3.363	256.491	7.263	260.269	7.370
470.60	143.44	15.58	4.75	36.285	3.371	257.691	7.297	261.470	7.404

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
470.64	143.45	15.62	4.76	36.360	3.378	258.892	7.331	262.671	7.438
470.67	143.46	15.65	4.77	36.447	3.386	260.093	7.365	263.836	7.471
470.70	143.47	15.68	4.78	36.522	3.393	261.258	7.398	265.037	7.505
470.73	143.48	15.72	4.79	36.608	3.401	262.459	7.432	266.238	7.539
470.77	143.49	15.75	4.80	36.683	3.408	263.660	7.466	267.438	7.573
470.80	143.50	15.78	4.81	36.769	3.416	264.896	7.501	268.639	7.607
470.83	143.51	15.81	4.82	36.845	3.423	266.096	7.535	269.875	7.642
470.87	143.52	15.85	4.83	36.920	3.430	267.297	7.569	271.076	7.676
470.90	143.53	15.88	4.84	37.006	3.438	268.498	7.603	272.276	7.710
470.93	143.54	15.91	4.85	37.082	3.445	269.734	7.638	273.512	7.745
470.96	143.55	15.94	4.86	37.168	3.453	270.934	7.672	274.713	7.779
471.00	143.56	15.98	4.87	37.243	3.460	272.170	7.707	275.949	7.814
471.03	143.57	16.01	4.88	37.329	3.468	273.406	7.742	277.150	7.848
471.06	143.58	16.04	4.89	37.415	3.476	274.607	7.776	278.386	7.883
471.10	143.59	16.08	4.90	37.491	3.483	275.843	7.811	279.622	7.918
471.13	143.60	16.11	4.91	37.577	3.491	277.079	7.846	280.858	7.953
471.16	143.61	16.14	4.92	37.663	3.499	278.315	7.881	282.094	7.988
471.19	143.62	16.17	4.93	37.738	3.506	279.551	7.916	283.330	8.023
471.23	143.63	16.21	4.94	37.824	3.514	280.787	7.951	284.566	8.058
471.26	143.64	16.24	4.95	37.910	3.522	282.023	7.986	285.802	8.093
471.29	143.65	16.27	4.96	37.986	3.529	283.259	8.021	287.038	8.128
471.33	143.66	16.31	4.97	38.072	3.537	284.531	8.057	288.274	8.163
471.36	143.67	16.34	4.98	38.158	3.545	285.767	8.092	289.545	8.199
471.39	143.68	16.37	4.99	38.244	3.553	287.038	8.128	290.781	8.234

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
471.42	143.69	16.40	5.00	38.330	3.561	288.274	8.163	292.053	8.270
471.46	143.70	16.44	5.01	38.416	3.569	289.545	8.199	293.324	8.306
471.49	143.71	16.47	5.02	38.502	3.577	290.817	8.235	294.560	8.341
471.52	143.72	16.50	5.03	38.589	3.585	292.053	8.270	295.831	8.377
471.56	143.73	16.54	5.04	38.675	3.593	293.324	8.306	297.103	8.413
471.59	143.74	16.57	5.05	38.750	3.600	294.595	8.342	298.374	8.449
471.62	143.75	16.60	5.06	38.836	3.608	295.867	8.378	299.645	8.485
471.65	143.76	16.63	5.07	38.911	3.615	297.138	8.414	300.917	8.521
471.69	143.77	16.67	5.08	38.998	3.623	298.445	8.451	302.188	8.557
471.72	143.78	16.70	5.09	39.084	3.631	299.716	8.487	303.495	8.594
471.75	143.79	16.73	5.10	39.159	3.638	300.987	8.523	304.766	8.630
471.78	143.80	16.77	5.11	39.245	3.646	302.294	8.560	306.037	8.666
471.82	143.81	16.80	5.12	39.331	3.654	303.565	8.596	307.344	8.703
471.85	143.82	16.83	5.13	39.407	3.661	304.872	8.633	308.615	8.739
471.88	143.83	16.86	5.14	39.493	3.669	306.143	8.669	309.922	8.776
471.92	143.84	16.90	5.15	39.568	3.676	307.450	8.706	311.228	8.813
471.95	143.85	16.93	5.16	39.654	3.684	308.756	8.743	312.535	8.850
471.98	143.86	16.96	5.17	39.740	3.692	310.063	8.780	313.842	8.887
472.01	143.87	16.99	5.18	39.816	3.699	311.370	8.817	315.113	8.923
472.05	143.88	17.03	5.19	39.902	3.707	312.676	8.854	316.455	8.961
472.08	143.89	17.06	5.20	39.988	3.715	313.983	8.891	317.762	8.998
472.11	143.90	17.09	5.21	40.063	3.722	315.290	8.928	319.068	9.035
472.15	143.91	17.13	5.22	40.149	3.730	316.596	8.965	320.375	9.072
472.18	143.92	17.16	5.23	40.225	3.737	317.938	9.003	321.682	9.109

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
472.21	143.93	17.19	5.24	40.311	3.745	319.245	9.040	323.024	9.147
472.24	143.94	17.22	5.25	40.397	3.753	320.587	9.078	324.330	9.184
472.28	143.95	17.26	5.26	40.472	3.760	321.893	9.115	325.672	9.222
472.31	143.96	17.29	5.27	40.558	3.768	323.235	9.153	326.979	9.259
472.34	143.97	17.32	5.28	40.644	3.776	324.542	9.190	328.321	9.297
472.38	143.98	17.36	5.29	40.731	3.784	325.884	9.228	329.663	9.335
472.41	143.99	17.39	5.30	40.817	3.792	327.226	9.266	331.005	9.373
472.44	144.00	17.42	5.31	40.903	3.800	328.568	9.304	332.347	9.411
472.47	144.01	17.45	5.32	40.989	3.808	329.910	9.342	333.689	9.449
472.51	144.02	17.49	5.33	41.075	3.816	331.252	9.380	335.031	9.487
472.54	144.03	17.52	5.34	41.161	3.824	332.594	9.418	336.373	9.525
472.57	144.04	17.55	5.35	41.247	3.832	333.936	9.457	337.714	9.563
472.61	144.05	17.59	5.36	41.334	3.841	335.278	9.495	339.056	9.602
472.64	144.06	17.62	5.37	41.420	3.849	336.620	9.534	340.398	9.640
472.67	144.07	17.65	5.38	41.506	3.857	337.962	9.572	341.740	9.679
472.70	144.08	17.68	5.39	41.592	3.865	339.304	9.611	343.082	9.717
472.74	144.09	17.72	5.40	41.678	3.874	340.646	9.649	344.424	9.756
472.77	144.10	17.75	5.41	41.764	3.882	341.988	9.688	345.766	9.795
472.80	144.11	17.78	5.42	41.850	3.890	343.330	9.727	347.108	9.834
472.83	144.12	17.81	5.43	41.936	3.899	344.672	9.766	348.450	9.873
472.87	144.13	17.85	5.44	42.022	3.907	346.014	9.805	350.792	9.912
472.90	144.14	17.88	5.45	42.108	3.916	347.356	9.844	352.134	9.951
472.93	144.15	17.91	5.46	42.194	3.924	348.698	9.883	353.476	9.990
472.97	144.16	17.95	5.47	42.280	3.932	350.040	9.923	354.818	10.029

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
473.00	144.17	17.98	5.48	42.421	3.941	351.805	9.962	355.584	10.069
473.03	144.18	18.01	5.49	42.507	3.949	353.182	10.001	356.961	10.108
473.06	144.19	18.04	5.50	42.593	3.957	354.595	10.041	358.374	10.148
473.10	144.20	18.08	5.51	42.690	3.966	356.007	10.081	359.751	10.187
473.13	144.21	18.11	5.52	42.776	3.974	357.385	10.120	361.163	10.227
473.16	144.22	18.14	5.53	42.862	3.982	358.797	10.160	362.576	10.267
473.20	144.23	18.18	5.54	42.948	3.990	360.210	10.200	363.989	10.307
473.23	144.24	18.21	5.55	43.045	3.999	361.623	10.240	365.401	10.347
473.26	144.25	18.24	5.56	43.131	4.007	363.035	10.280	366.814	10.387
473.29	144.26	18.27	5.57	43.217	4.015	364.448	10.320	368.226	10.427
473.33	144.27	18.31	5.58	43.314	4.024	365.860	10.360	369.639	10.467
473.36	144.28	18.34	5.59	43.400	4.032	367.273	10.400	371.052	10.507
473.39	144.29	18.37	5.60	43.497	4.041	368.721	10.441	372.499	10.548
473.43	144.30	18.41	5.61	43.583	4.049	370.133	10.481	373.912	10.588
473.46	144.31	18.44	5.62	43.669	4.057	371.581	10.522	375.360	10.629
473.49	144.32	18.47	5.63	43.755	4.065	372.994	10.562	376.773	10.669
473.52	144.33	18.50	5.64	43.852	4.074	374.442	10.603	378.220	10.710
473.56	144.34	18.54	5.65	43.938	4.082	375.890	10.644	379.668	10.751
473.59	144.35	18.57	5.66	44.024	4.090	377.338	10.685	381.081	10.791
473.62	144.36	18.60	5.67	44.110	4.098	378.785	10.726	382.529	10.832
473.65	144.37	18.64	5.68	44.197	4.106	380.233	10.767	383.977	10.873
473.69	144.38	18.67	5.69	44.283	4.114	381.681	10.808	385.460	10.915
473.72	144.39	18.70	5.70	44.380	4.123	383.129	10.849	386.908	10.956
473.75	144.40	18.73	5.71	44.466	4.131	384.577	10.890	388.356	10.997

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
473.79	144.41	18.77	5.72	44.552	4.139	386.060	10.932	389.804	11.038
473.82	144.42	18.80	5.73	44.638	4.147	387.508	10.973	391.287	11.080
473.85	144.43	18.83	5.74	44.724	4.155	388.991	11.015	392.735	11.121
473.88	144.44	18.86	5.75	44.810	4.163	390.439	11.056	394.218	11.163
473.92	144.45	18.90	5.76	44.896	4.171	391.923	11.098	395.701	11.205
473.95	144.46	18.93	5.77	44.982	4.179	393.406	11.140	397.149	11.246
473.98	144.47	18.96	5.78	45.068	4.187	394.854	11.181	398.632	11.288
474.02	144.48	19.00	5.79	45.155	4.195	396.337	11.223	400.116	11.330
474.05	144.49	19.03	5.80	45.241	4.203	397.820	11.265	401.599	11.372
474.08	144.50	19.06	5.81	45.327	4.211	399.303	11.307	403.082	11.414
474.11	144.51	19.09	5.82	45.413	4.219	400.787	11.349	404.565	11.456
474.15	144.52	19.13	5.83	45.499	4.227	402.305	11.392	406.048	11.498
474.18	144.53	19.16	5.84	45.585	4.235	403.788	11.434	407.567	11.541
474.21	144.54	19.19	5.85	45.682	4.244	405.271	11.476	409.050	11.583
474.25	144.55	19.23	5.86	45.768	4.252	406.790	11.519	410.569	11.626
474.28	144.56	19.26	5.87	45.854	4.260	408.273	11.561	412.052	11.668
474.31	144.57	19.29	5.88	45.940	4.268	409.792	11.604	413.570	11.711
474.34	144.58	19.32	5.89	46.026	4.276	411.310	11.647	415.089	11.754
474.38	144.59	19.36	5.90	46.113	4.284	412.829	11.690	416.572	11.796
474.41	144.60	19.39	5.91	46.199	4.292	414.347	11.733	418.091	11.839
474.44	144.61	19.42	5.92	46.285	4.300	415.831	11.775	419.609	11.882
474.48	144.62	19.46	5.93	46.382	4.309	417.384	11.819	421.128	11.925
474.51	144.63	19.49	5.94	46.468	4.317	418.903	11.862	422.646	11.968
474.54	144.64	19.52	5.95	46.554	4.325	420.422	11.905	424.200	12.012

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
474.57	144.65	19.55	5.96	46.640	4.333	421.940	11.948	425.719	12.055
474.61	144.66	19.59	5.97	46.737	4.342	423.494	11.992	427.237	12.098
474.64	144.67	19.62	5.98	46.823	4.350	425.012	12.035	428.791	12.142
474.67	144.68	19.65	5.99	46.909	4.358	426.566	12.079	430.310	12.185
474.70	144.69	19.69	6.00	47.006	4.367	428.085	12.122	431.863	12.229
474.74	144.70	19.72	6.01	47.092	4.375	429.639	12.166	433.417	12.273
474.77	144.71	19.75	6.02	47.189	4.384	431.192	12.210	434.936	12.316
474.80	144.72	19.78	6.03	47.286	4.393	432.746	12.254	436.490	12.360
474.84	144.73	19.82	6.04	47.372	4.401	434.300	12.298	438.044	12.404
474.87	144.74	19.85	6.05	47.469	4.410	435.854	12.342	439.597	12.448
474.90	144.75	19.88	6.06	47.566	4.419	437.408	12.386	441.151	12.492
474.93	144.76	19.91	6.07	47.652	4.427	438.962	12.430	442.740	12.537
474.97	144.77	19.95	6.08	47.749	4.436	440.516	12.474	444.294	12.581
475.00	144.78	19.98	6.09	47.846	4.445	442.105	12.519	445.848	12.625
475.03	144.79	20.01	6.10	47.932	4.453	443.659	12.563	447.437	12.670
475.07	144.80	20.05	6.11	48.029	4.462	445.248	12.608	448.991	12.714
475.10	144.81	20.08	6.12	48.115	4.470	446.802	12.652	450.580	12.759
475.13	144.82	20.11	6.13	48.212	4.479	448.391	12.697	452.169	12.804
475.16	144.83	20.14	6.14	48.298	4.487	449.980	12.742	453.759	12.849
475.20	144.84	20.18	6.15	48.394	4.496	451.569	12.787	455.348	12.894
475.23	144.85	20.21	6.16	48.491	4.505	453.158	12.832	456.937	12.939
475.26	144.86	20.24	6.17	48.577	4.513	454.747	12.877	458.526	12.984
475.30	144.87	20.28	6.18	48.674	4.522	456.337	12.922	460.115	13.029
475.33	144.88	20.31	6.19	48.760	4.530	457.926	12.967	461.704	13.074

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
475.36	144.89	20.34	6.20	48.847	4.538	459.550	13.013	463.329	13.120
475.39	144.90	20.37	6.21	48.943	4.547	461.139	13.058	464.918	13.165
475.43	144.91	20.41	6.22	49.030	4.555	462.764	13.104	466.507	13.210
475.46	144.92	20.44	6.23	49.126	4.564	464.353	13.149	468.132	13.256
475.49	144.93	20.47	6.24	49.213	4.572	465.977	13.195	469.756	13.302
475.52	144.94	20.51	6.25	49.299	4.580	467.602	13.241	471.345	13.347
475.56	144.95	20.54	6.26	49.396	4.589	469.226	13.287	472.970	13.393
475.59	144.96	20.57	6.27	49.482	4.597	470.851	13.333	474.594	13.439
475.62	144.97	20.60	6.28	49.579	4.606	472.475	13.379	476.219	13.485
475.66	144.98	20.64	6.29	49.665	4.614	474.100	13.425	477.843	13.531
475.69	144.99	20.67	6.30	49.751	4.622	475.724	13.471	479.503	13.578
475.72	145.00	20.70	6.31	49.848	4.631	477.349	13.517	481.127	13.624
475.75	145.01	20.73	6.32	49.934	4.639	478.973	13.563	482.752	13.670
475.79	145.02	20.77	6.33	50.020	4.647	480.633	13.610	484.412	13.717
475.82	145.03	20.80	6.34	50.117	4.656	482.258	13.656	486.036	13.763
475.85	145.04	20.83	6.35	50.203	4.664	483.917	13.703	487.696	13.810
475.89	145.05	20.87	6.36	50.300	4.673	485.577	13.750	489.320	13.856
475.92	145.06	20.90	6.37	50.397	4.682	487.202	13.796	490.980	13.903
475.95	145.07	20.93	6.38	50.493	4.691	488.861	13.843	492.640	13.950
475.98	145.08	20.96	6.39	50.590	4.700	490.521	13.890	494.300	13.997
476.02	145.09	21.00	6.40	50.676	4.708	492.181	13.937	495.960	14.044
476.05	145.10	21.03	6.41	50.773	4.717	493.841	13.984	497.619	14.091
476.08	145.11	21.06	6.42	50.870	4.726	495.536	14.032	499.279	14.138
476.12	145.12	21.10	6.43	50.967	4.735	497.196	14.079	500.974	14.186

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
476.15	145.13	21.13	6.44	51.075	4.745	498.855	14.126	502.634	14.233
476.18	145.14	21.16	6.45	51.172	4.754	500.551	14.174	504.329	14.281
476.21	145.15	21.19	6.46	51.268	4.763	502.210	14.221	505.989	14.328
476.25	145.16	21.23	6.47	51.355	4.771	503.905	14.269	507.684	14.376
476.28	145.17	21.26	6.48	51.451	4.780	505.601	14.317	509.379	14.424
476.31	145.18	21.29	6.49	51.548	4.789	507.296	14.365	511.039	14.471
476.35	145.19	21.33	6.50	51.645	4.798	508.991	14.413	512.734	14.519
476.38	145.20	21.36	6.51	51.742	4.807	510.686	14.461	514.429	14.567
476.41	145.21	21.39	6.52	51.839	4.816	512.381	14.509	516.124	14.615
476.44	145.22	21.42	6.53	51.936	4.825	514.076	14.557	517.855	14.664
476.48	145.23	21.46	6.54	52.022	4.833	515.771	14.605	519.550	14.712
476.51	145.24	21.49	6.55	52.119	4.842	517.502	14.654	521.245	14.760
476.54	145.25	21.52	6.56	52.216	4.851	519.197	14.702	522.975	14.809
476.57	145.26	21.56	6.57	52.313	4.860	520.927	14.751	524.670	14.857
476.61	145.27	21.59	6.58	52.409	4.869	522.622	14.799	526.401	14.906
476.64	145.28	21.62	6.59	52.506	4.878	524.353	14.848	528.131	14.955
476.67	145.29	21.65	6.60	52.603	4.887	526.083	14.897	529.862	15.004
476.71	145.30	21.69	6.61	52.700	4.896	527.814	14.946	531.592	15.053
476.74	145.31	21.72	6.62	52.797	4.905	529.544	14.995	533.323	15.102
476.77	145.32	21.75	6.63	52.894	4.914	531.274	15.044	535.053	15.151
476.80	145.33	21.78	6.64	52.980	4.922	533.005	15.093	536.783	15.200
476.84	145.34	21.82	6.65	53.077	4.931	534.735	15.142	538.514	15.249
476.87	145.35	21.85	6.66	53.174	4.940	536.501	15.192	540.244	15.298
476.90	145.36	21.88	6.67	53.271	4.949	538.231	15.241	542.010	15.348

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
476.94	145.37	21.92	6.68	53.367	4.958	539.997	15.291	543.740	15.397
476.97	145.38	21.95	6.69	53.464	4.967	541.727	15.340	545.506	15.447
477.00	145.39	21.98	6.70	53.561	4.976	543.493	15.390	547.272	15.497
477.03	145.40	22.01	6.71	53.658	4.985	545.259	15.440	549.038	15.547
477.07	145.41	22.05	6.72	53.766	4.995	547.025	15.490	550.768	15.596
477.10	145.42	22.08	6.73	53.863	5.004	548.790	15.540	552.534	15.646
477.13	145.43	22.11	6.74	53.959	5.013	550.556	15.590	554.335	15.697
477.17	145.44	22.15	6.75	54.056	5.022	552.322	15.640	556.101	15.747
477.20	145.45	22.18	6.76	54.142	5.030	554.088	15.690	557.866	15.797
477.23	145.46	22.21	6.77	54.239	5.039	555.889	15.741	559.632	15.847
477.26	145.47	22.24	6.78	54.336	5.048	557.654	15.791	561.433	15.898
477.30	145.48	22.28	6.79	54.433	5.057	559.455	15.842	563.199	15.948
477.33	145.49	22.31	6.80	54.530	5.066	561.221	15.892	565.000	15.999
477.36	145.50	22.34	6.81	54.627	5.075	563.022	15.943	566.801	16.050
477.40	145.51	22.38	6.82	54.734	5.085	564.823	15.994	568.567	16.100
477.43	145.52	22.41	6.83	54.831	5.094	566.624	16.045	570.368	16.151
477.46	145.53	22.44	6.84	54.928	5.103	568.425	16.096	572.169	16.202
477.49	145.54	22.47	6.85	55.025	5.112	570.226	16.147	573.970	16.253
477.53	145.55	22.51	6.86	55.122	5.121	572.028	16.198	575.806	16.305
477.56	145.56	22.54	6.87	55.230	5.131	573.829	16.249	577.607	16.356
477.59	145.57	22.57	6.88	55.326	5.140	575.630	16.300	579.408	16.407
477.62	145.58	22.60	6.89	55.423	5.149	577.466	16.352	581.245	16.459
477.66	145.59	22.64	6.90	55.520	5.158	579.267	16.403	583.046	16.510
477.69	145.60	22.67	6.91	55.617	5.167	581.103	16.455	584.882	16.562

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
477.72	145.61	22.70	6.92	55.714	5.176	582.940	16.507	586.683	16.613
477.76	145.62	22.74	6.93	55.811	5.185	584.776	16.559	588.519	16.665
477.79	145.63	22.77	6.94	55.908	5.194	586.577	16.610	590.356	16.717
477.82	145.64	22.80	6.95	56.005	5.203	588.414	16.662	592.192	16.769
477.85	145.65	22.83	6.96	56.101	5.212	590.250	16.714	594.029	16.821
477.89	145.66	22.87	6.97	56.198	5.221	592.122	16.767	595.865	16.873
477.92	145.67	22.90	6.98	56.295	5.230	593.958	16.819	597.737	16.926
477.95	145.68	22.93	6.99	56.392	5.239	595.794	16.871	599.573	16.978
477.99	145.69	22.97	7.00	56.489	5.248	597.666	16.924	601.409	17.030
478.02	145.70	23.00	7.01	56.586	5.257	599.502	16.976	603.281	17.083
478.05	145.71	23.03	7.02	56.683	5.266	601.374	17.029	605.153	17.136
478.08	145.72	23.06	7.03	56.780	5.275	603.210	17.081	606.989	17.188
478.12	145.73	23.10	7.04	56.876	5.284	605.082	17.134	608.861	17.241
478.15	145.74	23.13	7.05	56.984	5.294	606.954	17.187	610.732	17.294
478.18	145.75	23.16	7.06	57.081	5.303	608.825	17.240	612.604	17.347
478.22	145.76	23.20	7.07	57.189	5.313	610.697	17.293	614.476	17.400
478.25	145.77	23.23	7.08	57.285	5.322	612.569	17.346	616.347	17.453
478.28	145.78	23.26	7.09	57.393	5.332	614.476	17.400	618.219	17.506
478.31	145.79	23.29	7.10	57.501	5.342	616.347	17.453	620.126	17.560
478.35	145.80	23.33	7.11	57.598	5.351	618.254	17.507	621.998	17.613
478.38	145.81	23.36	7.12	57.705	5.361	620.126	17.560	623.905	17.667
478.41	145.82	23.39	7.13	57.813	5.371	622.033	17.614	625.776	17.720
478.44	145.83	23.43	7.14	57.921	5.381	623.940	17.668	627.683	17.774
478.48	145.84	23.46	7.15	58.028	5.391	625.812	17.721	629.590	17.828

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
478.51	145.85	23.49	7.16	58.136	5.401	627.719	17.775	631.497	17.882
478.54	145.86	23.52	7.17	58.243	5.411	629.626	17.829	633.404	17.936
478.58	145.87	23.56	7.18	58.351	5.421	631.568	17.884	635.311	17.990
478.61	145.88	23.59	7.19	58.459	5.431	633.475	17.938	637.254	18.045
478.64	145.89	23.62	7.20	58.577	5.442	635.382	17.992	639.161	18.099
478.67	145.90	23.65	7.21	58.685	5.452	637.324	18.047	641.068	18.153
478.71	145.91	23.69	7.22	58.792	5.462	639.231	18.101	643.010	18.208
478.74	145.92	23.72	7.23	58.911	5.473	641.174	18.156	644.952	18.263
478.77	145.93	23.75	7.24	59.018	5.483	643.116	18.211	646.859	18.317
478.81	145.94	23.79	7.25	59.126	5.493	645.058	18.266	648.802	18.372
478.84	145.95	23.82	7.26	59.245	5.504	647.001	18.321	650.744	18.427
478.87	145.96	23.85	7.27	59.352	5.514	648.943	18.376	652.686	18.482
478.90	145.97	23.88	7.28	59.471	5.525	650.885	18.431	654.664	18.538
478.94	145.98	23.92	7.29	59.578	5.535	652.828	18.486	656.606	18.593
478.97	145.99	23.95	7.30	59.697	5.546	654.805	18.542	658.549	18.648
479.00	146.00	23.98	7.31	59.815	5.557	656.747	18.597	660.526	18.704
479.04	146.01	24.02	7.32	59.923	5.567	658.725	18.653	662.468	18.759
479.07	146.02	24.05	7.33	60.041	5.578	660.667	18.708	664.446	18.815
479.10	146.03	24.08	7.34	60.159	5.589	662.645	18.764	666.424	18.871
479.13	146.04	24.11	7.35	60.278	5.600	664.623	18.820	668.401	18.927
479.17	146.05	24.15	7.36	60.396	5.611	666.600	18.876	670.379	18.983
479.20	146.06	24.18	7.37	60.515	5.622	668.578	18.932	672.357	19.039
479.23	146.07	24.21	7.38	60.633	5.633	670.591	18.989	674.334	19.095
479.27	146.08	24.25	7.39	60.751	5.644	672.568	19.045	676.347	19.152

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
479.30	146.09	24.28	7.40	60.881	5.656	674.581	19.102	678.325	19.208
479.33	146.10	24.31	7.41	60.999	5.667	676.559	19.158	680.338	19.265
479.36	146.11	24.34	7.42	61.117	5.678	678.572	19.215	682.351	19.322
479.40	146.12	24.38	7.43	61.236	5.689	680.585	19.272	684.328	19.378
479.43	146.13	24.41	7.44	61.354	5.700	682.598	19.329	686.341	19.435
479.46	146.14	24.44	7.45	61.473	5.711	684.611	19.386	688.354	19.492
479.49	146.15	24.48	7.46	61.591	5.722	686.624	19.443	690.402	19.550
479.53	146.16	24.51	7.47	61.720	5.734	688.637	19.500	692.415	19.607
479.56	146.17	24.54	7.48	61.839	5.745	690.685	19.558	694.428	19.664
479.59	146.18	24.57	7.49	61.968	5.757	692.698	19.615	696.477	19.722
479.63	146.19	24.61	7.50	62.097	5.769	694.746	19.673	698.489	19.779
479.66	146.20	24.64	7.51	62.226	5.781	696.759	19.730	700.538	19.837
479.69	146.21	24.67	7.52	62.355	5.793	698.807	19.788	702.586	19.895
479.72	146.22	24.70	7.53	62.495	5.806	700.856	19.846	704.634	19.953
479.76	146.23	24.74	7.54	62.624	5.818	702.904	19.904	706.682	20.011
479.79	146.24	24.77	7.55	62.764	5.831	704.987	19.963	708.731	20.069
479.82	146.25	24.80	7.56	62.904	5.844	707.036	20.021	710.814	20.128
479.86	146.26	24.84	7.57	63.044	5.857	709.119	20.080	712.863	20.186
479.89	146.27	24.87	7.58	63.195	5.871	711.167	20.138	714.946	20.245
479.92	146.28	24.90	7.59	63.335	5.884	713.251	20.197	717.030	20.304
479.95	146.29	24.93	7.60	63.496	5.899	715.335	20.256	719.113	20.363
479.99	146.30	24.97	7.61	63.647	5.913	717.418	20.315	721.197	20.422
480.02	146.31	25.00	7.62	63.798	5.927	719.502	20.374	723.280	20.481
480.05	146.32	25.03	7.63	63.959	5.942	721.585	20.433	725.364	20.540

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
480.09	146.33	25.07	7.64	64.131	5.958	723.704	20.493	727.483	20.600
480.12	146.34	25.10	7.65	64.314	5.975	725.823	20.553	729.566	20.659
480.15	146.35	25.13	7.66	64.519	5.994	727.907	20.612	731.685	20.719
480.18	146.36	25.16	7.67	64.734	6.014	730.061	20.673	733.804	20.779
480.22	146.37	25.20	7.68	64.949	6.034	732.180	20.733	735.958	20.840
480.25	146.38	25.23	7.69	65.165	6.054	734.299	20.793	738.077	20.900
480.28	146.39	25.26	7.70	65.391	6.075	736.453	20.854	740.231	20.961
480.31	146.40	25.30	7.71	65.627	6.097	738.607	20.915	742.350	21.021
480.35	146.41	25.33	7.72	65.854	6.118	740.761	20.976	744.540	21.083
480.38	146.42	25.36	7.73	66.058	6.137	742.915	21.037	746.694	21.144
480.41	146.43	25.39	7.74	66.263	6.156	745.105	21.099	748.848	21.205
480.45	146.44	25.43	7.75	66.467	6.175	747.259	21.160	751.038	21.267
480.48	146.45	25.46	7.76	66.693	6.196	749.449	21.222	753.227	21.329
480.51	146.46	25.49	7.77	66.962	6.221	751.638	21.284	755.417	21.391
480.54	146.47	25.52	7.78	67.285	6.251	753.828	21.346	757.606	21.453
480.58	146.48	25.56	7.79	67.597	6.280	756.052	21.409	759.831	21.516
480.61	146.49	25.59	7.80	67.866	6.305	758.277	21.472	762.056	21.579
480.64	146.50	25.62	7.81	68.103	6.327	760.502	21.535	764.281	21.642
480.68	146.51	25.66	7.82	68.318	6.347	762.762	21.599	766.506	21.705
480.71	146.52	25.69	7.83	68.512	6.365	764.987	21.662	768.766	21.769
480.74	146.53	25.72	7.84	68.706	6.383	767.247	21.726	771.026	21.833
480.77	146.54	25.75	7.85	68.900	6.401	769.507	21.790	773.286	21.897
480.81	146.55	25.79	7.86	69.115	6.421	771.767	21.854	775.546	21.961
480.84	146.56	25.82	7.87	69.320	6.440	774.028	21.918	777.806	22.025

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
480.87	146.57	25.85	7.88	69.524	6.459	776.323	21.983	780.066	22.089
480.91	146.58	25.89	7.89	69.707	6.476	778.583	22.047	782.362	22.154
480.94	146.59	25.92	7.90	69.890	6.493	780.879	22.112	784.657	22.219
480.97	146.60	25.95	7.91	70.062	6.509	783.174	22.177	786.953	22.284
481.00	146.61	25.98	7.92	70.245	6.526	785.470	22.242	789.248	22.349
481.04	146.62	26.02	7.93	70.407	6.541	787.800	22.308	791.579	22.415
481.07	146.63	26.05	7.94	70.579	6.557	790.096	22.373	793.874	22.480
481.10	146.64	26.08	7.95	70.762	6.574	792.427	22.439	796.205	22.546
481.14	146.65	26.12	7.96	70.913	6.588	794.757	22.505	798.501	22.611
481.17	146.66	26.15	7.97	71.053	6.601	797.088	22.571	800.831	22.677
481.20	146.67	26.18	7.98	71.182	6.613	799.419	22.637	803.162	22.743
481.23	146.68	26.21	7.99	71.300	6.624	801.750	22.703	805.528	22.810
481.27	146.69	26.25	8.00	71.429	6.636	804.080	22.769	807.859	22.876
481.30	146.70	26.28	8.01	71.548	6.647	806.446	22.836	810.190	22.942
481.33	146.71	26.31	8.02	71.666	6.658	808.777	22.902	812.556	23.009
481.36	146.72	26.35	8.03	71.774	6.668	811.143	22.969	814.922	23.076
481.40	146.73	26.38	8.04	71.881	6.678	813.509	23.036	817.253	23.142
481.43	146.74	26.41	8.05	72.000	6.689	815.840	23.102	819.619	23.209
481.46	146.75	26.44	8.06	72.107	6.699	818.206	23.169	821.985	23.276
481.50	146.76	26.48	8.07	72.215	6.709	820.572	23.236	824.351	23.343
481.53	146.77	26.51	8.08	72.323	6.719	822.938	23.303	826.717	23.410
481.56	146.78	26.54	8.09	72.441	6.730	825.340	23.371	829.083	23.477
481.59	146.79	26.57	8.10	72.549	6.740	827.706	23.438	831.485	23.545
481.63	146.80	26.61	8.11	72.667	6.751	830.107	23.506	833.851	23.612

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
481.66	146.81	26.64	8.12	72.775	6.761	832.473	23.573	836.252	23.680
481.69	146.82	26.67	8.13	72.882	6.771	834.875	23.641	838.618	23.747
481.73	146.83	26.71	8.14	72.990	6.781	837.276	23.709	841.020	23.815
481.76	146.84	26.74	8.15	73.098	6.791	839.642	23.776	843.421	23.883
481.79	146.85	26.77	8.16	73.195	6.800	842.044	23.844	845.822	23.951
481.82	146.86	26.80	8.17	73.302	6.810	844.445	23.912	848.224	24.019
481.86	146.87	26.84	8.18	73.410	6.820	846.882	23.981	850.625	24.087
481.89	146.88	26.87	8.19	73.507	6.829	849.283	24.049	853.062	24.156
481.92	146.89	26.90	8.20	73.614	6.839	851.685	24.117	855.463	24.224
481.96	146.90	26.94	8.21	73.711	6.848	854.121	24.186	857.865	24.292
481.99	146.91	26.97	8.22	73.819	6.858	856.523	24.254	860.301	24.361
482.02	146.92	27.00	8.23	73.916	6.867	858.959	24.323	862.703	24.429
482.05	146.93	27.03	8.24	74.023	6.877	861.361	24.391	865.140	24.498
482.09	146.94	27.07	8.25	74.131	6.887	863.798	24.460	867.576	24.567
482.12	146.95	27.10	8.26	74.228	6.896	866.234	24.529	870.013	24.636
482.15	146.96	27.13	8.27	74.325	6.905	868.671	24.598	872.450	24.705
482.19	146.97	27.17	8.28	74.422	6.914	871.108	24.667	874.886	24.774
482.22	146.98	27.20	8.29	74.508	6.922	873.544	24.736	877.323	24.843
482.25	146.99	27.23	8.30	74.605	6.931	876.016	24.806	879.760	24.912
482.28	147.00	27.26	8.31	74.701	6.940	878.453	24.875	882.232	24.982
482.32	147.01	27.30	8.32	74.809	6.950	880.925	24.945	884.669	25.051
482.35	147.02	27.33	8.33	74.906	6.959	883.362	25.014	887.141	25.121
482.38	147.03	27.36	8.34	75.024	6.970	885.834	25.084	889.577	25.190
482.41	147.04	27.40	8.35	75.132	6.980	888.271	25.153	892.049	25.260

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
482.45	147.05	27.43	8.36	75.240	6.990	890.743	25.223	894.521	25.330
482.48	147.06	27.46	8.37	75.337	6.999	893.215	25.293	896.993	25.400
482.51	147.07	27.49	8.38	75.433	7.008	895.687	25.363	899.465	25.470
482.55	147.08	27.53	8.39	75.530	7.017	898.159	25.433	901.937	25.540
482.58	147.09	27.56	8.40	75.627	7.026	900.666	25.504	904.409	25.610
482.61	147.10	27.59	8.41	75.735	7.036	903.138	25.574	906.917	25.681
482.64	147.11	27.62	8.42	75.832	7.045	905.610	25.644	909.389	25.751
482.68	147.12	27.66	8.43	75.939	7.055	908.118	25.715	911.896	25.822
482.71	147.13	27.69	8.44	76.025	7.063	910.590	25.785	914.368	25.892
482.74	147.14	27.72	8.45	76.122	7.072	913.097	25.856	916.876	25.963
482.78	147.15	27.76	8.46	76.219	7.081	915.604	25.927	919.383	26.034
482.81	147.16	27.79	8.47	76.305	7.089	918.112	25.998	921.855	26.104
482.84	147.17	27.82	8.48	76.391	7.097	920.619	26.069	924.362	26.175
482.87	147.18	27.85	8.49	76.478	7.105	923.126	26.140	926.870	26.246
482.91	147.19	27.89	8.50	76.564	7.113	925.634	26.211	929.377	26.317
482.94	147.20	27.92	8.51	76.650	7.121	928.141	26.282	931.920	26.389
482.97	147.21	27.95	8.52	76.736	7.129	930.648	26.353	934.427	26.460
483.01	147.22	27.99	8.53	76.822	7.137	933.191	26.425	936.934	26.531
483.04	147.23	28.02	8.54	76.908	7.145	935.698	26.496	939.477	26.603
483.07	147.24	28.05	8.55	77.005	7.154	938.206	26.567	941.984	26.674
483.10	147.25	28.08	8.56	77.091	7.162	940.748	26.639	944.527	26.746
483.14	147.26	28.12	8.57	77.188	7.171	943.291	26.711	947.034	26.817
483.17	147.27	28.15	8.58	77.274	7.179	945.798	26.782	949.577	26.889
483.20	147.28	28.18	8.59	77.349	7.186	948.341	26.854	952.120	26.961

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
483.23	147.29	28.22	8.60	77.435	7.194	950.884	26.926	954.662	27.033
483.27	147.30	28.25	8.61	77.522	7.202	953.426	26.998	957.205	27.105
483.30	147.31	28.28	8.62	77.608	7.210	955.969	27.070	959.748	27.177
483.33	147.32	28.31	8.63	77.694	7.218	958.512	27.142	962.290	27.249
483.37	147.33	28.35	8.64	77.791	7.227	961.090	27.215	964.833	27.321
483.40	147.34	28.38	8.65	77.877	7.235	963.632	27.287	967.411	27.394
483.43	147.35	28.41	8.66	77.963	7.243	966.175	27.359	969.954	27.466
483.46	147.36	28.44	8.67	78.060	7.252	968.753	27.432	972.496	27.538
483.50	147.37	28.48	8.68	78.146	7.260	971.296	27.504	975.074	27.611
483.53	147.38	28.51	8.69	78.232	7.268	973.873	27.577	977.652	27.684
483.56	147.39	28.54	8.70	78.318	7.276	976.451	27.650	980.195	27.756
483.60	147.40	28.58	8.71	78.415	7.285	978.994	27.722	982.773	27.829
483.63	147.41	28.61	8.72	78.501	7.293	981.572	27.795	985.351	27.902
483.66	147.42	28.64	8.73	78.587	7.301	984.150	27.868	987.929	27.975
483.69	147.43	28.67	8.74	78.673	7.309	986.728	27.941	990.507	28.048
483.73	147.44	28.71	8.75	78.759	7.317	989.306	28.014	993.085	28.121
483.76	147.45	28.74	8.76	78.846	7.325	991.919	28.088	995.663	28.194
483.79	147.46	28.77	8.77	78.932	7.333	994.497	28.161	998.276	28.268
483.83	147.47	28.81	8.78	79.029	7.342	997.075	28.234	1000.854	28.341
483.86	147.48	28.84	8.79	79.115	7.350	999.689	28.308	1003.467	28.415
483.89	147.49	28.87	8.80	79.212	7.359	1002.267	28.381	1006.045	28.488
483.92	147.50	28.90	8.81	79.308	7.368	1004.880	28.455	1008.658	28.562
483.96	147.51	28.94	8.82	79.405	7.377	1007.493	28.529	1011.236	28.635
483.99	147.52	28.97	8.83	79.502	7.386	1010.106	28.603	1013.850	28.709

F.R.L

levation (MSL, ft)	Elevation (MSL, m)	Depth of water from D.W.L/O.S.L		Area (M.Sq.ft)	Area (M.Sq.m)	Live Capacity		Gross Capacity (Live + Dead)	
		ft	m			Volume (M.Cu.ft)	Volume (M.Cu.m)	Volume (M.Cu.ft)	Volume (M.Cu.m)
484.02	147.53	29.00	8.84	79.610	7.396	1012.684	28.676	1016.463	28.783
484.06	147.54	29.04	8.85	79.707	7.405	1015.298	28.750	1019.076	28.857
484.09	147.55	29.07	8.86	79.814	7.415	1017.946	28.825	1021.690	28.931
484.12	147.56	29.10	8.87	79.922	7.425	1020.560	28.899	1024.338	29.006
484.15	147.57	29.13	8.88	80.040	7.436	1023.173	28.973	1026.951	29.080
484.19	147.58	29.17	8.89	80.148	7.446	1025.786	29.047	1029.565	29.154
484.22	147.59	29.20	8.90	80.256	7.456	1028.435	29.122	1032.213	29.229
484.25	147.60	29.23	8.91	80.363	7.466	1031.083	29.197	1034.827	29.303
484.28	147.61	29.27	8.92	80.471	7.476	1033.697	29.271	1037.475	29.378
484.32	147.62	29.30	8.93	80.579	7.486	1036.345	29.346	1040.124	29.453
484.35	147.63	29.33	8.94	80.686	7.496	1038.994	29.421	1042.772	29.528
484.38	147.64	29.36	8.95	80.794	7.506	1041.642	29.496	1045.421	29.603
484.42	147.65	29.40	8.96	80.891	7.515	1044.291	29.571	1048.070	29.678
484.45	147.66	29.43	8.97	80.998	7.525	1046.940	29.646	1050.718	29.753
484.48	147.67	29.46	8.98	81.106	7.535	1049.624	29.722	1053.367	29.828
484.51	147.68	29.49	8.99	81.203	7.544	1052.272	29.797	1056.051	29.904
484.55	147.69	29.53	9.00	81.311	7.554	1054.956	29.873	1058.699	29.979
484.58	147.70	29.56	9.01	81.407	7.563	1057.605	29.948	1061.383	30.055

Annexure - 2
Mobilisation and Calibration Report
Aji 1 Reservoir

1 MOBILISATION

1.1 Introduction

Ocean Science & Surveying Pvt. Ltd. (OSaS) was contracted by Narmada Water Resources, Water Supply & Kalpsar Department (WRD) to carry out topographic and bathymetric survey of thirteen reservoirs in the Saurashtra region; namely Bhadar-1, Bhadar-2, Brahmani-1, Und-1, Machhu-1, Machhu-2, Khodiyar, Aaji-1, Nara, Tappar, Rudramata, Mitti and Fatehghadh.

This report documents the mobilisation and calibrations carried out by OSaS on board SMB Ocean for bathymetric survey of Aji-1 reservoir in Saurashtra region, Gujarat.

The survey team arrived at the survey site on 26th March 2021. After necessary meetings and discussions on the same day, the survey team established two reference stations (TBM) using RTK systems for checking the DGPS consistency. The levelling of these TBMs was carried out with respect to the known level of FRL provided by the client. Mobilisation of equipment on board SMB Ocean was started on 27th March 2021. Initial on board system preparation and equipment checks were completed on 28th March. A bar check was carried out every day before commencing the survey. The topographic survey commenced on 27th March and bathymetric survey commenced on 28th March. Bathymetric survey was completed on 04th April and topographic survey was completed on 07th April 2021.

1.2 HSE Checks

A safety induction was given by the Party Chief prior to survey, detailing personnel responsibilities in the event of an emergency, life jacket location, safety gear locations and procedures and signals for emergencies.

Back deck procedures were explained and enforced with no single man operations and all non-essential personnel keeping clear of operations. PPE included safety boots, hard hats and cover-alls for all personnel involved in back deck operations.

1.3 Survey Equipment list on SMB Ocean

1.3.1 Navigation and Positioning

Item	Quantity
Hemisphere DGPS system with cables	1
Navigation computer with Hypack software	1
Moxa 8-port cable	4
Hemisphere RTK system with all accessories	3

1.3.2 Single beam Echo sounder

Item	Quantity
Odom MK III Single beam echo sounder	2
Dual frequency transducer and mounting pole	2
Bar check	1
MRU-PD	2
TSS HS-50 Heave sensor	1

1.3.3 Auto Level

Item	Quantity
Geomax auto level	1

1.3.4 Power Systems

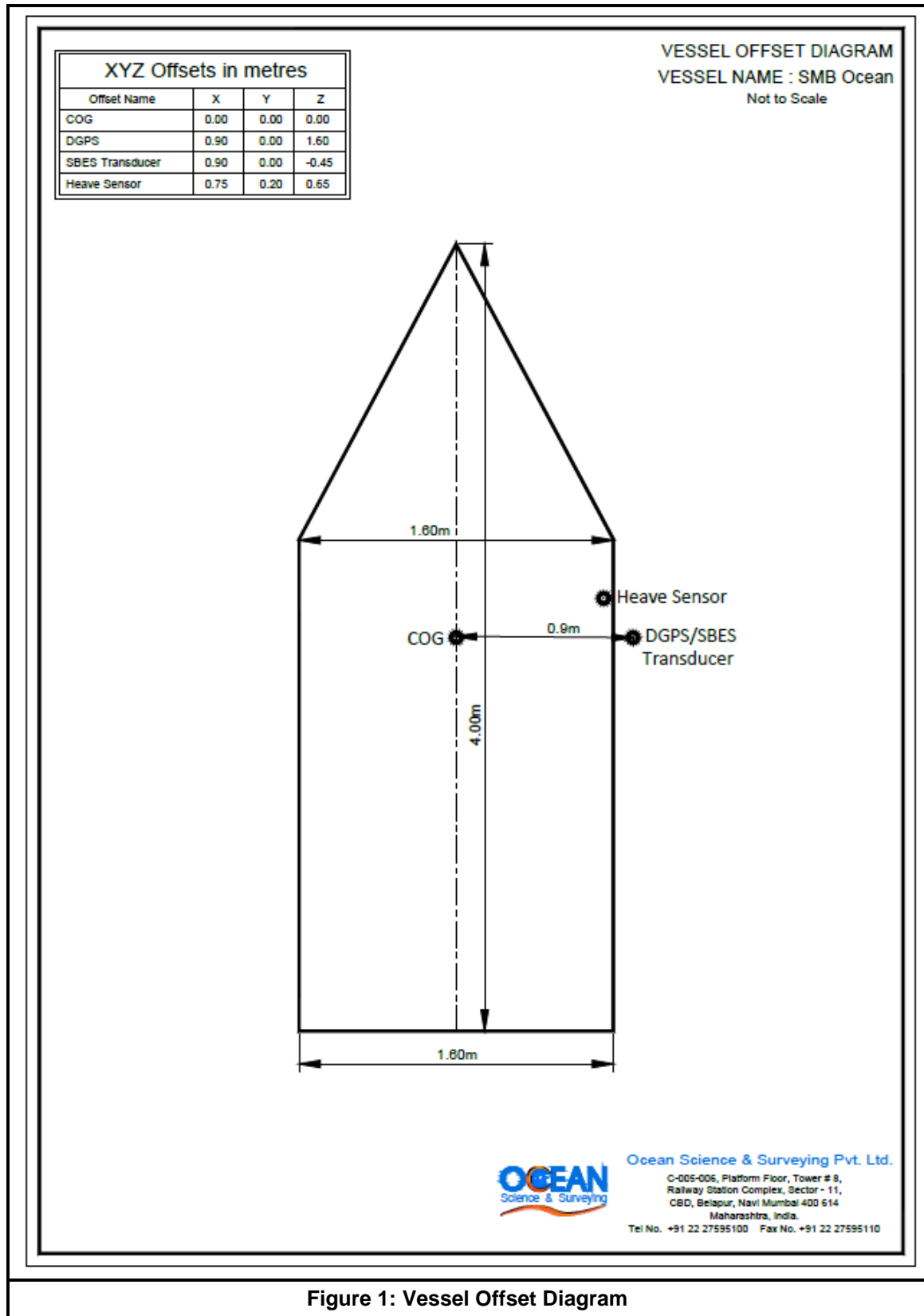
Item	Quantity
2KVA stabilizer	2
1 KVA generator	3
24V power supply	5
Exide battery 100AH	1

1.3.5 Miscellaneous

Item	Quantity
Monitor	5
Laptop	2
LCD monitors	5
24V power supply	5
Helmets / life jackets	8
Tool box	1
Tripod and Tribrach	4 & 3
Exide battery 100AH	1
Antenna T-section	2 Sets
Echo rolls	52 nos
HP printer	1 nos
UPS	2 Sets
Switch board	9 Sets
Drill machine	1 Set

1.4 Vessel Offset Diagram

The equipment offsets in the Survey Motor Boat (SMB) Ocean are shown in the figure below:



2 EQUIPMENT CALIBRATIONS

2.1 DGPS Calibrations

The details of the DGPS consistency checks are as follows:

In order to determine the integrity and reliability of the positioning system, the system was checked for its consistency during mobilisation.

Two reference stations were established as temporary control points/temporary benchmarks (TBM). The levelling of these TBMs was completed using an auto level, with respect to the known level of FRL which is given as 147.52m (484.00ft) above MSL, provided by the client. The base stations of the RTK were set up at these positions and two-hour continuous observations using Hemisphere RTK positioning system was conducted to fix the consistency of the position for horizontal control. The system provides real time correction signals, providing centimetre level accuracy. Additional TBMs were established at various parts of the survey area to keep the rover in range with respect to the base station.

The details of reference stations OSaS-TBM-AJ-01 and OSaS-TBM-AJ-02 are given in **Table 1** and **Table 2**.

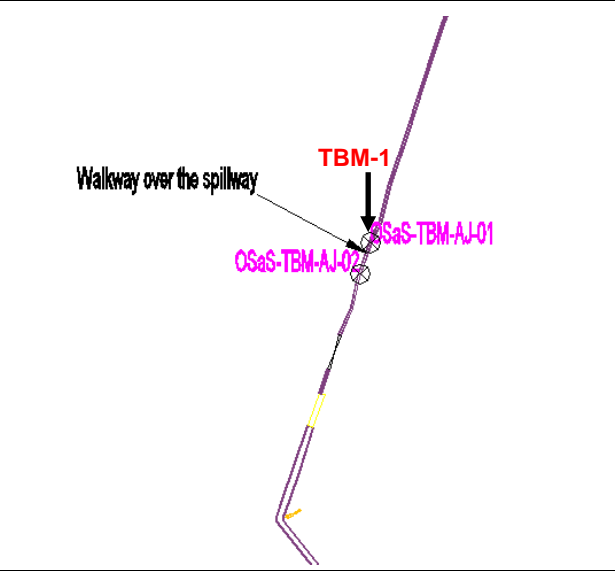

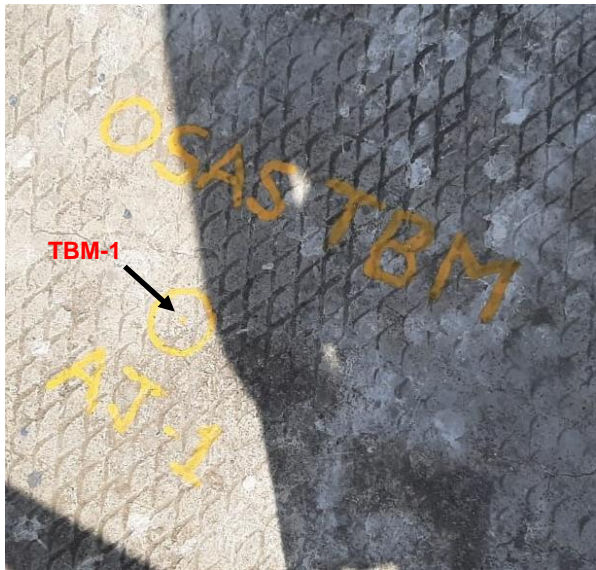

Station Number:	OSaS-TBM-AJ-01	Latitude:	22° 15' 58.221" N
Locality:	Rajkot, Gujarat	Longitude:	70° 50' 04.483" E
Geodetic Datum:	WGS84	Northing:	2463436.002 m N
Projection:	Mercator	Easting:	689034.528 m E
Date:	26 th March 2021	Elevation:	150.918m above MSL
Station Description:	A circle with text OSaS-TBM-AJ-1 is drawn with yellow paint on the walkway over the spillway, on the crest of the Dam.		
Access:	Road to the top of the reservoir. The TBM is situated on the walkway over the spillway, on the crest of the Dam, at the southwest end		
Sketch:			
Map:			
Photo:			
Photo:			

Table 1: Details of OSaS-TBM-AJ-01

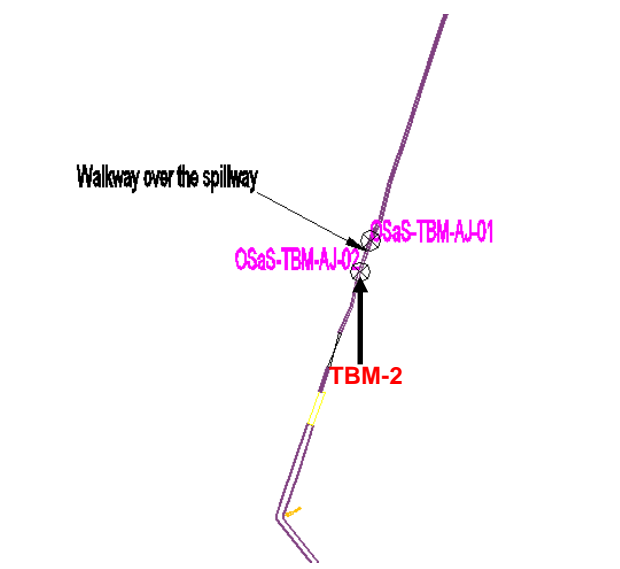


Station Number:	OSaS-TBM-AJ-02	Latitude:	22° 15' 57.760" N
Locality:	Rajkot, Gujarat	Longitude:	70° 50' 04.314" E
Geodetic Datum:	WGS84	Northing:	2463421.762 m N
Projection:	Mercator	Easting:	689029.848 m E
Date:	26 th March 2021	Elevation:	150.930m above MSL
Station Description:	A circle with text OSaS-TBM-AJ-2 is drawn with yellow paint on the walkway over the spillway, on the crest of the Dam.		
Access:	Road to the top of the reservoir. The TBM is situated on the walkway over the spillway, on the crest of the Dam, at the southwest end. TBM02 is situated 15m southwest of TBM01.		
Sketch:			
Map:			
Photo:			

Table 2: Details of OSaS-TBM-AJ-02

2.2 Single Beam Echo Sounder

The average speed of sound through the water column was input to the single beam echo sounder when a bar-check was performed before the start of survey operations. The following **Figure 2** shows the bar check extract of the Odom MK III echo sounder used in SMB Ocean.

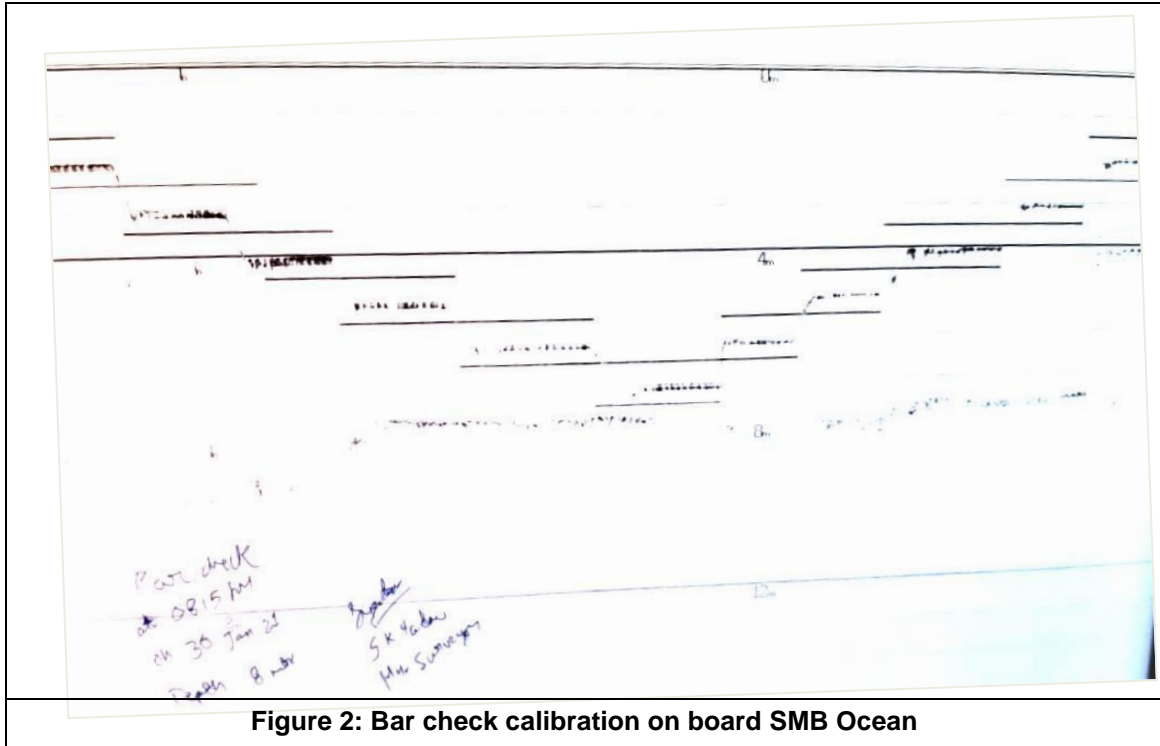


Figure 2: Bar check calibration on board SMB Ocean

3 CONCLUSIONS

Mobilisation for this project, including calibration and verification were carried out on board SMB Ocean in a safe and acceptable manner. All systems performed to the specifications throughout the length of the survey.

Annexure - 3
Previous Data - 2000
Aji - 1 Reservoir

The document provided by the client contains the revised capacity of Aji-1 reservoir as per the silt survey conducted in 2000. The following document has been used to extract capacities at intervals of 0.5m from 137.69m above MSL to 147.52m (FRL) above MSL.

**RAJKOT IRRIGATION CIRCLE, RAJKOT
RAJKOT IRRIGATION DIVISION, RAJKOT
IRRIGATION SUB-DIVISION, No. 1, RAJKOT
AJI-1 IRRIGATION SCHEME**

Revised Capacity Table as per Silt Survey - 2000 (0.01 Mt. Interval)

DEAD STORAGE :15.48 MCFT (0.438 MCUM) R. L. IN FT. 447.50 TO 455.00 Ft.& IN MT.136.39 to138.69										
LIVE STORAGE : 917.88 MCFT (25.991 MCUM) R. L. IN FT. 455.00 TO 484.00 Ft. & IN MT. 138.69 to 147.52										
DEAD + LIVE = GROSS STORAGE =15.48+917.88=933.36 MCFT (0.438+25.991 =26.430 MCUM)										
R. L. IN FT. 447.50 TO 484.00 Ft. & IN MT. 138.69 to 147.52										
Level in		Height in		Dead Storage		Live Storage		Gross Storage		Remarks
Feet	Mt	Feet	Mt.	in Mcft	in Mcum	in Mcft	in Mcum	in Mcft	in Mcum	% Filled
1	2	3	4	5	6	7	8	9	10	11
447.50	136.39	0.00	0.00		0.000	0.000	0.000	0.000	0.000	River Bed
447.51	136.40	0.00	0.00		0.001	0.000	0.000	0.023	0.001	0.00
447.53	136.41	0.03	0.01	0.000	0.001	0.000	0.000	0.045	0.001	0.00
447.57	136.42	0.07	0.02	0.023	0.002	0.000	0.000	0.068	0.002	0.01
447.60	136.43	0.10	0.03	0.045	0.003	0.000	0.000	0.090	0.003	0.01
447.63	136.44	0.13	0.04	0.068	0.003	0.000	0.000	0.120	0.003	0.01
447.67	136.45	0.16	0.05	0.090	0.004	0.000	0.000	0.150	0.004	0.02
447.70	136.46	0.20	0.06	0.120	0.005	0.000	0.000	0.180	0.005	0.02
447.73	136.47	0.23	0.07	0.150	0.006	0.000	0.000	0.210	0.006	0.02
447.76	136.48	0.26	0.08	0.180	0.007	0.000	0.000	0.240	0.007	0.03
447.80	136.49	0.30	0.09	0.210	0.008	0.000	0.000	0.270	0.008	0.03

447.83	136.50	0.33	0.10	0.240	0.008	0.000	0.000	0.300	0.008	0.03
447.86	136.51	0.36	0.11	0.270	0.009	0.000	0.000	0.330	0.009	0.04
447.89	136.52	0.39	0.12	0.300	0.010	0.000	0.000	0.360	0.010	0.04
447.93	136.53	0.43	0.13	0.330	0.011	0.000	0.000	0.390	0.011	0.04
447.96	136.54	0.46	0.14	0.360	0.012	0.000	0.000	0.420	0.012	0.04
447.99	136.55	0.49	0.15	0.390	0.013	0.000	0.000	0.450	0.013	0.05
448.03	136.56	0.52	0.16	0.420	0.014	0.000	0.000	0.480	0.014	0.05
448.06	136.57	0.56	0.17	0.450	0.014	0.000	0.000	0.510	0.014	0.05
448.09	136.58	0.59	0.18	0.480	0.015	0.000	0.000	0.540	0.015	0.06
448.12	136.59	0.62	0.19	0.510	0.016	0.000	0.000	0.573	0.016	0.06
448.16	136.60	0.66	0.20	0.540	0.017	0.000	0.000	0.607	0.017	0.06
448.19	136.61	0.69	0.21	0.573	0.018	0.000	0.000	0.640	0.018	0.07
448.22	136.62	0.72	0.22	0.607	0.019	0.000	0.000	0.673	0.019	0.07
448.26	136.63	0.75	0.23	0.640	0.020	0.000	0.000	0.707	0.020	0.08
448.29	136.64	0.79	0.24	0.673	0.021	0.000	0.000	0.740	0.021	0.08
448.32	136.65	0.82	0.25	0.707	0.022	0.000	0.000	0.773	0.022	0.08
448.35	136.66	0.85	0.26	0.740	0.023	0.000	0.000	0.807	0.023	0.09
448.39	136.67	0.89	0.27	0.773	0.024	0.000	0.000	0.840	0.024	0.09
448.42	136.68	0.92	0.28	0.807	0.024	0.000	0.000	0.840	0.024	0.09
448.45	136.69	0.95	0.29	0.840	0.024	0.000	0.000	0.840	0.024	0.09
448.49	136.70	0.98	0.30	0.840	0.024	0.000	0.000	0.840	0.024	0.09
448.52	136.71	1.02	0.31	0.840	0.026	0.000	0.000	0.903	0.026	0.10
448.55	136.72	1.05	0.32	0.840	0.027	0.000	0.000	0.967	0.027	0.10
448.58	136.73	1.08	0.33	0.903	0.029	0.000	0.000	1.030	0.029	0.11

448.62	136.74	1.12	0.34	0.967	0.030	0.000	0.000	1.055	0.030	0.11
448.65	136.75	1.15	0.35	1.030	0.031	0.000	0.000	1.080	0.031	0.12
448.68	136.76	1.18	0.36	1.055	0.031	0.000	0.000	1.105	0.031	0.12
448.72	136.77	1.21	0.37	1.080	0.032	0.000	0.000	1.130	0.032	0.12
448.75	136.78	1.25	0.38	1.105	0.033	0.000	0.000	1.163	0.033	0.12
448.78	136.79	1.28	0.39	1.130	0.034	0.000	0.000	1.197	0.034	0.13
448.81	136.80	1.31	0.40	1.163	0.035	0.000	0.000	1.230	0.035	0.13
448.85	136.81	1.35	0.41	1.197	0.036	0.000	0.000	1.263	0.036	0.14
448.88	136.82	1.38	0.42	1.230	0.037	0.000	0.000	1.297	0.037	0.14
448.91	136.83	1.41	0.43	1.263	0.038	0.000	0.000	1.330	0.038	0.14
448.94	136.84	1.44	0.44	1.297	0.039	0.000	0.000	1.363	0.039	0.15
448.98	136.85	1.48	0.45	1.330	0.040	0.000	0.000	1.397	0.040	0.15
449.01	136.86	1.51	0.46	1.363	0.040	0.000	0.000	1.430	0.040	0.15
449.04	136.87	1.54	0.47	1.397	0.042	0.000	0.000	1.470	0.042	0.16
449.08	136.88	1.57	0.48	1.430	0.043	0.000	0.000	1.510	0.043	0.16
449.11	136.89	1.61	0.49	1.470	0.044	0.000	0.000	1.550	0.044	0.17
449.14	136.90	1.64	0.50	1.510	0.045	0.000	0.000	1.593	0.045	0.17
449.17	136.91	1.67	0.51	1.550	0.046	0.000	0.000	1.637	0.046	0.18
449.21	136.92	1.71	0.52	1.593	0.048	0.000	0.000	1.680	0.048	0.18
449.24	136.93	1.74	0.53	1.637	0.049	0.000	0.000	1.720	0.049	0.18
449.27	136.94	1.77	0.54	1.680	0.050	0.000	0.000	1.760	0.050	0.19
449.31	136.95	1.80	0.55	1.720	0.051	0.000	0.000	1.800	0.051	0.19
449.34	136.96	1.84	0.56	1.760	0.052	0.000	0.000	1.843	0.052	0.20
449.37	136.97	1.87	0.57	1.800	0.053	0.000	0.000	1.887	0.053	0.20

449.40	136.98	1.90	0.58	1.843	0.055	0.000	0.000	1.930	0.055	0.21
449.44	136.99	1.94	0.59	1.887	0.056	0.000	0.000	1.970	0.056	0.21
449.47	137.00	1.97	0.60	1.930	0.057	0.000	0.000	2.010	0.057	0.22
449.50	137.01	2.00	0.61	1.970	0.058	0.000	0.000	2.050	0.058	0.22
449.54	137.02	2.03	0.62	2.010	0.059	0.000	0.000	2.093	0.059	0.22
449.57	137.03	2.07	0.63	2.050	0.061	0.000	0.000	2.137	0.061	0.23
449.60	137.04	2.10	0.64	2.093	0.062	0.000	0.000	2.180	0.062	0.23
449.63	137.05	2.13	0.65	2.137	0.063	0.000	0.000	2.220	0.063	0.24
449.67	137.06	2.17	0.66	2.180	0.064	0.000	0.000	2.260	0.064	0.24
449.70	137.07	2.20	0.67	2.220	0.065	0.000	0.000	2.300	0.065	0.25
449.73	137.08	2.23	0.68	2.260	0.066	0.000	0.000	2.343	0.066	0.25
449.76	137.09	2.26	0.69	2.300	0.068	0.000	0.000	2.387	0.068	0.26
449.80	137.10	2.30	0.70	2.343	0.069	0.000	0.000	2.430	0.069	0.26
449.83	137.11	2.33	0.71	2.387	0.070	0.000	0.000	2.470	0.070	0.26
449.86	137.12	2.36	0.72	2.430	0.071	0.000	0.000	2.510	0.071	0.27
449.90	137.13	2.39	0.73	2.470	0.072	0.000	0.000	2.550	0.072	0.27
449.93	137.14	2.43	0.74	2.510	0.073	0.000	0.000	2.593	0.073	0.28
449.96	137.15	2.46	0.75	2.550	0.075	0.000	0.000	2.637	0.075	0.28
449.99	137.16	2.49	0.76	2.593	0.076	0.000	0.000	2.680	0.076	0.29
450.03	137.17	2.53	0.77	2.637	0.077	0.000	0.000	2.730	0.077	0.29
450.06	137.18	2.56	0.78	2.680	0.079	0.000	0.000	2.780	0.079	0.30
450.09	137.19	2.59	0.79	2.730	0.080	0.000	0.000	2.830	0.080	0.30
450.13	137.20	2.62	0.80	2.780	0.081	0.000	0.000	2.863	0.081	0.31
450.16	137.21	2.66	0.81	2.830	0.082	0.000	0.000	2.897	0.082	0.31

450.19	137.22	2.69	0.82	2.863	0.083	0.000	0.000	2.930	0.083	0.31
450.22	137.23	2.72	0.83	2.897	0.085	0.000	0.000	3.000	0.085	0.32
450.26	137.24	2.76	0.84	2.930	0.087	0.000	0.000	3.070	0.087	0.33
450.29	137.25	2.79	0.85	3.000	0.089	0.000	0.000	3.140	0.089	0.34
450.32	137.26	2.82	0.86	3.070	0.090	0.000	0.000	3.190	0.090	0.34
450.36	137.27	2.85	0.87	3.140	0.092	0.000	0.000	3.240	0.092	0.35
450.39	137.28	2.89	0.88	3.190	0.093	0.000	0.000	3.290	0.093	0.35
450.42	137.29	2.92	0.89	3.240	0.095	0.000	0.000	3.340	0.095	0.36
450.45	137.30	2.95	0.90	3.290	0.096	0.000	0.000	3.390	0.096	0.36
450.49	137.31	2.99	0.91	3.340	0.097	0.000	0.000	3.440	0.097	0.37
450.52	137.32	3.02	0.92	3.390	0.099	0.000	0.000	3.493	0.099	0.37
450.55	137.33	3.05	0.93	3.440	0.100	0.000	0.000	3.547	0.100	0.38
450.59	137.34	3.08	0.94	3.493	0.102	0.000	0.000	3.600	0.102	0.39
450.62	137.35	3.12	0.95	3.547	0.103	0.000	0.000	3.638	0.103	0.39
450.65	137.36	3.15	0.96	3.600	0.104	0.000	0.000	3.675	0.104	0.39
450.68	137.37	3.18	0.97	3.638	0.105	0.000	0.000	3.713	0.105	0.40
450.72	137.38	3.22	0.98	3.675	0.106	0.000	0.000	3.750	0.106	0.40
450.75	137.39	3.25	0.99	3.713	0.108	0.000	0.000	3.800	0.108	0.41
450.78	137.40	3.28	1.00	3.750	0.109	0.000	0.000	3.850	0.109	0.41
450.81	137.41	3.31	1.01	3.800	0.110	0.000	0.000	3.900	0.110	0.42
450.85	137.42	3.35	1.02	3.850	0.112	0.000	0.000	3.950	0.112	0.42
450.88	137.43	3.38	1.03	3.900	0.113	0.000	0.000	4.000	0.113	0.43
450.91	137.44	3.41	1.04	3.950	0.115	0.000	0.000	4.050	0.115	0.43
450.95	137.45	3.44	1.05	4.000	0.116	0.000	0.000	4.103	0.116	0.44

450.98	137.46	3.48	1.06	4.050	0.118	0.000	0.000	4.157	0.118	0.45
451.01	137.47	3.51	1.07	4.103	0.119	0.000	0.000	4.210	0.119	0.45
451.04	137.48	3.54	1.08	4.157	0.121	0.000	0.000	4.277	0.121	0.46
451.08	137.49	3.58	1.09	4.210	0.123	0.000	0.000	4.343	0.123	0.47
451.11	137.50	3.61	1.10	4.277	0.125	0.000	0.000	4.410	0.125	0.47
451.14	137.51	3.64	1.11	4.343	0.127	0.000	0.000	4.480	0.127	0.48
451.18	137.52	3.67	1.12	4.410	0.129	0.000	0.000	4.550	0.129	0.49
451.21	137.53	3.71	1.13	4.480	0.131	0.000	0.000	4.620	0.131	0.49
451.24	137.54	3.74	1.14	4.550	0.133	0.000	0.000	4.687	0.133	0.50
451.27	137.55	3.77	1.15	4.620	0.135	0.000	0.000	4.753	0.135	0.51
451.31	137.56	3.81	1.16	4.687	0.136	0.000	0.000	4.820	0.136	0.52
451.34	137.57	3.84	1.17	4.753	0.138	0.000	0.000	4.890	0.138	0.52
451.37	137.58	3.87	1.18	4.820	0.140	0.000	0.000	4.960	0.140	0.53
451.41	137.59	3.90	1.19	4.890	0.142	0.000	0.000	5.030	0.142	0.54
451.44	137.60	3.94	1.20	4.960	0.144	0.000	0.000	5.097	0.144	0.55
451.47	137.61	3.97	1.21	5.030	0.146	0.000	0.000	5.163	0.146	0.55
451.50	137.62	4.00	1.22	5.097	0.148	0.000	0.000	5.230	0.148	0.56
451.54	137.63	4.04	1.23	5.163	0.150	0.000	0.000	5.300	0.150	0.57
451.57	137.64	4.07	1.24	5.230	0.152	0.000	0.000	5.370	0.152	0.58
451.60	137.65	4.10	1.25	5.300	0.154	0.000	0.000	5.440	0.154	0.58
451.63	137.66	4.13	1.26	5.370	0.156	0.000	0.000	5.507	0.156	0.59
451.67	137.67	4.17	1.27	5.440	0.158	0.000	0.000	5.573	0.158	0.60
451.70	137.68	4.20	1.28	5.507	0.160	0.000	0.000	5.640	0.160	0.60
451.73	137.69	4.23	1.29	5.573	0.162	0.000	0.000	5.710	0.162	0.61

451.77	137.70	4.27	1.30	5.640	0.164	0.000	0.000	5.780	0.164	0.62
451.80	137.71	4.30	1.31	5.710	0.166	0.000	0.000	5.850	0.166	0.63
451.83	137.72	4.33	1.32	5.780	0.168	0.000	0.000	5.917	0.168	0.63
451.86	137.73	4.36	1.33	5.850	0.169	0.000	0.000	5.983	0.169	0.64
451.90	137.74	4.40	1.34	5.917	0.171	0.000	0.000	6.050	0.171	0.65
451.93	137.75	4.43	1.35	5.983	0.173	0.000	0.000	6.120	0.173	0.66
451.96	137.76	4.46	1.36	6.050	0.175	0.000	0.000	6.190	0.175	0.66
452.00	137.77	4.49	1.37	6.120	0.177	0.000	0.000	6.260	0.177	0.67
452.03	137.78	4.53	1.38	6.190	0.180	0.000	0.000	6.340	0.180	0.68
452.06	137.79	4.56	1.39	6.260	0.182	0.000	0.000	6.420	0.182	0.69
452.09	137.80	4.59	1.40	6.340	0.184	0.000	0.000	6.500	0.184	0.70
452.13	137.81	4.63	1.41	6.420	0.186	0.000	0.000	6.580	0.186	0.70
452.16	137.82	4.66	1.42	6.500	0.189	0.000	0.000	6.660	0.189	0.71
452.19	137.83	4.69	1.43	6.580	0.191	0.000	0.000	6.740	0.191	0.72
452.23	137.84	4.72	1.44	6.660	0.193	0.000	0.000	6.820	0.193	0.73
452.26	137.85	4.76	1.45	6.740	0.195	0.000	0.000	6.900	0.195	0.74
452.29	137.86	4.79	1.46	6.820	0.198	0.000	0.000	6.980	0.198	0.75
452.32	137.87	4.82	1.47	6.900	0.200	0.000	0.000	7.060	0.200	0.76
452.36	137.88	4.86	1.48	6.980	0.202	0.000	0.000	7.140	0.202	0.76
452.39	137.89	4.89	1.49	7.060	0.204	0.000	0.000	7.220	0.204	0.77
452.42	137.90	4.92	1.50	7.140	0.207	0.000	0.000	7.300	0.207	0.78
452.46	137.91	4.95	1.51	7.220	0.209	0.000	0.000	7.380	0.209	0.79
452.49	137.92	4.99	1.52	7.300	0.211	0.000	0.000	7.460	0.211	0.80
452.52	137.93	5.02	1.53	7.380	0.214	0.000	0.000	7.540	0.214	0.81

452.55	137.94	5.05	1.54	7.460	0.216	0.000	0.000	7.620	0.216	0.82
452.59	137.95	5.09	1.55	7.540	0.218	0.000	0.000	7.700	0.218	0.82
452.62	137.96	5.12	1.56	7.620	0.220	0.000	0.000	7.780	0.220	0.83
452.65	137.97	5.15	1.57	7.700	0.223	0.000	0.000	7.860	0.223	0.84
452.68	137.98	5.18	1.58	7.780	0.225	0.000	0.000	7.940	0.225	0.85
452.72	137.99	5.22	1.59	7.860	0.227	0.000	0.000	8.000	0.227	0.86
452.75	138.00	5.25	1.60	7.940	0.228	0.000	0.000	8.060	0.228	0.86
452.78	138.01	5.28	1.61	8.000	0.230	0.000	0.000	8.120	0.230	0.87
452.82	138.02	5.31	1.62	8.060	0.232	0.000	0.000	8.180	0.232	0.88
452.85	138.03	5.35	1.63	8.120	0.234	0.000	0.000	8.260	0.234	0.88
452.88	138.04	5.38	1.64	8.180	0.236	0.000	0.000	8.340	0.236	0.89
452.91	138.05	5.41	1.65	8.260	0.238	0.000	0.000	8.420	0.238	0.90
452.95	138.06	5.45	1.66	8.340	0.241	0.000	0.000	8.500	0.241	0.91
452.98	138.07	5.48	1.67	8.420	0.243	0.000	0.000	8.580	0.243	0.92
453.01	138.08	5.51	1.68	8.500	0.245	0.000	0.000	8.660	0.245	0.93
453.05	138.09	5.54	1.69	8.580	0.248	0.000	0.000	8.763	0.248	0.94
453.08	138.10	5.58	1.70	8.660	0.251	0.000	0.000	8.867	0.251	0.95
453.11	138.11	5.61	1.71	8.763	0.254	0.000	0.000	8.970	0.254	0.96
453.14	138.12	5.64	1.72	8.867	0.257	0.000	0.000	9.073	0.257	0.97
453.18	138.13	5.68	1.73	8.970	0.260	0.000	0.000	9.177	0.260	0.98
453.21	138.14	5.71	1.74	9.073	0.263	0.000	0.000	9.280	0.263	0.99
453.24	138.15	5.74	1.75	9.177	0.266	0.000	0.000	9.387	0.266	1.01
453.28	138.16	5.77	1.76	9.280	0.269	0.000	0.000	9.493	0.269	1.02
453.31	138.17	5.81	1.77	9.387	0.272	0.000	0.000	9.600	0.272	1.03

453.34	138.18	5.84	1.78	9.493	0.275	0.000	0.000	9.703	0.275	1.04
453.37	138.19	5.87	1.79	9.600	0.278	0.000	0.000	9.807	0.278	1.05
453.41	138.20	5.91	1.80	9.703	0.281	0.000	0.000	9.910	0.281	1.06
453.44	138.21	5.94	1.81	9.807	0.284	0.000	0.000	10.017	0.284	1.07
453.47	138.22	5.97	1.82	9.910	0.287	0.000	0.000	10.123	0.287	1.08
453.50	138.23	6.00	1.83	10.017	0.290	0.000	0.000	10.230	0.290	1.10
453.54	138.24	6.04	1.84	10.123	0.293	0.000	0.000	10.333	0.293	1.11
453.57	138.25	6.07	1.85	10.230	0.296	0.000	0.000	10.437	0.296	1.12
453.60	138.26	6.10	1.86	10.333	0.298	0.000	0.000	10.540	0.298	1.13
453.64	138.27	6.14	1.87	10.437	0.301	0.000	0.000	10.643	0.301	1.14
453.67	138.28	6.17	1.88	10.540	0.304	0.000	0.000	10.747	0.304	1.15
453.70	138.29	6.20	1.89	10.643	0.307	0.000	0.000	10.850	0.307	1.16
453.73	138.30	6.23	1.90	10.747	0.310	0.000	0.000	10.957	0.310	1.17
453.77	138.31	6.27	1.91	10.850	0.313	0.000	0.000	11.063	0.313	1.19
453.80	138.32	6.30	1.92	10.957	0.316	0.000	0.000	11.170	0.316	1.20
453.83	138.33	6.33	1.93	11.063	0.319	0.000	0.000	11.273	0.319	1.21
453.87	138.34	6.36	1.94	11.170	0.322	0.000	0.000	11.377	0.322	1.22
453.90	138.35	6.40	1.95	11.273	0.325	0.000	0.000	11.480	0.325	1.23
453.93	138.36	6.43	1.96	11.377	0.328	0.000	0.000	11.587	0.328	1.24
453.96	138.37	6.46	1.97	11.480	0.331	0.000	0.000	11.693	0.331	1.25
454.00	138.38	6.50	1.98	11.587	0.334	0.000	0.000	11.800	0.334	1.26
454.03	138.39	6.53	1.99	11.693	0.338	0.000	0.000	11.920	0.338	1.28
454.06	138.40	6.56	2.00	11.800	0.341	0.000	0.000	12.040	0.341	1.29
454.10	138.41	6.59	2.01	11.920	0.344	0.000	0.000	12.160	0.344	1.30

454.13	138.42	6.63	2.02	12.040	0.348	0.000	0.000	12.283	0.348	1.32
454.16	138.43	6.66	2.03	12.160	0.351	0.000	0.000	12.407	0.351	1.33
454.19	138.44	6.69	2.04	12.283	0.355	0.000	0.000	12.530	0.355	1.34
454.23	138.45	6.73	2.05	12.407	0.358	0.000	0.000	12.653	0.358	1.36
454.26	138.46	6.76	2.06	12.530	0.362	0.000	0.000	12.777	0.362	1.37
454.29	138.47	6.79	2.07	12.653	0.365	0.000	0.000	12.900	0.365	1.38
454.33	138.48	6.82	2.08	12.777	0.369	0.000	0.000	13.023	0.369	1.40
454.36	138.49	6.86	2.09	12.900	0.372	0.000	0.000	13.147	0.372	1.41
454.39	138.50	6.89	2.10	13.023	0.376	0.000	0.000	13.270	0.376	1.42
454.42	138.51	6.92	2.11	13.147	0.379	0.000	0.000	13.393	0.379	1.43
454.46	138.52	6.96	2.12	13.270	0.383	0.000	0.000	13.517	0.383	1.45
454.49	138.53	6.99	2.13	13.393	0.386	0.000	0.000	13.640	0.386	1.46
454.52	138.54	7.02	2.14	13.517	0.390	0.000	0.000	13.760	0.390	1.47
454.55	138.55	7.05	2.15	13.640	0.393	0.000	0.000	13.880	0.393	1.49
454.59	138.56	7.09	2.16	13.760	0.396	0.000	0.000	14.000	0.396	1.50
454.62	138.57	7.12	2.17	13.880	0.400	0.000	0.000	14.123	0.400	1.51
454.65	138.58	7.15	2.18	14.000	0.403	0.000	0.000	14.247	0.403	1.53
454.69	138.59	7.18	2.19	14.123	0.407	0.000	0.000	14.370	0.407	1.54
454.72	138.60	7.22	2.20	14.247	0.410	0.000	0.000	14.493	0.410	1.55
454.75	138.61	7.25	2.21	14.370	0.414	0.000	0.000	14.617	0.414	1.57
454.78	138.62	7.28	2.22	14.493	0.417	0.000	0.000	14.740	0.417	1.58
454.82	138.63	7.32	2.23	14.617	0.420	0.000	0.000	14.833	0.420	1.59
454.85	138.64	7.35	2.24	14.740	0.423	0.000	0.000	14.925	0.423	1.60
454.88	138.65	7.38	2.25	14.833	0.425	0.000	0.000	15.018	0.425	1.61

454.92	138.66	7.41	2.26	14.925	0.428	0.000	0.000	15.110	0.428	1.62
454.95	138.67	7.45	2.27	15.018	0.431	0.000	0.000	15.233	0.431	1.63
454.98	138.68	7.48	2.28	15.110	0.435	0.000	0.000	15.357	0.435	1.65
455.01	138.69	7.51	2.29	15.233	0.438	0.000	0.000	15.480	0.438	1.66
455.05	138.70	0.03	0.01	15.357	0.438	0.000	0.000	15.480	0.438	1.66
455.08	138.71	0.07	0.02	15.480	0.438	0.313	0.009	15.793	0.447	1.69
455.11	138.72	0.10	0.03	15.480	0.438	0.470	0.013	15.950	0.452	1.71
455.15	138.73	0.13	0.04	15.480	0.438	0.627	0.018	16.107	0.456	1.73
455.18	138.74	0.16	0.05	15.480	0.438	0.783	0.022	16.263	0.461	1.74
455.21	138.75	0.20	0.06	15.480	0.438	0.940	0.027	16.420	0.465	1.76
455.24	138.76	0.23	0.07	15.480	0.438	1.100	0.031	16.580	0.469	1.78
455.28	138.77	0.26	0.08	15.480	0.438	1.260	0.036	16.740	0.474	1.79
455.31	138.78	0.30	0.09	15.480	0.438	1.420	0.040	16.900	0.479	1.81
455.34	138.79	0.33	0.10	15.480	0.438	1.577	0.045	17.057	0.483	1.83
455.38	138.80	0.36	0.11	15.480	0.438	1.733	0.049	17.213	0.487	1.84
455.41	138.81	0.39	0.12	15.480	0.438	1.890	0.054	17.370	0.492	1.86
455.44	138.82	0.43	0.13	15.480	0.438	2.047	0.058	17.527	0.496	1.88
455.47	138.83	0.46	0.14	15.480	0.438	2.203	0.062	17.683	0.501	1.89
455.51	138.84	0.49	0.15	15.480	0.438	2.360	0.067	17.840	0.505	1.91
455.54	138.85	0.52	0.16	15.480	0.438	2.520	0.071	18.000	0.510	1.93
455.57	138.86	0.56	0.17	15.480	0.438	2.680	0.076	18.160	0.514	1.95
455.60	138.87	0.59	0.18	15.480	0.438	2.840	0.080	18.320	0.519	1.96
455.64	138.88	0.62	0.19	15.480	0.438	2.997	0.085	18.477	0.523	1.98
455.67	138.89	0.66	0.20	15.480	0.438	3.153	0.089	18.633	0.528	2.00

455.70	138.90	0.69	0.21	15.480	0.438	3.310	0.094	18.790	0.532	2.01
455.74	138.91	0.72	0.22	15.480	0.438	3.467	0.098	18.947	0.537	2.03
455.77	138.92	0.75	0.23	15.480	0.438	3.623	0.103	19.103	0.541	2.05
455.80	138.93	0.79	0.24	15.480	0.438	3.780	0.107	19.260	0.545	2.06
455.83	138.94	0.82	0.25	15.480	0.438	3.940	0.112	19.420	0.550	2.08
455.87	138.95	0.85	0.26	15.480	0.438	4.100	0.116	19.580	0.554	2.10
455.90	138.96	0.89	0.27	15.480	0.438	4.260	0.121	19.740	0.559	2.11
455.93	138.97	0.92	0.28	15.480	0.438	4.420	0.125	19.900	0.563	2.13
455.97	138.98	0.95	0.29	15.480	0.438	4.580	0.130	20.060	0.568	2.15
456.00	138.99	0.98	0.30	15.480	0.438	4.740	0.134	20.220	0.573	2.17
456.03	139.00	1.02	0.31	15.480	0.438	4.977	0.141	20.457	0.579	2.19
456.06	139.01	1.05	0.32	15.480	0.438	5.213	0.148	20.693	0.586	2.22
456.10	139.02	1.08	0.33	15.480	0.438	5.450	0.154	20.930	0.593	2.24
456.13	139.03	1.12	0.34	15.480	0.438	5.690	0.161	21.170	0.599	2.27
456.16	139.04	1.15	0.35	15.480	0.438	5.930	0.168	21.410	0.606	2.29
456.20	139.05	1.18	0.36	15.480	0.438	6.170	0.175	21.650	0.613	2.32
456.23	139.06	1.21	0.37	15.480	0.438	6.407	0.181	21.887	0.620	2.34
456.26	139.07	1.25	0.38	15.480	0.438	6.643	0.188	22.123	0.626	2.37
456.29	139.08	1.28	0.39	15.480	0.438	6.880	0.195	22.360	0.633	2.40
456.33	139.09	1.31	0.40	15.480	0.438	7.120	0.202	22.600	0.640	2.42
456.36	139.10	1.35	0.41	15.480	0.438	7.360	0.208	22.840	0.647	2.45
456.39	139.11	1.38	0.42	15.480	0.438	7.600	0.215	23.080	0.654	2.47
456.42	139.12	1.41	0.43	15.480	0.438	7.840	0.222	23.320	0.660	2.50
456.46	139.13	1.44	0.44	15.480	0.438	8.080	0.229	23.560	0.667	2.52

456.49	139.14	1.48	0.45	15.480	0.438	8.320	0.236	23.800	0.674	2.55
456.52	139.15	1.51	0.46	15.480	0.438	8.557	0.242	24.037	0.681	2.58
456.56	139.16	1.54	0.47	15.480	0.438	8.793	0.249	24.273	0.687	2.60
456.59	139.17	1.57	0.48	15.480	0.438	9.030	0.256	24.510	0.694	2.63
456.62	139.18	1.61	0.49	15.480	0.438	9.270	0.262	24.750	0.701	2.65
456.65	139.19	1.64	0.50	15.480	0.438	9.510	0.269	24.990	0.708	2.68
456.69	139.20	1.67	0.51	15.480	0.438	9.750	0.276	25.230	0.714	2.70
456.72	139.21	1.71	0.52	15.480	0.438	9.987	0.283	25.467	0.721	2.73
456.75	139.22	1.74	0.53	15.480	0.438	10.223	0.289	25.703	0.728	2.75
456.79	139.23	1.77	0.54	15.480	0.438	10.460	0.296	25.940	0.735	2.78
456.82	139.24	1.80	0.55	15.480	0.438	10.700	0.303	26.180	0.741	2.80
456.85	139.25	1.84	0.56	15.480	0.438	10.940	0.310	26.420	0.748	2.83
456.88	139.26	1.87	0.57	15.480	0.438	11.180	0.317	26.660	0.755	2.86
456.92	139.27	1.90	0.58	15.480	0.438	11.360	0.322	26.840	0.760	2.88
456.95	139.28	1.94	0.59	15.480	0.438	11.540	0.327	27.020	0.765	2.89
456.98	139.29	1.97	0.60	15.480	0.438	11.720	0.332	27.200	0.770	2.91
457.02	139.30	2.00	0.61	15.480	0.438	11.900	0.337	27.380	0.775	2.93
457.05	139.31	2.03	0.62	15.480	0.438	12.157	0.344	27.637	0.783	2.96
457.08	139.32	2.07	0.63	15.480	0.438	12.413	0.352	27.893	0.790	2.99
457.11	139.33	2.10	0.64	15.480	0.438	12.670	0.359	28.150	0.797	3.02
457.15	139.34	2.13	0.65	15.480	0.438	12.927	0.366	28.407	0.804	3.04
457.18	139.35	2.17	0.66	15.480	0.438	13.183	0.373	28.663	0.812	3.07
457.21	139.36	2.20	0.67	15.480	0.438	13.440	0.381	28.920	0.819	3.10
457.25	139.37	2.23	0.68	15.480	0.438	13.700	0.388	29.180	0.826	3.13

457.28	139.38	2.26	0.69	15.480	0.438	13.960	0.395	29.440	0.834	3.15
457.31	139.39	2.30	0.70	15.480	0.438	14.220	0.403	29.700	0.841	3.18
457.34	139.40	2.33	0.71	15.480	0.438	14.477	0.410	29.957	0.848	3.21
457.38	139.41	2.36	0.72	15.480	0.438	14.733	0.417	30.213	0.856	3.24
457.41	139.42	2.39	0.73	15.480	0.438	14.990	0.424	30.470	0.863	3.26
457.44	139.43	2.43	0.74	15.480	0.438	15.247	0.432	30.727	0.870	3.29
457.47	139.44	2.46	0.75	15.480	0.438	15.503	0.439	30.983	0.877	3.32
457.51	139.45	2.49	0.76	15.480	0.438	15.760	0.446	31.240	0.885	3.35
457.54	139.46	2.53	0.77	15.480	0.438	16.017	0.454	31.497	0.892	3.37
457.57	139.47	2.56	0.78	15.480	0.438	16.273	0.461	31.753	0.899	3.40
457.61	139.48	2.59	0.79	15.480	0.438	16.530	0.468	32.010	0.906	3.43
457.64	139.49	2.62	0.80	15.480	0.438	16.790	0.475	32.270	0.914	3.46
457.67	139.50	2.66	0.81	15.480	0.438	17.050	0.483	32.530	0.921	3.49
457.70	139.51	2.69	0.82	15.480	0.438	17.310	0.490	32.790	0.929	3.51
457.74	139.52	2.72	0.83	15.480	0.438	17.567	0.497	33.047	0.936	3.54
457.77	139.53	2.76	0.84	15.480	0.438	17.823	0.505	33.303	0.943	3.57
457.80	139.54	2.79	0.85	15.480	0.438	18.080	0.512	33.560	0.950	3.60
457.84	139.55	2.82	0.86	15.480	0.438	18.337	0.519	33.817	0.958	3.62
457.87	139.56	2.85	0.87	15.480	0.438	18.593	0.526	34.073	0.965	3.65
457.90	139.57	2.89	0.88	15.480	0.438	18.850	0.534	34.330	0.972	3.68
457.93	139.58	2.92	0.89	15.480	0.438	19.110	0.541	34.590	0.979	3.71
457.97	139.59	2.95	0.90	15.480	0.438	19.370	0.548	34.850	0.987	3.73
458.00	139.60	2.99	0.91	15.480	0.438	19.630	0.556	35.110	0.994	3.76
458.03	139.61	3.02	0.92	15.480	0.438	19.917	0.564	35.397	1.002	3.79

458.07	139.62	3.05	0.93	15.480	0.438	20.203	0.572	35.683	1.010	3.82
458.10	139.63	3.08	0.94	15.480	0.438	20.490	0.580	35.970	1.019	3.85
458.13	139.64	3.12	0.95	15.480	0.438	20.780	0.588	36.260	1.027	3.88
458.16	139.65	3.15	0.96	15.480	0.438	21.070	0.597	36.550	1.035	3.92
458.20	139.66	3.18	0.97	15.480	0.438	21.360	0.605	36.840	1.043	3.95
458.23	139.67	3.22	0.98	15.480	0.438	21.650	0.613	37.130	1.051	3.98
458.26	139.68	3.25	0.99	15.480	0.438	21.940	0.621	37.420	1.060	4.01
458.29	139.69	3.28	1.00	15.480	0.438	22.230	0.629	37.710	1.068	4.04
458.33	139.70	3.31	1.01	15.480	0.438	22.520	0.638	38.000	1.076	4.07
458.36	139.71	3.35	1.02	15.480	0.438	22.810	0.646	38.290	1.084	4.10
458.39	139.72	3.38	1.03	15.480	0.438	23.100	0.654	38.580	1.092	4.13
458.43	139.73	3.41	1.04	15.480	0.438	23.390	0.662	38.870	1.101	4.16
458.46	139.74	3.44	1.05	15.480	0.438	23.680	0.671	39.160	1.109	4.20
458.49	139.75	3.48	1.06	15.480	0.438	23.970	0.679	39.450	1.117	4.23
458.52	139.76	3.51	1.07	15.480	0.438	24.257	0.687	39.737	1.125	4.26
458.56	139.77	3.54	1.08	15.480	0.438	24.543	0.695	40.023	1.133	4.29
458.59	139.78	3.58	1.09	15.480	0.438	24.830	0.703	40.310	1.141	4.32
458.62	139.79	3.61	1.10	15.480	0.438	25.120	0.711	40.600	1.150	4.35
458.66	139.80	3.64	1.11	15.480	0.438	25.410	0.720	40.890	1.158	4.38
458.69	139.81	3.67	1.12	15.480	0.438	25.700	0.728	41.180	1.166	4.41
458.72	139.82	3.71	1.13	15.480	0.438	25.990	0.736	41.470	1.174	4.44
458.75	139.83	3.74	1.14	15.480	0.438	26.280	0.744	41.760	1.183	4.47
458.79	139.84	3.77	1.15	15.480	0.438	26.570	0.752	42.050	1.191	4.51
458.82	139.85	3.81	1.16	15.480	0.438	26.860	0.761	42.340	1.199	4.54

458.85	139.86	3.84	1.17	15.480	0.438	27.150	0.769	42.630	1.207	4.57
458.89	139.87	3.87	1.18	15.480	0.438	27.440	0.777	42.920	1.215	4.60
458.92	139.88	3.90	1.19	15.480	0.438	27.730	0.785	43.210	1.224	4.63
458.95	139.89	3.94	1.20	15.480	0.438	28.020	0.793	43.500	1.232	4.66
458.98	139.90	3.97	1.21	15.480	0.438	28.310	0.802	43.790	1.240	4.69
459.02	139.91	4.00	1.22	15.480	0.438	28.573	0.809	44.053	1.247	4.72
459.05	139.92	4.04	1.23	15.480	0.438	28.835	0.817	44.315	1.255	4.75
459.08	139.93	4.07	1.24	15.480	0.438	29.098	0.824	44.578	1.262	4.78
459.12	139.94	4.10	1.25	15.480	0.438	29.360	0.831	44.840	1.270	4.80
459.15	139.95	4.13	1.26	15.480	0.438	29.710	0.841	45.190	1.280	4.84
459.18	139.96	4.17	1.27	15.480	0.438	30.060	0.851	45.540	1.290	4.88
459.21	139.97	4.20	1.28	15.480	0.438	30.410	0.861	45.890	1.299	4.92
459.25	139.98	4.23	1.29	15.480	0.438	30.760	0.871	46.240	1.309	4.95
459.28	139.99	4.27	1.30	15.480	0.438	31.110	0.881	46.590	1.319	4.99
459.31	140.00	4.30	1.31	15.480	0.438	31.460	0.891	46.940	1.329	5.03
459.34	140.01	4.33	1.32	15.480	0.438	31.810	0.901	47.290	1.339	5.07
459.38	140.02	4.36	1.33	15.480	0.438	32.160	0.911	47.640	1.349	5.10
459.41	140.03	4.40	1.34	15.480	0.438	32.510	0.921	47.990	1.359	5.14
459.44	140.04	4.43	1.35	15.480	0.438	32.860	0.930	48.340	1.369	5.18
459.48	140.05	4.46	1.36	15.480	0.438	33.210	0.940	48.690	1.379	5.22
459.51	140.06	4.49	1.37	15.480	0.438	33.560	0.950	49.040	1.389	5.25
459.54	140.07	4.53	1.38	15.480	0.438	33.913	0.960	49.393	1.399	5.29
459.57	140.08	4.56	1.39	15.480	0.438	34.267	0.970	49.747	1.409	5.33
459.61	140.09	4.59	1.40	15.480	0.438	34.620	0.980	50.100	1.419	5.37

459.64	140.10	4.63	1.41	15.480	0.438	34.973	0.990	50.453	1.429	5.41
459.67	140.11	4.66	1.42	15.480	0.438	35.327	1.000	50.807	1.439	5.44
459.71	140.12	4.69	1.43	15.480	0.438	35.680	1.010	51.160	1.449	5.48
459.74	140.13	4.72	1.44	15.480	0.438	36.033	1.020	51.513	1.459	5.52
459.77	140.14	4.76	1.45	15.480	0.438	36.387	1.030	51.867	1.469	5.56
459.80	140.15	4.79	1.46	15.480	0.438	36.740	1.040	52.220	1.479	5.59
459.84	140.16	4.82	1.47	15.480	0.438	37.090	1.050	52.570	1.489	5.63
459.87	140.17	4.86	1.48	15.480	0.438	37.440	1.060	52.920	1.499	5.67
459.90	140.18	4.89	1.49	15.480	0.438	37.790	1.070	53.270	1.508	5.71
459.94	140.19	4.92	1.50	15.480	0.438	38.140	1.080	53.620	1.518	5.74
459.97	140.20	4.95	1.51	15.480	0.438	38.490	1.090	53.970	1.528	5.78
460.00	140.21	4.99	1.52	15.480	0.438	38.840	1.100	54.320	1.538	5.82
460.03	140.22	5.02	1.53	15.480	0.438	39.223	1.111	54.703	1.549	5.86
460.07	140.23	5.05	1.54	15.480	0.438	39.607	1.122	55.087	1.560	5.90
460.10	140.24	5.09	1.55	15.480	0.438	39.990	1.132	55.470	1.571	5.94
460.13	140.25	5.12	1.56	15.480	0.438	40.373	1.143	55.853	1.582	5.98
460.17	140.26	5.15	1.57	15.480	0.438	40.757	1.154	56.237	1.592	6.03
460.20	140.27	5.18	1.58	15.480	0.438	41.140	1.165	56.620	1.603	6.07
460.23	140.28	5.22	1.59	15.480	0.438	41.523	1.176	57.003	1.614	6.11
460.26	140.29	5.25	1.60	15.480	0.438	41.907	1.187	57.387	1.625	6.15
460.30	140.30	5.28	1.61	15.480	0.438	42.290	1.198	57.770	1.636	6.19
460.33	140.31	5.31	1.62	15.480	0.438	42.673	1.208	58.153	1.647	6.23
460.36	140.32	5.35	1.63	15.480	0.438	43.057	1.219	58.537	1.658	6.27
460.39	140.33	5.38	1.64	15.480	0.438	43.440	1.230	58.920	1.668	6.31

460.43	140.34	5.41	1.65	15.480	0.438	43.823	1.241	59.303	1.679	6.35
460.46	140.35	5.45	1.66	15.480	0.438	44.207	1.252	59.687	1.690	6.39
460.49	140.36	5.48	1.67	15.480	0.438	44.590	1.263	60.070	1.701	6.44
460.53	140.37	5.51	1.68	15.480	0.438	44.973	1.273	60.453	1.712	6.48
460.56	140.38	5.54	1.69	15.480	0.438	45.357	1.284	60.837	1.723	6.52
460.59	140.39	5.58	1.70	15.480	0.438	45.740	1.295	61.220	1.734	6.56
460.62	140.40	5.61	1.71	15.480	0.438	46.123	1.306	61.603	1.744	6.60
460.66	140.41	5.64	1.72	15.480	0.438	46.507	1.317	61.987	1.755	6.64
460.69	140.42	5.68	1.73	15.480	0.438	46.890	1.328	62.370	1.766	6.68
460.72	140.43	5.71	1.74	15.480	0.438	47.273	1.339	62.753	1.777	6.72
460.76	140.44	5.74	1.75	15.480	0.438	47.657	1.349	63.137	1.788	6.76
460.79	140.45	5.77	1.76	15.480	0.438	48.040	1.360	63.520	1.799	6.81
460.82	140.46	5.81	1.77	15.480	0.438	48.423	1.371	63.903	1.810	6.85
460.85	140.47	5.84	1.78	15.480	0.438	48.807	1.382	64.287	1.820	6.89
460.89	140.48	5.87	1.79	15.480	0.438	49.190	1.393	64.670	1.831	6.93
460.92	140.49	5.91	1.80	15.480	0.438	49.573	1.404	65.053	1.842	6.97
460.95	140.50	5.94	1.81	15.480	0.438	49.957	1.415	65.437	1.853	7.01
460.99	140.51	5.97	1.82	15.480	0.438	50.340	1.425	65.820	1.864	7.05
461.02	140.52	6.00	1.83	15.480	0.438	50.723	1.437	66.203	1.876	7.10
461.05	140.53	6.04	1.84	15.480	0.438	51.107	1.449	66.587	1.888	7.14
461.08	140.54	6.07	1.85	15.480	0.438	51.490	1.461	66.970	1.900	7.19
461.12	140.55	6.10	1.86	15.480	0.438	51.873	1.470	67.353	1.909	7.22
461.15	140.56	6.14	1.87	15.480	0.438	52.257	1.480	67.737	1.918	7.26
461.18	140.57	6.17	1.88	15.480	0.438	52.640	1.489	68.120	1.927	7.29

461.21	140.58	6.20	1.89	15.480	0.438	52.890	1.498	68.370	1.936	7.33
461.25	140.59	6.23	1.90	15.480	0.438	53.317	1.510	68.797	1.948	7.37
461.28	140.60	6.27	1.91	15.480	0.438	53.743	1.522	69.223	1.960	7.42
461.31	140.61	6.30	1.92	15.480	0.438	54.170	1.534	69.650	1.972	7.46
461.35	140.62	6.33	1.93	15.480	0.438	54.593	1.546	70.073	1.984	7.51
461.38	140.63	6.36	1.94	15.480	0.438	55.017	1.558	70.497	1.996	7.55
461.41	140.64	6.40	1.95	15.480	0.438	55.440	1.570	70.920	2.008	7.60
461.44	140.65	6.43	1.96	15.480	0.438	55.867	1.582	71.347	2.020	7.64
461.48	140.66	6.46	1.97	15.480	0.438	56.293	1.594	71.773	2.032	7.69
461.51	140.67	6.50	1.98	15.480	0.438	56.720	1.606	72.200	2.044	7.74
461.54	140.68	6.53	1.99	15.480	0.438	57.147	1.618	72.627	2.057	7.78
461.58	140.69	6.56	2.00	15.480	0.438	57.573	1.630	73.053	2.069	7.83
461.61	140.70	6.59	2.01	15.480	0.438	58.000	1.642	73.480	2.081	7.87
461.64	140.71	6.63	2.02	15.480	0.438	58.427	1.654	73.907	2.093	7.92
461.67	140.72	6.66	2.03	15.480	0.438	58.853	1.667	74.333	2.105	7.96
461.71	140.73	6.69	2.04	15.480	0.438	59.280	1.679	74.760	2.117	8.01
461.74	140.74	6.73	2.05	15.480	0.438	59.703	1.691	75.183	2.129	8.06
461.77	140.75	6.76	2.06	15.480	0.438	60.127	1.703	75.607	2.141	8.10
461.81	140.76	6.79	2.07	15.480	0.438	60.550	1.715	76.030	2.153	8.15
461.84	140.77	6.82	2.08	15.480	0.438	60.977	1.727	76.457	2.165	8.19
461.87	140.78	6.86	2.09	15.480	0.438	61.403	1.739	76.883	2.177	8.24
461.90	140.79	6.89	2.10	15.480	0.438	61.830	1.751	77.310	2.189	8.28
461.94	140.80	6.92	2.11	15.480	0.438	62.257	1.763	77.737	2.201	8.33
461.97	140.81	6.96	2.12	15.480	0.438	62.683	1.775	78.163	2.213	8.37

462.00	140.82	6.99	2.13	15.480	0.438	63.110	1.787	78.590	2.225	8.42
462.04	140.83	7.02	2.14	15.480	0.438	63.580	1.800	79.060	2.239	8.47
462.07	140.84	7.05	2.15	15.480	0.438	64.050	1.814	79.530	2.252	8.52
462.10	140.85	7.09	2.16	15.480	0.438	64.520	1.827	80.000	2.265	8.57
462.13	140.86	7.12	2.17	15.480	0.438	64.993	1.840	80.473	2.279	8.62
462.17	140.87	7.15	2.18	15.480	0.438	65.467	1.854	80.947	2.292	8.67
462.20	140.88	7.18	2.19	15.480	0.438	65.940	1.867	81.420	2.306	8.72
462.23	140.89	7.22	2.20	15.480	0.438	66.423	1.881	81.903	2.319	8.78
462.26	140.90	7.25	2.21	15.480	0.438	66.907	1.895	82.387	2.333	8.83
462.30	140.91	7.28	2.22	15.480	0.438	67.390	1.908	82.870	2.347	8.88
462.33	140.92	7.32	2.23	15.480	0.438	67.853	1.921	83.333	2.360	8.93
462.36	140.93	7.35	2.24	15.480	0.438	68.317	1.934	83.797	2.373	8.98
462.40	140.94	7.38	2.25	15.480	0.438	68.780	1.948	84.260	2.386	9.03
462.43	140.95	7.41	2.26	15.480	0.438	69.253	1.961	84.733	2.399	9.08
462.46	140.96	7.45	2.27	15.480	0.438	69.727	1.974	85.207	2.413	9.13
462.49	140.97	7.48	2.28	15.480	0.438	70.200	1.988	85.680	2.426	9.18
462.53	140.98	7.51	2.29	15.480	0.438	70.670	2.001	86.150	2.439	9.23
462.56	140.99	7.55	2.30	15.480	0.438	71.140	2.014	86.620	2.453	9.28
462.59	141.00	7.58	2.31	15.480	0.438	71.610	2.028	87.090	2.466	9.33
462.63	141.01	7.61	2.32	15.480	0.438	72.083	2.041	87.563	2.479	9.38
462.66	141.02	7.64	2.33	15.480	0.438	72.557	2.055	88.037	2.493	9.43
462.69	141.03	7.68	2.34	15.480	0.438	73.030	2.068	88.510	2.506	9.48
462.72	141.04	7.71	2.35	15.480	0.438	73.503	2.081	88.983	2.520	9.53
462.76	141.05	7.74	2.36	15.480	0.438	73.977	2.095	89.457	2.533	9.58

462.79	141.06	7.78	2.37	15.480	0.438	74.450	2.108	89.930	2.547	9.64
462.82	141.07	7.81	2.38	15.480	0.438	74.923	2.122	90.403	2.560	9.69
462.86	141.08	7.84	2.39	15.480	0.438	75.397	2.135	90.877	2.573	9.74
462.89	141.09	7.87	2.40	15.480	0.438	75.870	2.148	91.350	2.587	9.79
462.92	141.10	7.91	2.41	15.480	0.438	76.343	2.162	91.823	2.600	9.84
462.95	141.11	7.94	2.42	15.480	0.438	76.817	2.175	92.297	2.614	9.89
462.99	141.12	7.97	2.43	15.480	0.438	77.290	2.189	92.770	2.627	9.94
463.02	141.13	8.01	2.44	15.480	0.438	77.837	2.204	93.317	2.642	10.00
463.05	141.14	8.04	2.45	15.480	0.438	78.383	2.220	93.863	2.658	10.06
463.08	141.15	8.07	2.46	15.480	0.438	78.930	2.235	94.410	2.673	10.12
463.12	141.16	8.10	2.47	15.480	0.438	79.343	2.247	94.823	2.685	10.16
463.15	141.17	8.14	2.48	15.480	0.438	79.755	2.258	95.235	2.697	10.20
463.18	141.18	8.17	2.49	15.480	0.438	80.168	2.270	95.648	2.708	10.25
463.22	141.19	8.20	2.50	15.480	0.438	80.580	2.282	96.060	2.720	10.29
463.25	141.20	8.23	2.51	15.480	0.438	81.130	2.297	96.610	2.736	10.35
463.28	141.21	8.27	2.52	15.480	0.438	81.680	2.313	97.160	2.751	10.41
463.31	141.22	8.30	2.53	15.480	0.438	82.230	2.328	97.710	2.767	10.47
463.35	141.23	8.33	2.54	15.480	0.438	82.780	2.344	98.260	2.782	10.53
463.38	141.24	8.37	2.55	15.480	0.438	83.330	2.360	98.810	2.798	10.59
463.41	141.25	8.40	2.56	15.480	0.438	83.880	2.375	99.360	2.814	10.65
463.45	141.26	8.43	2.57	15.480	0.438	84.430	2.391	99.910	2.829	10.70
463.48	141.27	8.46	2.58	15.480	0.438	84.980	2.406	100.460	2.845	10.76
463.51	141.28	8.50	2.59	15.480	0.438	85.530	2.422	101.010	2.860	10.82
463.54	141.29	8.53	2.60	15.480	0.438	86.077	2.437	101.557	2.876	10.88

463.58	141.30	8.56	2.61	15.480	0.438	86.623	2.453	102.103	2.891	10.94
463.61	141.31	8.60	2.62	15.480	0.438	87.170	2.468	102.650	2.907	11.00
463.64	141.32	8.63	2.63	15.480	0.438	87.720	2.484	103.200	2.922	11.06
463.68	141.33	8.66	2.64	15.480	0.438	88.270	2.500	103.750	2.938	11.12
463.71	141.34	8.69	2.65	15.480	0.438	88.820	2.515	104.300	2.953	11.17
463.74	141.35	8.73	2.66	15.480	0.438	89.370	2.531	104.850	2.969	11.23
463.77	141.36	8.76	2.67	15.480	0.438	89.920	2.546	105.400	2.985	11.29
463.81	141.37	8.79	2.68	15.480	0.438	90.470	2.562	105.950	3.000	11.35
463.84	141.38	8.83	2.69	15.480	0.438	91.020	2.577	106.500	3.016	11.41
463.87	141.39	8.86	2.70	15.480	0.438	91.570	2.593	107.050	3.031	11.47
463.91	141.40	8.89	2.71	15.480	0.438	92.120	2.609	107.600	3.047	11.53
463.94	141.41	8.92	2.72	15.480	0.438	92.670	2.624	108.150	3.062	11.59
463.97	141.42	8.96	2.73	15.480	0.438	93.220	2.640	108.700	3.078	11.65
464.00	141.43	8.99	2.74	15.480	0.438	93.770	2.655	109.250	3.094	11.71
464.04	141.44	9.02	2.75	15.480	0.438	94.413	2.673	109.893	3.112	11.77
464.07	141.45	9.06	2.76	15.480	0.438	95.057	2.692	110.537	3.130	11.84
464.10	141.46	9.09	2.77	15.480	0.438	95.700	2.710	111.180	3.148	11.91
464.13	141.47	9.12	2.78	15.480	0.438	96.343	2.728	111.823	3.166	11.98
464.17	141.48	9.15	2.79	15.480	0.438	96.987	2.746	112.467	3.185	12.05
464.20	141.49	9.19	2.80	15.480	0.438	97.630	2.765	113.110	3.203	12.12
464.23	141.50	9.22	2.81	15.480	0.438	98.277	2.783	113.757	3.221	12.19
464.27	141.51	9.25	2.82	15.480	0.438	98.923	2.801	114.403	3.240	12.26
464.30	141.52	9.28	2.83	15.480	0.438	99.570	2.819	115.050	3.258	12.33
464.33	141.53	9.32	2.84	15.480	0.438	100.213	2.838	115.693	3.276	12.40

464.36	141.54	9.35	2.85	15.480	0.438	100.857	2.856	116.337	3.294	12.46
464.40	141.55	9.38	2.86	15.480	0.438	101.500	2.874	116.980	3.312	12.53
464.43	141.56	9.42	2.87	15.480	0.438	102.147	2.892	117.627	3.331	12.60
464.46	141.57	9.45	2.88	15.480	0.438	102.793	2.911	118.273	3.349	12.67
464.50	141.58	9.48	2.89	15.480	0.438	103.440	2.929	118.920	3.367	12.74
464.53	141.59	9.51	2.90	15.480	0.438	104.083	2.947	119.563	3.386	12.81
464.56	141.60	9.55	2.91	15.480	0.438	104.727	2.966	120.207	3.404	12.88
464.59	141.61	9.58	2.92	15.480	0.438	105.370	2.984	120.850	3.422	12.95
464.63	141.62	9.61	2.93	15.480	0.438	106.013	3.002	121.493	3.440	13.02
464.66	141.63	9.65	2.94	15.480	0.438	106.657	3.020	122.137	3.458	13.09
464.69	141.64	9.68	2.95	15.480	0.438	107.300	3.038	122.780	3.477	13.15
464.73	141.65	9.71	2.96	15.480	0.438	107.947	3.057	123.427	3.495	13.22
464.76	141.66	9.74	2.97	15.480	0.438	108.593	3.075	124.073	3.513	13.29
464.79	141.67	9.78	2.98	15.480	0.438	109.240	3.093	124.720	3.532	13.36
464.82	141.68	9.81	2.99	15.480	0.438	109.883	3.112	125.363	3.550	13.43
464.86	141.69	9.84	3.00	15.480	0.438	110.527	3.130	126.007	3.568	13.50
464.89	141.70	9.88	3.01	15.480	0.438	111.170	3.148	126.650	3.586	13.57
464.92	141.71	9.91	3.02	15.480	0.438	111.817	3.166	127.297	3.605	13.64
464.95	141.72	9.94	3.03	15.480	0.438	112.463	3.185	127.943	3.623	13.71
464.99	141.73	9.97	3.04	15.480	0.438	113.110	3.203	128.590	3.641	13.78
465.02	141.74	10.01	3.05	15.480	0.438	113.790	3.222	129.270	3.660	13.85
465.05	141.75	10.04	3.06	15.480	0.438	114.470	3.241	129.950	3.680	13.92
465.09	141.76	10.07	3.07	15.480	0.438	115.150	3.261	130.630	3.699	14.00
465.12	141.77	10.10	3.08	15.480	0.438	115.830	3.280	131.310	3.718	14.07

465.15	141.78	10.14	3.09	15.480	0.438	116.510	3.299	131.990	3.738	14.14
465.18	141.79	10.17	3.10	15.480	0.438	117.190	3.318	132.670	3.757	14.21
465.22	141.80	10.20	3.11	15.480	0.438	117.700	3.333	133.180	3.771	14.27
465.25	141.81	10.24	3.12	15.480	0.438	118.210	3.347	133.690	3.786	14.32
465.28	141.82	10.27	3.13	15.480	0.438	118.720	3.362	134.200	3.800	14.38
465.32	141.83	10.30	3.14	15.480	0.438	119.230	3.376	134.710	3.815	14.43
465.35	141.84	10.33	3.15	15.480	0.438	119.913	3.396	135.393	3.834	14.51
465.38	141.85	10.37	3.16	15.480	0.438	120.597	3.415	136.077	3.853	14.58
465.41	141.86	10.40	3.17	15.480	0.438	121.280	3.434	136.760	3.873	14.65
465.45	141.87	10.43	3.18	15.480	0.438	121.960	3.453	137.440	3.892	14.73
465.48	141.88	10.47	3.19	15.480	0.438	122.640	3.473	138.120	3.911	14.80
465.51	141.89	10.50	3.20	15.480	0.438	123.320	3.492	138.800	3.930	14.87
465.55	141.90	10.53	3.21	15.480	0.438	124.000	3.511	139.480	3.950	14.94
465.58	141.91	10.56	3.22	15.480	0.438	124.680	3.531	140.160	3.969	15.02
465.61	141.92	10.60	3.23	15.480	0.438	125.360	3.550	140.840	3.988	15.09
465.64	141.93	10.63	3.24	15.480	0.438	126.040	3.569	141.520	4.007	15.16
465.68	141.94	10.66	3.25	15.480	0.438	126.720	3.588	142.200	4.027	15.24
465.71	141.95	10.70	3.26	15.480	0.438	127.400	3.608	142.880	4.046	15.31
465.74	141.96	10.73	3.27	15.480	0.438	128.080	3.627	143.560	4.065	15.38
465.78	141.97	10.76	3.28	15.480	0.438	128.760	3.646	144.240	4.084	15.45
465.81	141.98	10.79	3.29	15.480	0.438	129.440	3.665	144.920	4.104	15.53
465.84	141.99	10.83	3.30	15.480	0.438	130.123	3.685	145.603	4.123	15.60
465.87	142.00	10.86	3.31	15.480	0.438	130.807	3.704	146.287	4.142	15.67
465.91	142.01	10.89	3.32	15.480	0.438	131.490	3.723	146.970	4.162	15.75

465.94	142.02	10.93	3.33	15.480	0.438	132.170	3.743	147.650	4.181	15.82
465.97	142.03	10.96	3.34	15.480	0.438	132.850	3.762	148.330	4.200	15.89
466.00	142.04	10.99	3.35	15.480	0.438	133.530	3.781	149.010	4.219	15.96
466.04	142.05	11.02	3.36	15.480	0.438	134.237	3.801	149.717	4.239	16.04
466.07	142.06	11.06	3.37	15.480	0.438	134.943	3.821	150.423	4.259	16.12
466.10	142.07	11.09	3.38	15.480	0.438	135.650	3.841	151.130	4.279	16.19
466.14	142.08	11.12	3.39	15.480	0.438	136.360	3.861	151.840	4.300	16.27
466.17	142.09	11.15	3.40	15.480	0.438	137.070	3.881	152.550	4.320	16.34
466.20	142.10	11.19	3.41	15.480	0.438	137.780	3.901	153.260	4.340	16.42
466.23	142.11	11.22	3.42	15.480	0.438	138.487	3.921	153.967	4.360	16.50
466.27	142.12	11.25	3.43	15.480	0.438	139.193	3.941	154.673	4.380	16.57
466.30	142.13	11.29	3.44	15.480	0.438	139.900	3.961	155.380	4.400	16.65
466.33	142.14	11.32	3.45	15.480	0.438	140.610	3.982	156.090	4.420	16.72
466.37	142.15	11.35	3.46	15.480	0.438	141.320	4.002	156.800	4.440	16.80
466.40	142.16	11.38	3.47	15.480	0.438	142.030	4.022	157.510	4.460	16.88
466.43	142.17	11.42	3.48	15.480	0.438	142.737	4.042	158.217	4.480	16.95
466.46	142.18	11.45	3.49	15.480	0.438	143.443	4.062	158.923	4.500	17.03
466.50	142.19	11.48	3.50	15.480	0.438	144.150	4.082	159.630	4.520	17.10
466.53	142.20	11.52	3.51	15.480	0.438	144.860	4.102	160.340	4.540	17.18
466.56	142.21	11.55	3.52	15.480	0.438	145.570	4.122	161.050	4.560	17.25
466.60	142.22	11.58	3.53	15.480	0.438	146.280	4.142	161.760	4.580	17.33
466.63	142.23	11.61	3.54	15.480	0.438	146.987	4.162	162.467	4.601	17.41
466.66	142.24	11.65	3.55	15.480	0.438	147.693	4.182	163.173	4.621	17.48
466.69	142.25	11.68	3.56	15.480	0.438	148.400	4.202	163.880	4.641	17.56

466.73	142.26	11.71	3.57	15.480	0.438	149.110	4.222	164.590	4.661	17.63
466.76	142.27	11.75	3.58	15.480	0.438	149.820	4.242	165.300	4.681	17.71
466.79	142.28	11.78	3.59	15.480	0.438	150.530	4.262	166.010	4.701	17.79
466.83	142.29	11.81	3.60	15.480	0.438	151.237	4.283	166.717	4.721	17.86
466.86	142.30	11.84	3.61	15.480	0.438	151.943	4.303	167.423	4.741	17.94
466.89	142.31	11.88	3.62	15.480	0.438	152.650	4.323	168.130	4.761	18.01
466.92	142.32	11.91	3.63	15.480	0.438	153.360	4.343	168.840	4.781	18.09
466.96	142.33	11.94	3.64	15.480	0.438	154.070	4.363	169.550	4.801	18.17
466.99	142.34	11.97	3.65	15.480	0.438	154.780	4.383	170.260	4.821	18.24
467.02	142.35	12.01	3.66	15.480	0.438	155.553	4.405	171.033	4.843	18.32
467.05	142.36	12.04	3.67	15.480	0.438	156.327	4.427	171.807	4.865	18.41
467.09	142.37	12.07	3.68	15.480	0.438	157.100	4.449	172.580	4.887	18.49
467.12	142.38	12.11	3.69	15.480	0.438	157.873	4.470	173.353	4.909	18.57
467.15	142.39	12.14	3.70	15.480	0.438	158.647	4.492	174.127	4.931	18.66
467.19	142.40	12.17	3.71	15.480	0.438	159.420	4.514	174.900	4.953	18.74
467.22	142.41	12.20	3.72	15.480	0.438	160.193	4.536	175.673	4.974	18.82
467.25	142.42	12.24	3.73	15.480	0.438	160.967	4.558	176.447	4.996	18.90
467.28	142.43	12.27	3.74	15.480	0.438	161.740	4.580	177.220	5.018	18.99
467.32	142.44	12.30	3.75	15.480	0.438	162.378	4.598	177.858	5.036	19.06
467.35	142.45	12.34	3.76	15.480	0.438	163.015	4.616	178.495	5.054	19.12
467.38	142.46	12.37	3.77	15.480	0.438	163.653	4.634	179.133	5.072	19.19
467.42	142.47	12.40	3.78	15.480	0.438	164.290	4.652	179.770	5.090	19.26
467.45	142.48	12.43	3.79	15.480	0.438	165.140	4.676	180.620	5.115	19.35
467.48	142.49	12.47	3.80	15.480	0.438	165.990	4.700	181.470	5.139	19.44

467.51	142.50	12.50	3.81	15.480	0.438	166.840	4.724	182.320	5.163	19.53
467.55	142.51	12.53	3.82	15.480	0.438	167.690	4.748	183.170	5.187	19.62
467.58	142.52	12.57	3.83	15.480	0.438	168.540	4.772	184.020	5.211	19.72
467.61	142.53	12.60	3.84	15.480	0.438	169.390	4.797	184.870	5.235	19.81
467.65	142.54	12.63	3.85	15.480	0.438	170.240	4.821	185.720	5.259	19.90
467.68	142.55	12.66	3.86	15.480	0.438	171.090	4.845	186.570	5.283	19.99
467.71	142.56	12.70	3.87	15.480	0.438	171.940	4.869	187.420	5.307	20.08
467.74	142.57	12.73	3.88	15.480	0.438	172.790	4.893	188.270	5.331	20.17
467.78	142.58	12.76	3.89	15.480	0.438	173.640	4.917	189.120	5.355	20.26
467.81	142.59	12.80	3.90	15.480	0.438	174.490	4.941	189.970	5.379	20.35
467.84	142.60	12.83	3.91	15.480	0.438	175.340	4.965	190.820	5.403	20.44
467.87	142.61	12.86	3.92	15.480	0.438	176.190	4.989	191.670	5.427	20.54
467.91	142.62	12.89	3.93	15.480	0.438	177.040	5.013	192.520	5.452	20.63
467.94	142.63	12.93	3.94	15.480	0.438	177.890	5.037	193.370	5.476	20.72
467.97	142.64	12.96	3.95	15.480	0.438	178.740	5.061	194.220	5.500	20.81
468.01	142.65	12.99	3.96	15.480	0.438	179.590	5.085	195.070	5.524	20.90
468.04	142.66	13.02	3.97	15.480	0.438	180.440	5.109	195.920	5.548	20.99
468.07	142.67	13.06	3.98	15.480	0.438	181.290	5.134	196.770	5.572	21.08
468.10	142.68	13.09	3.99	15.480	0.438	182.140	5.158	197.620	5.596	21.17
468.14	142.69	13.12	4.00	15.480	0.438	182.990	5.182	198.470	5.620	21.26
468.17	142.70	13.16	4.01	15.480	0.438	183.840	5.206	199.320	5.644	21.36
468.20	142.71	13.19	4.02	15.480	0.438	184.690	5.230	200.170	5.668	21.45
468.24	142.72	13.22	4.03	15.480	0.438	185.553	5.254	201.033	5.693	21.54
468.27	142.73	13.25	4.04	15.480	0.438	186.417	5.279	201.897	5.717	21.63

468.30	142.74	13.29	4.05	15.480	0.438	187.280	5.303	202.760	5.741	21.72
468.33	142.75	13.32	4.06	15.480	0.438	187.590	5.312	203.070	5.750	21.76
468.37	142.76	13.35	4.07	15.480	0.438	187.900	5.321	203.380	5.759	21.79
468.40	142.77	13.39	4.08	15.480	0.438	188.210	5.329	203.690	5.768	21.82
468.43	142.78	13.42	4.09	15.480	0.438	189.060	5.354	204.540	5.792	21.91
468.47	142.79	13.45	4.10	15.480	0.438	189.910	5.378	205.390	5.816	22.01
468.50	142.80	13.48	4.11	15.480	0.438	190.760	5.402	206.240	5.840	22.10
468.53	142.81	13.52	4.12	15.480	0.438	191.610	5.426	207.090	5.864	22.19
468.56	142.82	13.55	4.13	15.480	0.438	192.460	5.450	207.940	5.888	22.28
468.60	142.83	13.58	4.14	15.480	0.438	193.310	5.474	208.790	5.912	22.37
468.63	142.84	13.62	4.15	15.480	0.438	194.160	5.498	209.640	5.936	22.46
468.66	142.85	13.65	4.16	15.480	0.438	195.010	5.522	210.490	5.960	22.55
468.70	142.86	13.68	4.17	15.480	0.438	195.860	5.546	211.340	5.984	22.64
468.73	142.87	13.71	4.18	15.480	0.438	196.710	5.570	212.190	6.008	22.73
468.76	142.88	13.75	4.19	15.480	0.438	197.560	5.594	213.040	6.033	22.83
468.79	142.89	13.78	4.20	15.480	0.438	198.410	5.618	213.890	6.057	22.92
468.83	142.90	13.81	4.21	15.480	0.438	199.263	5.642	214.743	6.081	23.01
468.86	142.91	13.84	4.22	15.480	0.438	200.117	5.667	215.597	6.105	23.10
468.89	142.92	13.88	4.23	15.480	0.438	200.970	5.691	216.450	6.129	23.19
468.92	142.93	13.91	4.24	15.480	0.438	201.820	5.715	217.300	6.153	23.28
468.96	142.94	13.94	4.25	15.480	0.438	202.670	5.739	218.150	6.177	23.37
468.99	142.95	13.98	4.26	15.480	0.438	203.520	5.763	219.000	6.201	23.46
469.02	142.96	14.01	4.27	15.480	0.438	204.363	5.787	219.843	6.225	23.55
469.06	142.97	14.04	4.28	15.480	0.438	205.207	5.811	220.687	6.249	23.64

469.09	142.98	14.07	4.29	15.480	0.438	206.050	5.835	221.530	6.273	23.73
469.12	142.99	14.11	4.30	15.480	0.438	206.893	5.859	222.373	6.297	23.83
469.15	143.00	14.14	4.31	15.480	0.438	207.737	5.882	223.217	6.321	23.92
469.19	143.01	14.17	4.32	15.480	0.438	208.580	5.906	224.060	6.345	24.01
469.22	143.02	14.21	4.33	15.480	0.438	209.423	5.930	224.903	6.368	24.10
469.25	143.03	14.24	4.34	15.480	0.438	210.267	5.954	225.747	6.392	24.19
469.29	143.04	14.27	4.35	15.480	0.438	211.110	5.978	226.590	6.416	24.28
469.32	143.05	14.30	4.36	15.480	0.438	211.953	6.002	227.433	6.440	24.37
469.35	143.06	14.34	4.37	15.480	0.438	212.797	6.026	228.277	6.464	24.46
469.38	143.07	14.37	4.38	15.480	0.438	213.640	6.050	229.120	6.488	24.55
469.42	143.08	14.40	4.39	15.480	0.438	214.273	6.067	229.753	6.506	24.62
469.45	143.09	14.44	4.40	15.480	0.438	214.905	6.085	230.385	6.524	24.68
469.48	143.10	14.47	4.41	15.480	0.438	215.538	6.103	231.018	6.542	24.75
469.52	143.11	14.50	4.42	15.480	0.438	216.170	6.121	231.650	6.560	24.82
469.55	143.12	14.53	4.43	15.480	0.438	217.013	6.145	232.493	6.583	24.91
469.58	143.13	14.57	4.44	15.480	0.438	217.857	6.169	233.337	6.607	25.00
469.61	143.14	14.60	4.45	15.480	0.438	218.700	6.193	234.180	6.631	25.09
469.65	143.15	14.63	4.46	15.480	0.438	219.543	6.217	235.023	6.655	25.18
469.68	143.16	14.67	4.47	15.480	0.438	220.387	6.241	235.867	6.679	25.27
469.71	143.17	14.70	4.48	15.480	0.438	221.230	6.264	236.710	6.703	25.36
469.74	143.18	14.73	4.49	15.480	0.438	222.070	6.288	237.550	6.727	25.45
469.78	143.19	14.76	4.50	15.480	0.438	222.910	6.312	238.390	6.750	25.54
469.81	143.20	14.80	4.51	15.480	0.438	223.750	6.336	239.230	6.774	25.63
469.84	143.21	14.83	4.52	15.480	0.438	224.593	6.360	240.073	6.798	25.72

469.88	143.22	14.86	4.53	15.480	0.438	225.437	6.384	240.917	6.822	25.81
469.91	143.23	14.89	4.54	15.480	0.438	226.280	6.407	241.760	6.846	25.90
469.94	143.24	14.93	4.55	15.480	0.438	227.157	6.432	242.637	6.871	26.00
469.97	143.25	14.96	4.56	15.480	0.438	228.033	6.457	243.513	6.895	26.09
470.01	143.26	14.99	4.57	15.480	0.438	228.910	6.482	244.390	6.920	26.18
470.04	143.27	15.03	4.58	15.480	0.438	229.783	6.507	245.263	6.945	26.28
470.07	143.28	15.06	4.59	15.480	0.438	230.657	6.531	246.137	6.970	26.37
470.11	143.29	15.09	4.60	15.480	0.438	231.530	6.556	247.010	6.994	26.46
470.14	143.30	15.12	4.61	15.480	0.438	232.440	6.582	247.920	7.020	26.56
470.17	143.31	15.16	4.62	15.480	0.438	233.350	6.608	248.830	7.046	26.66
470.20	143.32	15.19	4.63	15.480	0.438	234.260	6.633	249.740	7.072	26.76
470.24	143.33	15.22	4.64	15.480	0.438	235.170	6.659	250.650	7.098	26.85
470.27	143.34	15.26	4.65	15.480	0.438	236.080	6.685	251.560	7.123	26.95
470.30	143.35	15.29	4.66	15.480	0.438	236.990	6.711	252.470	7.149	27.05
470.34	143.36	15.32	4.67	15.480	0.438	237.897	6.736	253.377	7.175	27.15
470.37	143.37	15.35	4.68	15.480	0.438	238.803	6.762	254.283	7.200	27.24
470.40	143.38	15.39	4.69	15.480	0.438	239.710	6.788	255.190	7.226	27.34
470.43	143.39	15.42	4.70	15.480	0.438	240.620	6.814	256.100	7.252	27.44
470.47	143.40	15.45	4.71	15.480	0.438	241.530	6.839	257.010	7.278	27.54
470.50	143.41	15.49	4.72	15.480	0.438	242.440	6.865	257.920	7.303	27.63
470.53	143.42	15.52	4.73	15.480	0.438	243.350	6.891	258.830	7.329	27.73
470.57	143.43	15.55	4.74	15.480	0.438	244.260	6.917	259.740	7.355	27.83
470.60	143.44	15.58	4.75	15.480	0.438	245.170	6.942	260.650	7.381	27.93
470.63	143.45	15.62	4.76	15.480	0.438	246.080	6.968	261.560	7.406	28.02

470.66	143.46	15.65	4.77	15.480	0.438	246.990	6.994	262.470	7.432	28.12
470.70	143.47	15.68	4.78	15.480	0.438	247.900	7.020	263.380	7.458	28.22
470.73	143.48	15.72	4.79	15.480	0.438	248.807	7.045	264.287	7.484	28.32
470.76	143.49	15.75	4.80	15.480	0.438	249.713	7.071	265.193	7.509	28.41
470.79	143.50	15.78	4.81	15.480	0.438	250.620	7.097	266.100	7.535	28.51
470.83	143.51	15.81	4.82	15.480	0.438	251.530	7.122	267.010	7.561	28.61
470.86	143.52	15.85	4.83	15.480	0.438	252.440	7.148	267.920	7.587	28.70
470.89	143.53	15.88	4.84	15.480	0.438	253.350	7.174	268.830	7.612	28.80
470.93	143.54	15.91	4.85	15.480	0.438	254.260	7.200	269.740	7.638	28.90
470.96	143.55	15.94	4.86	15.480	0.438	255.170	7.226	270.650	7.664	29.00
470.99	143.56	15.98	4.87	15.480	0.438	256.080	7.251	271.560	7.690	29.09
471.02	143.57	16.01	4.88	15.480	0.438	257.473	7.291	272.953	7.729	29.24
471.06	143.58	16.04	4.89	15.480	0.438	258.867	7.330	274.347	7.769	29.39
471.09	143.59	16.08	4.90	15.480	0.438	260.260	7.370	275.740	7.808	29.54
471.12	143.60	16.11	4.91	15.480	0.438	261.657	7.409	277.137	7.848	29.69
471.16	143.61	16.14	4.92	15.480	0.438	263.053	7.449	278.533	7.887	29.84
471.19	143.62	16.17	4.93	15.480	0.438	264.450	7.488	279.930	7.927	29.99
471.22	143.63	16.21	4.94	15.480	0.438	265.847	7.528	281.327	7.966	30.14
471.25	143.64	16.24	4.95	15.480	0.438	267.243	7.567	282.723	8.006	30.29
471.29	143.65	16.27	4.96	15.480	0.438	268.640	7.607	284.120	8.045	30.44
471.32	143.66	16.31	4.97	15.480	0.438	270.037	7.647	285.517	8.085	30.59
471.35	143.67	16.34	4.98	15.480	0.438	271.433	7.686	286.913	8.124	30.74
471.39	143.68	16.37	4.99	15.480	0.438	272.830	7.726	288.310	8.164	30.89
471.42	143.69	16.40	5.00	15.480	0.438	274.227	7.765	289.707	8.204	31.04

471.45	143.70	16.44	5.01	15.480	0.438	275.623	7.805	291.103	8.243	31.19
471.48	143.71	16.47	5.02	15.480	0.438	277.020	7.844	292.500	8.283	31.34
471.52	143.72	16.50	5.03	15.480	0.438	278.068	7.874	293.548	8.312	31.45
471.55	143.73	16.54	5.04	15.480	0.438	279.115	7.904	294.595	8.342	31.56
471.58	143.74	16.57	5.05	15.480	0.438	280.163	7.933	295.643	8.372	31.68
471.61	143.75	16.60	5.06	15.480	0.438	281.210	7.963	296.690	8.401	31.79
471.65	143.76	16.63	5.07	15.480	0.438	282.607	8.002	298.087	8.441	31.94
471.68	143.77	16.67	5.08	15.480	0.438	284.003	8.042	299.483	8.480	32.09
471.71	143.78	16.70	5.09	15.480	0.438	285.400	8.082	300.880	8.520	32.24
471.75	143.79	16.73	5.10	15.480	0.438	286.797	8.121	302.277	8.559	32.39
471.78	143.80	16.76	5.11	15.480	0.438	288.193	8.161	303.673	8.599	32.54
471.81	143.81	16.80	5.12	15.480	0.438	289.590	8.200	305.070	8.639	32.69
471.84	143.82	16.83	5.13	15.480	0.438	290.987	8.240	306.467	8.678	32.83
471.88	143.83	16.86	5.14	15.480	0.438	292.383	8.279	307.863	8.718	32.98
471.91	143.84	16.90	5.15	15.480	0.438	293.780	8.319	309.260	8.757	33.13
471.94	143.85	16.93	5.16	15.480	0.438	294.983	8.353	310.463	8.791	33.26
471.98	143.86	16.96	5.17	15.480	0.438	296.187	8.387	311.667	8.825	33.39
472.01	143.87	16.99	5.18	15.480	0.438	297.390	8.421	312.870	8.859	33.52
472.04	143.88	17.03	5.19	15.480	0.438	298.593	8.455	314.073	8.893	33.65
472.07	143.89	17.06	5.20	15.480	0.438	299.797	8.489	315.277	8.928	33.78
472.11	143.90	17.09	5.21	15.480	0.438	301.000	8.523	316.480	8.962	33.91
472.14	143.91	17.13	5.22	15.480	0.438	302.010	8.552	317.490	8.990	34.02
472.17	143.92	17.16	5.23	15.480	0.438	303.020	8.580	318.500	9.019	34.12
472.21	143.93	17.19	5.24	15.480	0.438	304.030	8.609	319.510	9.047	34.23

472.24	143.94	17.22	5.25	15.480	0.438	305.040	8.638	320.520	9.076	34.34
472.27	143.95	17.26	5.26	15.480	0.438	306.050	8.666	321.530	9.105	34.45
472.30	143.96	17.29	5.27	15.480	0.438	307.060	8.695	322.540	9.133	34.56
472.34	143.97	17.32	5.28	15.480	0.438	308.073	8.724	323.553	9.162	34.67
472.37	143.98	17.36	5.29	15.480	0.438	309.087	8.752	324.567	9.191	34.77
472.40	143.99	17.39	5.30	15.480	0.438	310.100	8.781	325.580	9.219	34.88
472.44	144.00	17.42	5.31	15.480	0.438	311.110	8.810	326.590	9.248	34.99
472.47	144.01	17.45	5.32	15.480	0.438	312.120	8.838	327.600	9.277	35.10
472.50	144.02	17.49	5.33	15.480	0.438	313.130	8.867	328.610	9.305	35.21
472.53	144.03	17.52	5.34	15.480	0.438	314.140	8.895	329.620	9.334	35.32
472.57	144.04	17.55	5.35	15.480	0.438	315.150	8.924	330.630	9.362	35.42
472.60	144.05	17.59	5.36	15.480	0.438	316.160	8.953	331.640	9.391	35.53
472.63	144.06	17.62	5.37	15.480	0.438	317.173	8.981	332.653	9.420	35.64
472.66	144.07	17.65	5.38	15.480	0.438	318.187	9.010	333.667	9.448	35.75
472.70	144.08	17.68	5.39	15.480	0.438	319.200	9.039	334.680	9.477	35.86
472.73	144.09	17.72	5.40	15.480	0.438	320.210	9.067	335.690	9.506	35.97
472.76	144.10	17.75	5.41	15.480	0.438	321.220	9.096	336.700	9.534	36.07
472.80	144.11	17.78	5.42	15.480	0.438	322.230	9.124	337.710	9.563	36.18
472.83	144.12	17.81	5.43	15.480	0.438	323.240	9.153	338.720	9.591	36.29
472.86	144.13	17.85	5.44	15.480	0.438	324.250	9.182	339.730	9.620	36.40
472.89	144.14	17.88	5.45	15.480	0.438	325.260	9.210	340.740	9.649	36.51
472.93	144.15	17.91	5.46	15.480	0.438	326.273	9.239	341.753	9.677	36.62
472.96	144.16	17.95	5.47	15.480	0.438	327.287	9.268	342.767	9.706	36.72
472.99	144.17	17.98	5.48	15.480	0.438	328.300	9.296	343.780	9.735	36.83

473.03	144.18	18.01	5.49	15.480	0.438	329.463	9.329	344.943	9.768	36.96
473.06	144.19	18.04	5.50	15.480	0.438	330.627	9.362	346.107	9.801	37.08
473.09	144.20	18.08	5.51	15.480	0.438	331.790	9.395	347.270	9.833	37.21
473.12	144.21	18.11	5.52	15.480	0.438	332.953	9.428	348.433	9.866	37.33
473.16	144.22	18.14	5.53	15.480	0.438	334.117	9.461	349.597	9.899	37.46
473.19	144.23	18.18	5.54	15.480	0.438	335.280	9.494	350.760	9.932	37.58
473.22	144.24	18.21	5.55	15.480	0.438	336.443	9.527	351.923	9.965	37.70
473.26	144.25	18.24	5.56	15.480	0.438	337.607	9.560	353.087	9.998	37.83
473.29	144.26	18.27	5.57	15.480	0.438	338.770	9.593	354.250	10.031	37.95
473.32	144.27	18.31	5.58	15.480	0.438	339.933	9.626	355.413	10.064	38.08
473.35	144.28	18.34	5.59	15.480	0.438	341.097	9.659	356.577	10.097	38.20
473.39	144.29	18.37	5.60	15.480	0.438	342.260	9.692	357.740	10.130	38.33
473.42	144.30	18.41	5.61	15.480	0.438	343.423	9.725	358.903	10.163	38.45
473.45	144.31	18.44	5.62	15.480	0.438	344.587	9.758	360.067	10.196	38.58
473.49	144.32	18.47	5.63	15.480	0.438	345.750	9.790	361.230	10.229	38.70
473.52	144.33	18.50	5.64	15.480	0.438	346.623	9.815	362.103	10.254	38.80
473.55	144.34	18.54	5.65	15.480	0.438	347.495	9.840	362.975	10.278	38.89
473.58	144.35	18.57	5.66	15.480	0.438	348.368	9.865	363.848	10.303	38.98
473.62	144.36	18.60	5.67	15.480	0.438	349.240	9.889	364.720	10.328	39.08
473.65	144.37	18.63	5.68	15.480	0.438	350.403	9.922	365.883	10.361	39.20
473.68	144.38	18.67	5.69	15.480	0.438	351.567	9.955	367.047	10.394	39.33
473.71	144.39	18.70	5.70	15.480	0.438	352.730	9.988	368.210	10.426	39.45
473.75	144.40	18.73	5.71	15.480	0.438	353.893	10.021	369.373	10.459	39.57
473.78	144.41	18.77	5.72	15.480	0.438	355.057	10.054	370.537	10.492	39.70

473.81	144.42	18.80	5.73	15.480	0.438	356.220	10.087	371.700	10.525	39.82
473.85	144.43	18.83	5.74	15.480	0.438	357.383	10.120	372.863	10.558	39.95
473.88	144.44	18.86	5.75	15.480	0.438	358.547	10.153	374.027	10.591	40.07
473.91	144.45	18.90	5.76	15.480	0.438	359.710	10.186	375.190	10.624	40.20
473.94	144.46	18.93	5.77	15.480	0.438	360.873	10.219	376.353	10.657	40.32
473.98	144.47	18.96	5.78	15.480	0.438	362.037	10.252	377.517	10.690	40.45
474.01	144.48	19.00	5.79	15.480	0.438	363.200	10.285	378.680	10.723	40.57
474.04	144.49	19.03	5.80	15.480	0.438	364.363	10.318	380.173	10.765	40.73
474.08	144.50	19.06	5.81	15.480	0.438	366.187	10.369	381.667	10.807	40.89
474.11	144.51	19.09	5.82	15.480	0.438	367.680	10.411	383.160	10.850	41.05
474.14	144.52	19.13	5.83	15.480	0.438	369.173	10.454	384.653	10.892	41.21
474.17	144.53	19.16	5.84	15.480	0.438	370.667	10.496	386.147	10.934	41.37
474.21	144.54	19.19	5.85	15.480	0.438	372.160	10.538	387.640	10.977	41.53
474.24	144.55	19.23	5.86	15.480	0.438	373.653	10.581	389.133	11.019	41.69
474.27	144.56	19.26	5.87	15.480	0.438	375.147	10.623	390.627	11.061	41.85
474.31	144.57	19.29	5.88	15.480	0.438	376.640	10.665	392.120	11.103	42.01
474.34	144.58	19.32	5.89	15.480	0.438	378.133	10.707	393.613	11.146	42.17
474.37	144.59	19.36	5.90	15.480	0.438	379.627	10.750	395.107	11.188	42.33
474.40	144.60	19.39	5.91	15.480	0.438	381.120	10.792	396.600	11.230	42.49
474.44	144.61	19.42	5.92	15.480	0.438	382.617	10.834	398.097	11.273	42.65
474.47	144.62	19.46	5.93	15.480	0.438	384.113	10.877	399.593	11.315	42.81
474.50	144.63	19.49	5.94	15.480	0.438	385.610	10.919	401.090	11.357	42.97
474.53	144.64	19.52	5.95	15.480	0.438	387.103	10.961	402.583	11.400	43.13
474.57	144.65	19.55	5.96	15.480	0.438	388.597	11.004	404.077	11.442	43.29

474.60	144.66	19.59	5.97	15.480	0.438	390.090	11.046	405.570	11.484	43.45
474.63	144.67	19.62	5.98	15.480	0.438	391.583	11.088	407.063	11.527	43.61
474.67	144.68	19.65	5.99	15.480	0.438	393.077	11.131	408.557	11.569	43.77
474.70	144.69	19.68	6.00	15.480	0.438	394.570	11.173	410.050	11.611	43.93
474.73	144.70	19.72	6.01	15.480	0.438	396.063	11.215	411.543	11.653	44.09
474.76	144.71	19.75	6.02	15.480	0.438	397.557	11.257	413.037	11.696	44.25
474.80	144.72	19.78	6.03	15.480	0.438	399.050	11.300	414.530	11.738	44.41
474.83	144.73	19.82	6.04	15.480	0.438	400.543	11.342	416.023	11.780	44.57
474.86	144.74	19.85	6.05	15.480	0.438	402.037	11.384	417.517	11.823	44.73
474.90	144.75	19.88	6.06	15.480	0.438	403.530	11.427	419.010	11.865	44.89
474.93	144.76	19.91	6.07	15.480	0.438	405.027	11.469	420.507	11.907	45.05
474.96	144.77	19.95	6.08	15.480	0.438	406.523	11.511	422.003	11.950	45.21
474.99	144.78	19.98	6.09	15.480	0.438	408.020	11.554	423.500	11.992	45.37
475.03	144.79	20.01	6.10	15.480	0.438	409.540	11.597	425.020	12.035	45.54
475.06	144.80	20.05	6.11	15.480	0.438	411.060	11.640	426.540	12.078	45.70
475.09	144.81	20.08	6.12	15.480	0.438	412.580	11.683	428.060	12.121	45.86
475.13	144.82	20.11	6.13	15.480	0.438	414.103	11.726	429.583	12.164	46.03
475.16	144.83	20.14	6.14	15.480	0.438	415.627	11.769	431.107	12.207	46.19
475.19	144.84	20.18	6.15	15.480	0.438	417.150	11.812	432.630	12.251	46.35
475.22	144.85	20.21	6.16	15.480	0.438	418.673	11.855	434.153	12.294	46.52
475.26	144.86	20.24	6.17	15.480	0.438	420.197	11.899	435.677	12.337	46.68
475.29	144.87	20.28	6.18	15.480	0.438	421.720	11.942	437.200	12.380	46.84
475.32	144.88	20.31	6.19	15.480	0.438	423.243	11.985	438.723	12.423	47.00
475.36	144.89	20.34	6.20	15.480	0.438	424.767	12.028	440.247	12.466	47.17

475.39	144.90	20.37	6.21	15.480	0.438	426.290	12.071	441.770	12.509	47.33
475.42	144.91	20.41	6.22	15.480	0.438	427.813	12.114	443.293	12.553	47.49
475.45	144.92	20.44	6.23	15.480	0.438	429.337	12.157	444.817	12.596	47.66
475.49	144.93	20.47	6.24	15.480	0.438	430.860	12.200	446.340	12.639	47.82
475.52	144.94	20.51	6.25	15.480	0.438	432.383	12.244	447.863	12.682	47.98
475.55	144.95	20.54	6.26	15.480	0.438	433.907	12.287	449.387	12.725	48.15
475.58	144.96	20.57	6.27	15.480	0.438	435.430	12.330	450.910	12.768	48.31
475.62	144.97	20.60	6.28	15.480	0.438	436.573	12.362	452.053	12.801	48.43
475.65	144.98	20.64	6.29	15.480	0.438	437.715	12.395	453.195	12.833	48.56
475.68	144.99	20.67	6.30	15.480	0.438	438.858	12.427	454.338	12.865	48.68
475.72	145.00	20.70	6.31	15.480	0.438	440.000	12.459	455.480	12.898	48.80
475.75	145.01	20.73	6.32	15.480	0.438	441.523	12.502	457.003	12.941	48.96
475.78	145.02	20.77	6.33	15.480	0.438	443.047	12.546	458.527	12.984	49.13
475.81	145.03	20.80	6.34	15.480	0.438	444.570	12.589	460.050	13.027	49.29
475.85	145.04	20.83	6.35	15.480	0.438	446.093	12.632	461.573	13.070	49.45
475.88	145.05	20.87	6.36	15.480	0.438	447.617	12.675	463.097	13.113	49.62
475.91	145.06	20.90	6.37	15.480	0.438	449.140	12.718	464.620	13.156	49.78
475.95	145.07	20.93	6.38	15.480	0.438	450.663	12.761	466.143	13.200	49.94
475.98	145.08	20.96	6.39	15.480	0.438	452.187	12.804	467.667	13.243	50.11
476.01	145.09	21.00	6.40	15.480	0.438	453.710	12.848	469.190	13.286	50.27
476.04	145.10	21.03	6.41	15.480	0.438	455.207	12.890	470.687	13.328	50.43
476.08	145.11	21.06	6.42	15.480	0.438	456.703	12.932	472.183	13.371	50.59
476.11	145.12	21.10	6.43	15.480	0.438	458.200	12.975	473.680	13.413	50.75
476.14	145.13	21.13	6.44	15.480	0.438	459.700	13.017	475.180	13.455	50.91

476.18	145.14	21.16	6.45	15.480	0.438	461.200	13.060	476.680	13.498	51.07
476.21	145.15	21.19	6.46	15.480	0.438	462.700	13.102	478.180	13.540	51.23
476.24	145.16	21.23	6.47	15.480	0.438	464.200	13.145	479.680	13.583	51.39
476.27	145.17	21.26	6.48	15.480	0.438	465.700	13.187	481.180	13.625	51.55
476.31	145.18	21.29	6.49	15.480	0.438	467.200	13.230	482.680	13.668	51.71
476.34	145.19	21.33	6.50	15.480	0.438	468.700	13.272	484.180	13.710	51.87
476.37	145.20	21.36	6.51	15.480	0.438	470.200	13.314	485.680	13.753	52.04
476.40	145.21	21.39	6.52	15.480	0.438	471.700	13.357	487.180	13.795	52.20
476.44	145.22	21.42	6.53	15.480	0.438	473.200	13.399	488.680	13.838	52.36
476.47	145.23	21.46	6.54	15.480	0.438	474.700	13.442	490.180	13.880	52.52
476.50	145.24	21.49	6.55	15.480	0.438	476.200	13.484	491.680	13.923	52.68
476.54	145.25	21.52	6.56	15.480	0.438	477.700	13.527	493.180	13.965	52.84
476.57	145.26	21.55	6.57	15.480	0.438	479.200	13.569	494.680	14.008	53.00
476.60	145.27	21.59	6.58	15.480	0.438	480.700	13.612	496.180	14.050	53.16
476.63	145.28	21.62	6.59	15.480	0.438	482.200	13.654	497.680	14.093	53.32
476.67	145.29	21.65	6.60	15.480	0.438	483.700	13.697	499.180	14.135	53.48
476.70	145.30	21.69	6.61	15.480	0.438	485.200	13.739	500.680	14.178	53.64
476.73	145.31	21.72	6.62	15.480	0.438	486.700	13.782	502.180	14.220	53.80
476.77	145.32	21.75	6.63	15.480	0.438	488.200	13.824	503.680	14.262	53.96
476.80	145.33	21.78	6.64	15.480	0.438	489.700	13.867	505.180	14.305	54.12
476.83	145.34	21.82	6.65	15.480	0.438	491.200	13.909	506.680	14.347	54.29
476.86	145.35	21.85	6.66	15.480	0.438	492.700	13.952	508.180	14.390	54.45
476.90	145.36	21.88	6.67	15.480	0.438	494.200	13.994	509.680	14.432	54.61
476.93	145.37	21.92	6.68	15.480	0.438	495.700	14.037	511.180	14.475	54.77

476.96	145.38	21.95	6.69	15.480	0.438	497.200	14.079	512.680	14.517	54.93
477.00	145.39	21.98	6.70	15.480	0.438	498.700	14.121	514.180	14.560	55.09
477.03	145.40	22.01	6.71	15.480	0.438	500.430	14.170	515.910	14.609	55.27
477.06	145.41	22.05	6.72	15.480	0.438	502.160	14.219	517.640	14.658	55.46
477.09	145.42	22.08	6.73	15.480	0.438	503.890	14.268	519.370	14.707	55.65
477.13	145.43	22.11	6.74	15.480	0.438	505.620	14.317	521.100	14.756	55.83
477.16	145.44	22.15	6.75	15.480	0.438	507.350	14.366	522.830	14.805	56.02
477.19	145.45	22.18	6.76	15.480	0.438	509.080	14.415	524.560	14.854	56.20
477.23	145.46	22.21	6.77	15.480	0.438	510.813	14.464	526.293	14.903	56.39
477.26	145.47	22.24	6.78	15.480	0.438	512.547	14.514	528.027	14.952	56.57
477.29	145.48	22.28	6.79	15.480	0.438	514.280	14.563	529.760	15.001	56.76
477.32	145.49	22.31	6.80	15.480	0.438	516.010	14.612	531.490	15.050	56.94
477.36	145.50	22.34	6.81	15.480	0.438	517.740	14.661	533.220	15.099	57.13
477.39	145.51	22.38	6.82	15.480	0.438	519.470	14.710	534.950	15.148	57.31
477.42	145.52	22.41	6.83	15.480	0.438	521.200	14.759	536.680	15.197	57.50
477.45	145.53	22.44	6.84	15.480	0.438	522.930	14.808	538.410	15.246	57.69
477.49	145.54	22.47	6.85	15.480	0.438	524.660	14.857	540.140	15.295	57.87
477.52	145.55	22.51	6.86	15.480	0.438	526.390	14.906	541.870	15.344	58.06
477.55	145.56	22.54	6.87	15.480	0.438	528.120	14.955	543.600	15.393	58.24
477.59	145.57	22.57	6.88	15.480	0.438	529.850	15.004	545.330	15.442	58.43
477.62	145.58	22.60	6.89	15.480	0.438	531.583	15.053	547.063	15.491	58.61
477.65	145.59	22.64	6.90	15.480	0.438	533.317	15.102	548.797	15.540	58.80
477.68	145.60	22.67	6.91	15.480	0.438	535.050	15.151	550.530	15.589	58.98
477.72	145.61	22.70	6.92	15.480	0.438	536.348	15.188	551.828	15.626	59.12

477.75	145.62	22.74	6.93	15.480	0.438	537.645	15.224	553.125	15.663	59.26
477.78	145.63	22.77	6.94	15.480	0.438	538.943	15.261	554.423	15.699	59.40
477.82	145.64	22.80	6.95	15.480	0.438	540.240	15.298	555.720	15.736	59.54
477.85	145.65	22.83	6.96	15.480	0.438	541.970	15.347	557.450	15.785	59.73
477.88	145.66	22.87	6.97	15.480	0.438	543.700	15.396	559.180	15.834	59.91
477.91	145.67	22.90	6.98	15.480	0.438	545.430	15.445	560.910	15.883	60.10
477.95	145.68	22.93	6.99	15.480	0.438	547.163	15.494	562.643	15.932	60.28
477.98	145.69	22.97	7.00	15.480	0.438	548.897	15.543	564.377	15.981	60.47
478.01	145.70	23.00	7.01	15.480	0.438	550.630	15.592	566.110	16.030	60.65
478.05	145.71	23.03	7.02	15.480	0.438	552.503	15.645	567.983	16.083	60.85
478.08	145.72	23.06	7.03	15.480	0.438	554.377	15.698	569.857	16.136	61.05
478.11	145.73	23.10	7.04	15.480	0.438	556.250	15.751	571.730	16.189	61.26
478.14	145.74	23.13	7.05	15.480	0.438	558.123	15.804	573.603	16.242	61.46
478.18	145.75	23.16	7.06	15.480	0.438	559.997	15.857	575.477	16.296	61.66
478.21	145.76	23.20	7.07	15.480	0.438	561.870	15.910	577.350	16.349	61.86
478.24	145.77	23.23	7.08	15.480	0.438	563.743	15.963	579.223	16.402	62.06
478.28	145.78	23.26	7.09	15.480	0.438	565.617	16.016	581.097	16.455	62.26
478.31	145.79	23.29	7.10	15.480	0.438	567.490	16.069	582.970	16.508	62.46
478.34	145.80	23.33	7.11	15.480	0.438	569.363	16.122	584.843	16.561	62.66
478.37	145.81	23.36	7.12	15.480	0.438	571.237	16.175	586.717	16.614	62.86
478.41	145.82	23.39	7.13	15.480	0.438	573.110	16.229	588.590	16.667	63.06
478.44	145.83	23.42	7.14	15.480	0.438	574.983	16.282	590.463	16.720	63.26
478.47	145.84	23.46	7.15	15.480	0.438	576.857	16.335	592.337	16.773	63.46
478.50	145.85	23.49	7.16	15.480	0.438	578.730	16.388	594.210	16.826	63.66

478.54	145.86	23.52	7.17	15.480	0.438	580.603	16.441	596.083	16.879	63.86
478.57	145.87	23.56	7.18	15.480	0.438	582.477	16.494	597.957	16.932	64.06
478.60	145.88	23.59	7.19	15.480	0.438	584.350	16.547	599.830	16.985	64.27
478.64	145.89	23.62	7.20	15.480	0.438	586.223	16.600	601.703	17.038	64.47
478.67	145.90	23.65	7.21	15.480	0.438	588.097	16.653	603.577	17.091	64.67
478.70	145.91	23.69	7.22	15.480	0.438	589.970	16.706	605.450	17.144	64.87
478.73	145.92	23.72	7.23	15.480	0.438	591.843	16.759	607.323	17.197	65.07
478.77	145.93	23.75	7.24	15.480	0.438	593.717	16.812	609.197	17.250	65.27
478.80	145.94	23.79	7.25	15.480	0.438	595.590	16.865	611.070	17.303	65.47
478.83	145.95	23.82	7.26	15.480	0.438	597.463	16.918	612.943	17.356	65.67
478.87	145.96	23.85	7.27	15.480	0.438	599.337	16.971	614.817	17.410	65.87
478.90	145.97	23.88	7.28	15.480	0.438	601.210	17.024	616.690	17.463	66.07
478.93	145.98	23.92	7.29	15.480	0.438	603.083	17.077	618.563	17.516	66.27
478.96	145.99	23.95	7.30	15.480	0.438	604.957	17.130	620.437	17.569	66.47
479.00	146.00	23.98	7.31	15.480	0.438	606.830	17.183	622.310	17.622	66.67
479.03	146.01	24.02	7.32	15.480	0.438	608.700	17.236	624.180	17.675	66.87
479.06	146.02	24.05	7.33	15.480	0.438	610.570	17.289	626.050	17.728	67.07
479.10	146.03	24.08	7.34	15.480	0.438	612.440	17.342	627.920	17.781	67.28
479.13	146.04	24.11	7.35	15.480	0.438	614.313	17.395	629.793	17.834	67.48
479.16	146.05	24.15	7.36	15.480	0.438	616.187	17.448	631.667	17.887	67.68
479.19	146.06	24.18	7.37	15.480	0.438	618.060	17.501	633.540	17.940	67.88
479.23	146.07	24.21	7.38	15.480	0.438	619.930	17.554	635.410	17.993	68.08
479.26	146.08	24.25	7.39	15.480	0.438	621.800	17.607	637.280	18.046	68.28
479.29	146.09	24.28	7.40	15.480	0.438	623.670	17.660	639.150	18.099	68.48

479.32	146.10	24.31	7.41	15.480	0.438	625.543	17.713	641.023	18.152	68.68
479.36	146.11	24.34	7.42	15.480	0.438	627.417	17.766	642.897	18.205	68.88
479.39	146.12	24.38	7.43	15.480	0.438	629.290	17.819	644.770	18.258	69.08
479.42	146.13	24.41	7.44	15.480	0.438	631.163	17.872	646.643	18.311	69.28
479.46	146.14	24.44	7.45	15.480	0.438	633.037	17.925	648.517	18.364	69.48
479.49	146.15	24.47	7.46	15.480	0.438	634.910	17.978	650.390	18.417	69.68
479.52	146.16	24.51	7.47	15.480	0.438	636.780	18.031	652.260	18.470	69.88
479.55	146.17	24.54	7.48	15.480	0.438	638.650	18.084	654.130	18.523	70.08
479.59	146.18	24.57	7.49	15.480	0.438	640.520	18.137	656.000	18.576	70.28
479.62	146.19	24.61	7.50	15.480	0.438	642.393	18.190	657.873	18.629	70.48
479.65	146.20	24.64	7.51	15.480	0.438	644.267	18.243	659.747	18.682	70.69
479.69	146.21	24.67	7.52	15.480	0.438	646.140	18.296	661.620	18.735	70.89
479.72	146.22	24.70	7.53	15.480	0.438	648.010	18.349	663.490	18.788	71.09
479.75	146.23	24.74	7.54	15.480	0.438	649.880	18.402	665.360	18.841	71.29
479.78	146.24	24.77	7.55	15.480	0.438	651.750	18.455	667.230	18.894	71.49
479.82	146.25	24.80	7.56	15.480	0.438	653.155	18.495	668.635	18.933	71.64
479.85	146.26	24.84	7.57	15.480	0.438	654.560	18.535	670.040	18.973	71.79
479.88	146.27	24.87	7.58	15.480	0.438	655.965	18.575	671.445	19.013	71.94
479.92	146.28	24.90	7.59	15.480	0.438	657.370	18.614	672.850	19.053	72.09
479.95	146.29	24.93	7.60	15.480	0.438	659.243	18.668	674.723	19.106	72.29
479.98	146.30	24.97	7.61	15.480	0.438	661.117	18.721	676.597	19.159	72.49
480.01	146.31	25.00	7.62	15.480	0.438	662.990	18.774	678.470	19.212	72.69
480.05	146.32	25.03	7.63	15.480	0.438	664.990	18.830	680.470	19.269	72.91
480.08	146.33	25.07	7.64	15.480	0.438	666.990	18.887	682.470	19.325	73.12

480.11	146.34	25.10	7.65	15.480	0.438	668.990	18.944	684.470	19.382	73.33
480.15	146.35	25.13	7.66	15.480	0.438	670.990	19.000	686.470	19.438	73.55
480.18	146.36	25.16	7.67	15.480	0.438	672.990	19.057	688.470	19.495	73.76
480.21	146.37	25.20	7.68	15.480	0.438	674.990	19.113	690.470	19.552	73.98
480.24	146.38	25.23	7.69	15.480	0.438	676.990	19.170	692.470	19.608	74.19
480.28	146.39	25.26	7.70	15.480	0.438	678.990	19.227	694.470	19.665	74.41
480.31	146.40	25.29	7.71	15.480	0.438	680.990	19.283	696.470	19.722	74.62
480.34	146.41	25.33	7.72	15.480	0.438	682.990	19.340	698.470	19.778	74.83
480.37	146.42	25.36	7.73	15.480	0.438	684.990	19.397	700.470	19.835	75.05
480.41	146.43	25.39	7.74	15.480	0.438	686.990	19.453	702.470	19.892	75.26
480.44	146.44	25.43	7.75	15.480	0.438	688.990	19.510	704.470	19.948	75.48
480.47	146.45	25.46	7.76	15.480	0.438	690.990	19.566	706.470	20.005	75.69
480.51	146.46	25.49	7.77	15.480	0.438	692.990	19.623	708.470	20.061	75.91
480.54	146.47	25.52	7.78	15.480	0.438	694.990	19.680	710.470	20.118	76.12
480.57	146.48	25.56	7.79	15.480	0.438	696.990	19.736	712.470	20.175	76.33
480.60	146.49	25.59	7.80	15.480	0.438	698.990	19.793	714.470	20.231	76.55
480.64	146.50	25.62	7.81	15.480	0.438	700.990	19.850	716.470	20.288	76.76
480.67	146.51	25.66	7.82	15.480	0.438	702.990	19.906	718.470	20.345	76.98
480.70	146.52	25.69	7.83	15.480	0.438	704.990	19.963	720.470	20.401	77.19
480.74	146.53	25.72	7.84	15.480	0.438	706.990	20.020	722.470	20.458	77.41
480.77	146.54	25.75	7.85	15.480	0.438	708.990	20.076	724.470	20.515	77.62
480.80	146.55	25.79	7.86	15.480	0.438	710.990	20.133	726.470	20.571	77.83
480.83	146.56	25.82	7.87	15.480	0.438	712.990	20.189	728.470	20.628	78.05
480.87	146.57	25.85	7.88	15.480	0.438	714.990	20.246	730.470	20.684	78.26

480.90	146.58	25.89	7.89	15.480	0.438	716.990	20.303	732.470	20.741	78.48
480.93	146.59	25.92	7.90	15.480	0.438	718.990	20.359	734.470	20.798	78.69
480.97	146.60	25.95	7.91	15.480	0.438	720.990	20.416	736.470	20.854	78.91
481.00	146.61	25.98	7.92	15.480	0.438	722.990	20.473	738.470	20.911	79.12
481.03	146.62	26.02	7.93	15.480	0.438	725.237	20.536	740.717	20.975	79.36
481.06	146.63	26.05	7.94	15.480	0.438	727.483	20.600	742.963	21.038	79.60
481.10	146.64	26.08	7.95	15.480	0.438	729.730	20.663	745.210	21.102	79.84
481.13	146.65	26.12	7.96	15.480	0.438	731.977	20.727	747.457	21.165	80.08
481.16	146.66	26.15	7.97	15.480	0.438	734.223	20.791	749.703	21.229	80.32
481.19	146.67	26.18	7.98	15.480	0.438	736.470	20.854	751.950	21.293	80.56
481.23	146.68	26.21	7.99	15.480	0.438	738.720	20.918	754.200	21.356	80.80
481.26	146.69	26.25	8.00	15.480	0.438	740.970	20.982	756.450	21.420	81.05
481.29	146.70	26.28	8.01	15.480	0.438	743.220	21.045	758.700	21.484	81.29
481.33	146.71	26.31	8.02	15.480	0.438	745.467	21.109	760.947	21.547	81.53
481.36	146.72	26.34	8.03	15.480	0.438	747.713	21.173	763.193	21.611	81.77
481.39	146.73	26.38	8.04	15.480	0.438	749.960	21.236	765.440	21.675	82.01
481.42	146.74	26.41	8.05	15.480	0.438	752.207	21.300	767.687	21.738	82.25
481.46	146.75	26.44	8.06	15.480	0.438	754.453	21.364	769.933	21.802	82.49
481.49	146.76	26.48	8.07	15.480	0.438	756.700	21.427	772.180	21.865	82.73
481.52	146.77	26.51	8.08	15.480	0.438	756.700	21.427	772.180	21.865	82.73
481.56	146.78	26.54	8.09	15.480	0.438	756.700	21.427	772.180	21.865	82.73
481.59	146.79	26.57	8.10	15.480	0.438	763.440	21.618	778.920	22.056	83.45
481.62	146.80	26.61	8.11	15.480	0.438	765.690	21.682	781.170	22.120	83.69
481.65	146.81	26.64	8.12	15.480	0.438	767.940	21.745	783.420	22.184	83.94

481.69	146.82	26.67	8.13	15.480	0.438	770.190	21.809	785.670	22.247	84.18
481.72	146.83	26.71	8.14	15.480	0.438	772.437	21.873	787.917	22.311	84.42
481.75	146.84	26.74	8.15	15.480	0.438	774.683	21.936	790.163	22.375	84.66
481.79	146.85	26.77	8.16	15.480	0.438	776.930	22.000	792.410	22.438	84.90
481.82	146.86	26.80	8.17	15.480	0.438	779.177	22.064	794.657	22.502	85.14
481.85	146.87	26.84	8.18	15.480	0.438	781.423	22.127	796.903	22.566	85.38
481.88	146.88	26.87	8.19	15.480	0.438	783.670	22.191	799.150	22.629	85.62
481.92	146.89	26.90	8.20	15.480	0.438	785.358	22.239	800.838	22.677	85.80
481.95	146.90	26.94	8.21	15.480	0.438	787.045	22.286	802.525	22.725	85.98
481.98	146.91	26.97	8.22	15.480	0.438	788.733	22.334	804.213	22.773	86.16
482.02	146.92	27.00	8.23	15.480	0.438	790.420	22.382	805.900	22.820	86.34
482.05	146.93	27.03	8.24	15.480	0.438	792.620	22.444	808.100	22.883	86.58
482.08	146.94	27.07	8.25	15.480	0.438	794.820	22.507	810.300	22.945	86.82
482.11	146.95	27.10	8.26	15.480	0.438	797.020	22.569	812.500	23.007	87.05
482.15	146.96	27.13	8.27	15.480	0.438	799.220	22.631	814.700	23.070	87.29
482.18	146.97	27.17	8.28	15.480	0.438	801.420	22.693	816.900	23.132	87.52
482.21	146.98	27.20	8.29	15.480	0.438	803.620	22.756	819.100	23.194	87.76
482.24	146.99	27.23	8.30	15.480	0.438	805.820	22.818	821.300	23.256	87.99
482.28	147.00	27.26	8.31	15.480	0.438	808.020	22.880	823.500	23.319	88.23
482.31	147.01	27.30	8.32	15.480	0.438	810.220	22.943	825.700	23.381	88.47
482.34	147.02	27.33	8.33	15.480	0.438	812.420	23.005	827.900	23.443	88.70
482.38	147.03	27.36	8.34	15.480	0.438	814.620	23.067	830.100	23.506	88.94
482.41	147.04	27.39	8.35	15.480	0.438	816.820	23.130	832.300	23.568	89.17
482.44	147.05	27.43	8.36	15.480	0.438	819.020	23.192	834.500	23.630	89.41

482.47	147.06	27.46	8.37	15.480	0.438	821.220	23.254	836.700	23.692	89.64
482.51	147.07	27.49	8.38	15.480	0.438	823.420	23.316	838.900	23.755	89.88
482.54	147.08	27.53	8.39	15.480	0.438	825.620	23.379	841.100	23.817	90.12
482.57	147.09	27.56	8.40	15.480	0.438	827.820	23.441	843.300	23.879	90.35
482.61	147.10	27.59	8.41	15.480	0.438	830.020	23.503	845.500	23.942	90.59
482.64	147.11	27.62	8.42	15.480	0.438	832.220	23.566	847.700	24.004	90.82
482.67	147.12	27.66	8.43	15.480	0.438	834.420	23.628	849.900	24.066	91.06
482.70	147.13	27.69	8.44	15.480	0.438	836.620	23.690	852.100	24.129	91.29
482.74	147.14	27.72	8.45	15.480	0.438	838.820	23.753	854.300	24.191	91.53
482.77	147.15	27.76	8.46	15.480	0.438	841.020	23.815	856.500	24.253	91.77
482.80	147.16	27.79	8.47	15.480	0.438	843.220	23.877	858.700	24.315	92.00
482.84	147.17	27.82	8.48	15.480	0.438	845.420	23.939	860.900	24.378	92.24
482.87	147.18	27.85	8.49	15.480	0.438	847.620	24.002	863.100	24.440	92.47
482.90	147.19	27.89	8.50	15.480	0.438	849.820	24.064	865.300	24.502	92.71
482.93	147.20	27.92	8.51	15.480	0.438	852.020	24.126	867.500	24.565	92.94
482.97	147.21	27.95	8.52	15.480	0.438	854.220	24.189	869.700	24.627	93.18
483.00	147.22	27.99	8.53	15.480	0.438	856.420	24.251	871.900	24.689	93.42
483.03	147.23	28.02	8.54	15.480	0.438	858.667	24.309	873.947	24.747	93.63
483.06	147.24	28.05	8.55	15.480	0.438	860.513	24.367	875.993	24.805	93.85
483.10	147.25	28.08	8.56	15.480	0.438	862.560	24.425	878.040	24.863	94.07
483.13	147.26	28.12	8.57	15.480	0.438	864.610	24.483	880.090	24.921	94.29
483.16	147.27	28.15	8.58	15.480	0.438	866.660	24.541	882.140	24.979	94.51
483.20	147.28	28.18	8.59	15.480	0.438	868.710	24.599	884.190	25.037	94.73
483.23	147.29	28.21	8.60	15.480	0.438	870.757	24.657	886.237	25.095	94.95

483.26	147.30	28.25	8.61	15.480	0.438	872.803	24.715	888.283	25.153	95.17
483.29	147.31	28.28	8.62	15.480	0.438	874.850	24.773	890.330	25.211	95.39
483.33	147.32	28.31	8.63	15.480	0.438	876.900	24.831	892.380	25.269	95.61
483.36	147.33	28.35	8.64	15.480	0.438	878.950	24.889	894.430	25.327	95.83
483.39	147.34	28.38	8.65	15.480	0.438	881.000	24.947	896.480	25.385	96.05
483.43	147.35	28.41	8.66	15.480	0.438	883.050	25.005	898.530	25.443	96.27
483.46	147.36	28.44	8.67	15.480	0.438	885.100	25.063	900.580	25.501	96.49
483.49	147.37	28.48	8.68	15.480	0.438	887.150	25.121	902.630	25.559	96.71
483.52	147.38	28.51	8.69	15.480	0.438	889.197	25.179	904.677	25.617	96.93
483.56	147.39	28.54	8.70	15.480	0.438	891.243	25.237	906.723	25.675	97.15
483.59	147.40	28.58	8.71	15.480	0.438	893.290	25.295	908.770	25.733	97.37
483.62	147.41	28.61	8.72	15.480	0.438	895.340	25.353	910.820	25.791	97.59
483.66	147.42	28.64	8.73	15.480	0.438	897.390	25.411	912.870	25.849	97.80
483.69	147.43	28.67	8.74	15.480	0.438	899.440	25.469	914.920	25.907	98.02
483.72	147.44	28.71	8.75	15.480	0.438	901.487	25.527	916.967	25.965	98.24
483.75	147.45	28.74	8.76	15.480	0.438	903.533	25.585	919.013	26.023	98.46
483.79	147.46	28.77	8.77	15.480	0.438	905.580	25.643	921.060	26.081	98.68
483.82	147.47	28.81	8.78	15.480	0.438	907.630	25.701	923.110	26.139	98.90
483.85	147.48	28.84	8.79	15.480	0.438	909.680	25.759	925.160	26.197	99.12
483.89	147.49	28.87	8.80	15.480	0.438	911.730	25.817	927.210	26.255	99.34
483.92	147.50	28.90	8.81	15.480	0.438	913.780	25.875	929.260	26.313	99.56
483.95	147.51	28.94	8.82	15.480	0.438	915.830	25.933	931.310	26.372	99.78
484.00	147.52	29.00	8.84	15.480	0.438	917.880	25.991	933.360	26.430	100.00 F.R.L.
				15.480						

The following document provided by the client has been used to extract area at intervals of 0.5m from 137.70m above MSL to 147.52m (FRL) above MSL.

RAJKOT IRRIGATION DIVISION : RAJKOT					
AJI-I IRRIGATION SCHEME					
Area - Capacity Table as per silt survey 2001					
R.L. in Mt.	Area in MM ²	Capacity in MM ³			Remarks
		Live	Dead	Gross	
1	2	3	4	5	6
136.39	0.000	0.000	0.000	0.000	RBL
136.50	0.018	0.000	0.012	0.012	
136.60	0.036	0.000	0.017	0.017	
136.70	0.054	0.000	0.026	0.026	
136.80	0.072	0.000	0.037	0.037	
136.90	0.090	0.000	0.047	0.047	
137.00	0.108	0.000	0.057	0.057	
137.10	0.126	0.000	0.068	0.068	
137.20	0.114	0.000	0.084	0.084	
137.30	0.162	0.000	0.097	0.097	
137.40	0.180	0.000	0.110	0.110	
137.50	0.198	0.000	0.130	0.130	
137.60	0.216	0.000	0.148	0.148	
137.70	0.234	0.000	0.165	0.165	
137.80	0.252	0.000	0.190	0.190	
137.90	0.270	0.000	0.211	0.211	
138.00	0.288	0.000	0.231	0.231	
138.10	0.306	0.000	0.253	0.253	
138.20	0.324	0.000	0.273	0.273	
138.30	0.342	0.000	0.316	0.316	
138.40	0.360	0.000	0.344	0.344	
138.50	0.378	0.000	0.375	0.375	
138.60	0.394	0.000	0.407	0.407	
138.68	0.410	0.000	0.438	0.438	O.S.L.
138.70	0.419	0.031	0.438	0.469	
138.80	0.465	0.052	0.438	0.490	
138.90	0.510	0.098	0.438	0.536	
139.00	0.554	0.147	0.438	0.585	
139.10	0.592	0.215	0.438	0.653	
139.20	0.627	0.276	0.438	0.714	
139.30	0.665	0.344	0.438	0.782	
139.40	0.699	0.410	0.438	0.848	
139.50	0.742	0.489	0.438	0.927	
139.60	0.782	0.579	0.438	1.017	
139.70	0.818	0.645	0.438	1.083	
139.80	0.860	0.727	0.438	1.165	
139.90	0.895	0.801	0.438	1.239	
140.00	0.934	0.901	0.438	1.339	
140.10	0.973	1.007	0.438	1.445	
140.20	1.012	1.099	0.438	1.537	
140.30	1.050	1.208	0.438	1.646	
140.40	1.088	1.316	0.438	1.754	
140.50	1.122	1.414	0.438	1.852	
140.60	1.161	1.533	0.438	1.971	


140.70	1.200	1.654	0.438	2.092
140.80	1.239	1.774	0.438	2.212
140.90	1.295	1.907	0.438	2.345
141.00	1.353	2.041	0.438	2.479
141.10	1.406	2.160	0.438	2.598
141.20	1.489	2.312	0.438	2.750
141.30	1.579	2.468	0.438	2.906
141.40	1.670	2.624	0.438	3.062
141.50	1.723	2.801	0.438	3.239
141.60	1.768	2.984	0.438	3.422
141.70	1.813	3.166	0.438	3.604
141.80	1.850	3.335	0.438	3.773
141.90	1.876	3.531	0.438	3.969
142.00	1.909	3.723	0.438	4.161
142.10	1.963	3.921	0.438	4.359
142.20	2.027	4.123	0.438	4.561
142.30	2.093	4.321	0.438	4.759
142.40	2.150	4.513	0.438	4.951
142.50	2.212	4.733	0.438	5.171
142.60	2.273	4.948	0.438	5.386
142.70	2.339	5.184	0.438	5.622
142.80	2.410	5.425	0.438	5.863
142.90	2.460	5.665	0.438	6.103
143.00	2.529	5.882	0.438	6.320
143.10	2.601	6.120	0.438	6.558
143.20	2.679	6.359	0.438	6.797
143.30	2.748	6.607	0.438	7.045
143.40	2.824	6.865	0.438	7.303
143.50	2.906	7.122	0.438	7.560
143.60	2.958	7.448	0.438	7.886
143.70	2.915	7.804	0.438	8.242
143.80	3.040	8.199	0.438	8.637
143.90	3.105	8.551	0.438	8.989
144.00	3.185	8.838	0.438	9.276
144.10	3.277	9.124	0.438	9.562
144.20	3.380	9.420	0.438	9.858
144.30	3.490	9.724	0.438	10.162
144.40	3.617	10.053	0.438	10.491
144.50	3.732	10.410	0.438	10.848
144.60	3.830	10.834	0.438	11.272
144.70	3.926	11.257	0.438	11.695
144.80	4.025	11.682	0.438	12.120
144.90	4.124	12.113	0.438	12.551
145.00	4.214	12.502	0.438	12.940
145.10	4.311	12.932	0.438	13.370
145.20	4.406	13.356	0.438	13.794
145.30	4.505	13.781	0.438	14.219
145.40	4.592	14.218	0.438	14.656
145.50	4.697	14.709	0.438	15.147
145.60	4.789	15.150	0.438	15.588
145.70	4.892	15.645	0.438	16.083

Annexure - 4
Daily Progress Reports
Aji 1 Reservoir

 <p style="text-align: center;">DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
	Revision:	01
	Date:	11/07/2014
	Approved By	PKT

Aji 1 Dam



DPR No. 001

Client:	Narmada Water Resources, Water Supply & Kalpsar Department		Project No:	P34320	
Vessel:	OSAS SMB		Date:	26-03-2021	
Location:	Aji1 Dam		Sheet No:	1 of 1	
Party Chief: Gaurav Sharma			Client Rep.		
Survey Personnel:					
1. Amit Bhardwaj		2. Sanjeev Kumar		3.	
4.		5.		6.	
7.		8.		9.	
10.					
Equipment	RTK System	SBES System	Auto Level	Heave sensor	
	Water Level Meter	Bar Check	Generator	Hypack	
	Computer				
Time (hrs)	Activities				
0915	1100	Meeting attended by Party Chief with Section Officer Rajesh Meghani at site office.			
1100	1500	Established two reference station by DGPS observation.			
1530	1730	Vertical control established by level transfer from existing reference shown by section officer to the newly established reference station (Temporary Benchmark).			
1200	1700	Equipment, boat, OBM and generator maintenance.			
		Today's coverage		Cumulative coverage	
		Bathymetry: -- sq.km	Line km: --	Bathymetry: sq.km	Line km:
		Topo: sq.km	Line km:	Topo: sq.km	Line km:
		Weather downtime today: 0 hours		Cumulative weather downtime: 0 hours	
Plan for next 24 hours: Start topographic survey and mobilisation bathymetry survey boat and installation of digital water level gauge.					
Remarks:					
					
Party Chief			Client Representative		

 <p style="text-align: center;">DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
	Revision:	01
	Date:	11/07/2014
	Approved By	PKT

Aji 1 Dam

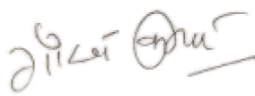

DPR No. 002

Client:	Narmada Water Resources, Water Supply & Kalpsar Department			Project No:	P34320	
Vessel:	OSAS SMB			Date:	27-03-2021	
Location:	Aji1 Dam			Sheet No:	1 of 1	
Party Chief: Gaurav Sharma				Client Rep.		
Survey Personnel:						
1. Amit Bhardwaj		2. Sanjeev Kumar		3.		
4.		5.		6.		
7.		8.		9.		
10.						
Equipment	RTK System		SBES System		Auto Level	
	Water Level Meter		Bar Check		Generator	
	Computer					
Time (hrs)		Activities				
0800	0900	Boat landed into dam reservoir after maintenance				
0915	0930	Land survey team reached site and set up RTK reference station for land survey.				
0930	0945	Land survey started.				
0915	1900	Boat mobilised and digital water level gauge installed				
1830	1845	Land survey terminated and reference station secured.				
1845	1900	Land survey team returned to guest house.				
1900	1930	Bathymetric survey team returned to guest house.				
		Today's coverage			Cumulative coverage	
		Bathymetry: -- sq.km		Line km: --		Bathymetry: sq.km
		Topo: 0.14 sq.km		Line km: 5.74		Line km: 5.74
		Weather downtime today: 0 hours			Cumulative weather downtime: 0 hours	
Plan for next 24 hours: Start bathymetric survey and continue with topographic survey.						
Remarks:						
						
Party Chief				Client Representative		

 <p style="text-align: center;">DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
	Revision:	01
	Date:	11/07/2014
	Approved By	PKT

Aji 1 Dam


DPR No. 003

Client:	Narmada Water Resources, Water Supply & Kalpsar Department			Project No:	P34320		
Vessel:	OSAS SMB			Date:	28-03-2021		
Location:	Aji1 Dam			Sheet No:	1 of 1		
Party Chief: Gaurav Sharma				Client Rep.			
Survey Personnel:							
1. Amit Bhardwaj		2. Sanjeev Kumar		3.			
4.		5.		6.			
7.		8.		9.			
10.							
Equipment	RTK System		SBES System		Auto Level		
	Water Level Meter		Bar Check		Generator		
	Computer				Heave sensor		
				Hypack			
Time (hrs)		Activities					
0815	0845	Bathy team reached site and set up RTK reference station for bathymetric survey.					
0815	0845	Land survey team reached site and set up RTK reference station for land survey.					
0845	0900	Bar check carried out.					
0900		Bathymetric survey started.					
0845		Land survey started.					
	1800	Bathymetry survey terminated and reference station secured.					
	1830	Land survey terminated and reference station secured.					
1830	1900	Land survey team returned to guest house.					
		Today's coverage			Cumulative coverage		
		Bathymetry: 0.69 sq.km		Line km: 28.70		Bathymetry: 0.69 sq.km Line km: 28.70	
		Topo: 0.12 sq.km		Line km: 4.92		Topo: 0.26 sq.km Line km: 10.66	
		Weather downtime today: 0 hours			Cumulative weather downtime: 0 hours		
Plan for next 24 hours: Continue with bathymetric and topographic survey.							
Remarks:							
							
Party Chief				Client Representative			

 <p>DAILY PROGRESS REPORT</p>	<i>Form No.:</i>	Sy01R
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	<i>Date:</i>	11/07/2014
	<i>Approved By</i>	PKT

Aji 1 Dam


DPR No. 004

Client:	Narmada Water Resources, Water Supply & Kalpsar Department	Project No:	P34320	
Vessel:	OSAS SMB	Date:	29-03-2021	
Location:	Aji1 Dam	Sheet No:	1 of 1	
Party Chief: Gaurav Sharma		Client Rep.		
Survey Personnel:				
1. Amit Bhardwaj		2. Sanjeev Kumar		3.
4.		5.		6.
7.		8.		9.
10.				
Equipment	RTK System	SBES System	Auto Level	Heave sensor
	Water Level Meter	Bar Check	Generator	Hypack
	Computer			
Time (hrs)		Activities		
0630	0715	Bathy team reached site and set up RTK reference station for bathymetric survey.		
0630	0715	Land survey team reached site and set up RTK reference station for land survey.		
0715	0730	Bar check carried out.		
0715		Land survey started.		
0730		Bathymetric survey started.		
	1700	Bathymetry survey terminated and reference station secured.		
	1830	Land survey terminated and reference station secured.		
1830	1900	Land Survey team returned to guest house.		
		Today's coverage		Cumulative coverage
		Bathymetry: 1.08 sq.km	Line km: 41.89	Bathymetry: 1.78 sq.km Line km: 70.59
		Topo: 0.31 sq.km	Line km: 12.71	Topo: 0.57 sq.km Line km: 23.37
		Weather downtime today: 0 hours		Cumulative weather downtime: 0 hours
Plan for next 24 hours: Continue with bathymetric and topographic survey.				
Remarks:				
 <p>Party Chief</p>			<p>Client Representative</p>	

 <p>DAILY PROGRESS REPORT</p>	<i>Form No.:</i>	Sy01R
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	<i>Approved By</i>	PKT

Aji 1 Dam


DPR No. 005

Client:	Narmada Water Resources, Water Supply & Kalpsar Department	Project No:	P34320	
Vessel:	OSAS SMB	Date:	30-03-2021	
Location:	Aji1 Dam	Sheet No:	1 of 1	
Party Chief: Gaurav Sharma		Client Rep.		
Survey Personnel:				
1. Amit Bhardwaj		2. Sanjeev Kumar		3.
4.		5.		6.
7.		8.		9.
10.				
Equipment	RTK System	SBES System	Auto Level	Heave sensor
	Water Level Meter	Bar Check	Generator	Hypack
	Computer			
Time (hrs)		Activities		
0645	0730	Bathy team reached site and set up RTK reference station for bathymetric survey.		
0645	0730	Land survey team reached site and set up RTK reference station for land survey.		
0730	0745	Bar check carried out.		
0730		Bathymetric survey started.		
0730		Land survey started.		
	1745	Bathymetry survey terminated and reference station secured.		
	1900	Land survey terminated and reference station secured.		
1900	1930	Land survey team returned to guest house.		
		Today's coverage		Cumulative coverage
		Bathymetry: 0.93 sq.km	Line km: 37.2	Bathymetry: 2.70 sq.km
		Topo: 0.39 sq.km	Line km: 15.58	Line km: 107.79
		Weather downtime today: 0 hours		Topo: 0.96 sq.km
				Line km: 38.95
				Cumulative weather downtime: 0 hours
Plan for next 24 hours: Continue with bathymetric and topographic survey.				
Remarks:				
 <p>Party Chief</p>			<p>Client Representative</p>	

 <p>DAILY PROGRESS REPORT</p>	<i>Form No.:</i>	Sy01R
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	<i>Date:</i>	11/07/2014
	<i>Approved By</i>	PKT

Aji 1 Dam


DPR No. 006

Client:	Narmada Water Resources, Water Supply & Kalpsar Department	Project No:	P34320	
Vessel:	OSAS SMB	Date:	31-03-2021	
Location:	Aji1 Dam	Sheet No:	1 of 1	
Party Chief: Gaurav Sharma			Client Rep.	
Survey Personnel:				
1. Amit Bhardwaj		2. Sanjeev Kumar		3.
4.		5.		6.
7.		8.		9.
10.				
Equipment	RTK System	SBES System	Auto Level	Heave sensor
	Water Level Meter	Bar Check	Generator	Hypack
	Computer			
Time (hrs)		Activities		
0630	0700	Bathy team reached site and set up RTK reference station for bathymetric survey.		
0630	0700	Land survey team reached site and set up RTK reference station for land survey.		
0700		Land survey started.		
0700	0715	Bar check carried out.		
0715		Bathymetric survey started.		
	1500	Bathymetry survey terminated and reference station secured.		
	1830	Land survey terminated and reference station secured.		
1830	1930	Land survey team returned to guest house.		
		Today's coverage		Cumulative coverage
		Bathymetry: 0.65 sq.km	Line km: 26.02	Bathymetry: 3.35 sq.km
		Topo: 0.33 sq.km	Line km: 13.12	Line km: 133.81
		Weather downtime today: 03 hours		Cumulative weather downtime: 03 hours
Plan for next 24 hours: Continue with bathymetric and topographic survey.				
Remarks:				
			<p style="text-align: center;">Client Representative</p>	
Party Chief				

 <p>DAILY PROGRESS REPORT</p>	<i>Form No.:</i>	Sy01R
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	<i>Date:</i>	11/07/2014
	<i>Approved By</i>	PKT

Aji 1 Dam

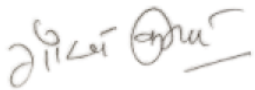
DPR No. 007

Client:	Narmada Water Resources, Water Supply & Kalpsar Department	Project No:	P34320	
Vessel:	OSAS SMB	Date:	01-04-2021	
Location:	Aji1 Dam	Sheet No:	1 of 1	
Party Chief: Gaurav Sharma			Client Rep.	
Survey Personnel:				
1. Amit Bhardwaj		2. Sanjeev Kumar		3.
4.		5.		6.
7.		8.		9.
10.				
Equipment	RTK System	SBES System	Auto Level	Heave sensor
	Water Level Meter	Bar Check	Generator	Hypack
	Computer			
Time (hrs)		Activities		
0630	0700	Bathy team reached site and set up RTK reference station for bathymetric survey.		
0630	0730	Land survey team reached site and set up RTK reference station for land survey.		
0700	0715	Bar check carried out.		
0715		Bathymetric survey started.		
0730		Land survey started.		
	1830	Bathymetry survey terminated and reference station secured.		
	1900	Land survey terminated and reference station secured.		
1900	1945	Land survey team returned to guest house.		
		Today's coverage		Cumulative coverage
		Bathymetry: 1.33 sq.km	Line km: 53.3	Bathymetry: 4.68 sq.km
		Topo: 0.26 sq.km	Line km: 10.25	Line km: 187.11
		Weather downtime today: 0 hours		Topo: 1.55 sq.km
				Line km: 62.32
				Cumulative weather downtime: 03 hours
Plan for next 24 hours: Continue with bathymetric and topographic survey.				
Remarks:				
 <p>Party Chief</p>			<p>Client Representative</p>	

 <p style="text-align: center;">DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
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	Approved By	PKT

Aji 1 Dam


DPR No. 008

Client:	Narmada Water Resources, Water Supply & Kalpsar Department		Project No:	P34320		
Vessel:	OSAS SMB		Date:	02-04-2021		
Location:	Aji 1 Dam		Sheet No:	1 of 1		
Party Chief: Gaurav Sharma			Client Rep.			
Survey Personnel:						
1. Amit Bhardwaj		2. Sanjeev Kumar		3.		
4.		5.		6.		
7.		8.		9.		
10.						
Equipment	RTK System	SBES System	Auto Level		Heave sensor	
	Water Level Meter	Bar Check	Generator		Hypack	
	Computer					
Time (hrs)		Activities				
0645	0715	Bathy team reached site and set up RTK reference station for bathymetric survey.				
0645	0745	Land survey team reached site and set up RTK reference station for land survey.				
0715	0730	Bar check carried out.				
0730		Bathymetric survey started.				
0745		Land survey started.				
	1800	Bathymetry survey terminated and reference station secured.				
	1800	Land survey terminated and reference station secured.				
1800	1845	Land survey team returned to guest house.				
			Today's coverage		Cumulative coverage	
		Bathymetry: 0.90 sq.km	Line km: 36.08	Bathymetry: 5.58 sq.km	Line km: 223.19	
		Topo: 0.15 sq.km	Line km: 6.15	Topo: 1.70 sq.km	Line km: 68.47	
			Weather downtime today: 0 hours		Cumulative weather downtime: 03 hours	
Plan for next 24 hours: Continue with bathymetric and topographic survey.						
Remarks:						
						
Party Chief			Client Representative			

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	<i>Date:</i>	11/07/2014
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Aji 1 Dam



DPR No. 009

Client:	Narmada Water Resources, Water Supply & Kalpsar Department	Project No:	P34320
Vessel:	OSAS SMB	Date:	03-04-2021
Location:	Aji 1 Dam	Sheet No:	1 of 1
Party Chief: Gaurav Sharma		Client Rep.	
Survey Personnel:			
1. Amit Bhardwaj		2. Sanjeev Kumar	
3.		4.	
5.		6.	
7.		8.	
9.		10.	
Equipment	RTK System	SBES System	Auto Level
	Water Level Meter	Bar Check	Generator
	Computer		
Heave sensor		Hypack	
Time (hrs)		Activities	
0700	0730	Bathy team reached site and set up RTK reference station for bathymetric survey.	
0700	0745	Land survey team reached site and set up RTK reference station for land survey.	
0730	0745	Bar check carried out.	
0745		Bathymetric survey started.	
0745		Land survey started.	
	1700	Bathymetry survey terminated and reference station secured.	
	1830	Land survey terminated and reference station secured.	
1830	1930	Land Survey team returned to guest house.	
		Today's coverage	
		Cumulative coverage	
		Bathymetry: 0.37 sq.km	Line km: 14.76
		Bathymetry: 5.95 sq.km	Line km: 237.95
		Topo: 0.29 sq.km	Line km: 11.48
		Topo: 1.99 sq.km	Line km: 79.95
		Weather downtime today: 0 hours	Cumulative weather downtime: 03 hours
Plan for next 24 hours: Continue with bathymetric and topographic survey.			
Remarks:			
 <p>Party Chief</p>		<p>Client Representative</p>	

 <p style="text-align: center;">DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
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	Date:	11/07/2014
	Approved By	PKT

Aji 1 Dam


DPR No. 010

Client:	Narmada Water Resources, Water Supply & Kalpsar Department		Project No:	P34320	
Vessel:	OSAS SMB		Date:	04-04-2021	
Location:	Aji 1 Dam		Sheet No:	1 of 1	
Party Chief: Gaurav Sharma			Client Rep.		
Survey Personnel:					
1. Amit Bhardwaj		2. Sanjeev Kumar		3.	
4.		5.		6.	
7.		8.		9.	
10.					
Equipment	RTK System	SBES System	Auto Level		Heave sensor
	Water Level Meter	Bar Check	Generator		Hypack
	Computer				
Time (hrs)		Activities			
0715	0745	Bathy team reached site and set up RTK reference station for marking hillocks.			
0715	0815	Land survey team reached site and set up RTK reference station for land survey.			
0745		Land survey started for hillock marking.			
0815		Land survey started.			
	1700	Bathymetry survey terminated and reference station secured.			
	1845	Land survey terminated and reference station secured.			
1845	1945	Land Survey team returned to guest house.			
		Today's coverage		Cumulative coverage	
		Bathymetry: sq.km	Line km:	Bathymetry: 5.95 sq.km	Line km: 237.95
		Topo: 0.57 sq.km	Line km: 22.96	Topo: 2.54 sq.km	Line km: 102.91
		Weather downtime today: 0 hours		Cumulative weather downtime: 03 hours	
Plan for next 24 hours: Continue with topographic survey and Demobilisation bathymetry survey boat					
Remarks:					
					
Party Chief			Client Representative		

 <p>DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
	Revision:	01
	Date:	11/07/2014
	Approved By	PKT

Aji 1 Dam

DPR No. 011

Client:	Narmada Water Resources, Water Supply & Kalpsar Department	Project No:	P34320
Vessel:	OSAS SMB	Date:	05-04-2021
Location:	Aji1 Dam	Sheet No:	1 of 1
Party Chief: Gaurav Sharma		Client Rep.	
Survey Personnel:			
1. Amit Bhardwaj		2. Sanjeev Kumar	
3.		4.	
5.		6.	
7.		8.	
9.		10.	
Equipment	RTK System	SBES System	Auto Level
	Water Level Meter	Bar Check	Generator
	Computer		
Time (hrs)		Activities	
0750	0810	Bathy team reached site and demobilisation started.	
0700	0745	Land survey team reached site and set up RTK reference station for land survey.	
0810	1630	Demobbed bathymetry survey equipment from boat and equipment shifted to the guest house.	
0750		Land survey started.	
	1800	Land survey terminated and reference station secured.	
1800	1830	Land survey team returned to guest house.	
		Today's coverage	
		Cumulative coverage	
		Bathymetry: -- sq.km	Line km: --
		Bathymetry: 5.95 sq.km	Line km: 237.95
		Topo: 0.34 sq.km	Line km: 13.53
		Topo: 2.90 sq.km	Line km: 116.44
		Weather downtime today: 0 hours	
		Cumulative weather downtime: 03 hours	
Plan for next 24 hours: Continue with topographic survey			
Remarks:			
 Party Chief		Client Representative	

 <p style="text-align: center;">DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
	Revision:	01
	Date:	11/07/2014
	Approved By	PKT

Aji 1 Dam


DPR No. 012

Client:	Narmada Water Resources, Water Supply & Kalpsar Department			Project No:	P34320
Vessel:	OSAS SMB			Date:	06-04-2021
Location:	Aji1 Dam			Sheet No:	1 of 1
Party Chief: Gaurav Sharma				Client Rep.	
Survey Personnel:					
1. Amit Bhardwaj		2. Sanjeev Kumar		3.	
4.		5.		6.	
7.		8.		9.	
10.					
Equipment	RTK System	SBES System	Auto Level		Heave sensor
	Water Level Meter	Bar Check	Generator		Hypack
	Computer				
Time (hrs)		Activities			
0700	0730	Land survey team reached site and set up RTK reference station for land survey.			
0730		Land survey started.			
	1800	Land survey terminated and reference station secured.			
1800	1830	Land Survey team returned to guest house.			
		Today's coverage		Cumulative coverage	
		Bathymetry: -- sq.km	Line km: --	Bathymetry: 5.95 sq.km	Line km: 237.95
		Topo: 0.46 sq.km	Line km: 18.86	Topo: 3.37 sq.km	Line km: 135.3
		Weather downtime today: 0 hours		Cumulative weather downtime: 03 hours	
Plan for next 24 hours: Continue with topographic survey and next location Und-1 site visit / arrangement of food and accommodation.					
Remarks:					
					
Party Chief			Client Representative		

 <p style="text-align: center;">DAILY PROGRESS REPORT</p>	Form No.:	Sy01R
	Revision:	01
	Date:	11/07/2014
	Approved By	PKT

Aji 1 Dam

DPR No. 013

Client:	Narmada Water Resources, Water Supply & Kalpsar Department			Project No:	P34320
Vessel:	OSAS SMB			Date:	07-04-2021
Location:	Aji1 Dam			Sheet No:	1 of 1
Party Chief: Gaurav Sharma				Client Rep.	
Survey Personnel:					
1. Amit Bhardwaj		2. Sanjeev Kumar		3.	
4.		5.		6.	
7.		8.		9.	
10.					
Equipment	RTK System	SBES System	Auto Level		Heave sensor
	Water Level Meter	Bar Check	Generator		Hypack
	Computer				
Time (hrs)		Activities			
0700	1700	Visited next location Und-1			
0700	0730	Land survey team reached site and set up RTK reference station for land survey.			
0730		Land survey started.			
	1400	Land survey terminated and reference station secured.			
1400	1430	Land survey team returned to guest house.			
		Requesting for Demobilisation.			
		Today's coverage		Cumulative coverage	
		Bathymetry: -- sq.km	Line km: --	Bathymetry: 5.95 sq.km	Line km: 237.95
		Topo: 0.16 sq.km	Line km: 06.56	Topo: 3.53 sq.km	Line km: 141.86
		Weather downtime today: 0 hours		Cumulative weather downtime: 03 hours	
Plan for next 24 hours: Shift to next location Und 1					
Remarks:					
					
Party Chief			Client Representative		