WRMIS User Manual

DAILY OPERATIONAL DATA

Development of Water Resources Management Information System (WRMIS) and
Decision Support System (DSS) for Efficient Irrigation Water Management in Punjab

Version 1.0

NESPAK

23-Aug-16

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Revision History

Version	Date	By	Summary of Changes
1.0	17-Oct-16	NESPAK	Initial Draft

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Daily Operational Data

Daily Operational Data is all about the data that is collected, analyzed, communicated to Higher Authorities and stored for reporting & decision making on daily basis. Data includes Daily Gauge Slip; Discharge Information of Head, Tail and Critical Gauges of all the Channels; Discharge Data of Upstream, Downstream, and Canal withdrawals of Barrages, Indent Placement against the channels in a specific sub division and Outlet performance

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Daily Operational Data

This module provides an interface to keep the record of data regarding daily gauge slip; Discharge Information of Head, Tail and Critical Gauges of all the Channels; Discharge Data of Upstream, Downstream, and Canal withdrawals of Barrages; and the Indent Placement against the channels in a specific sub division etc. Data is collected, analyzed, communicated to Secretariat and stored for reporting & decision making on daily basis

Business User: XEN, PMIU Data Analyst, SDO

Any other user can access “Daily Operational Data” based on assigned rights from Roles and Rights (User Administration)

Pre-Requisite: Daily Operational Data Role and Rights should be assigned to respective user correctly.

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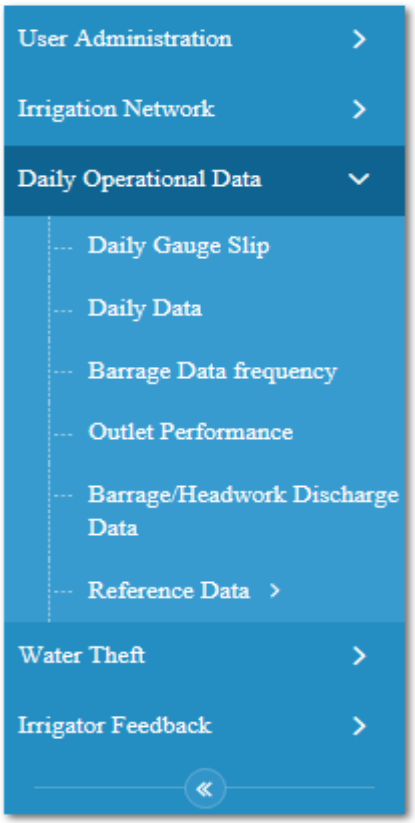
1. Daily Gauge Slip

Through “Gauge Slip” screen User can add, edit and view daily gauge slip data of Headworks/Barrage/Dams. System displays gauge slip data on the basis of selection of date. For example: Upon selection of date, River-wise Dams/Headworks/Barrages, Dam/Headworks/Barrages-wise canals and then canal-wise sites will be displayed in same sequence as that of one provided in the Daily Gauge Slip of Indus Water Treaty & Regulation Punjab. User (PMIU Data Analyst, Chief PMIU) can add, edit or view the current or past data. Other users (who have been assigned rights) can add or edit the current data but they can only view the past data. Daily Gauge Slip Report will be generated regardless of availability of data

How to Access: Main Menu -> Daily Gauge Slip



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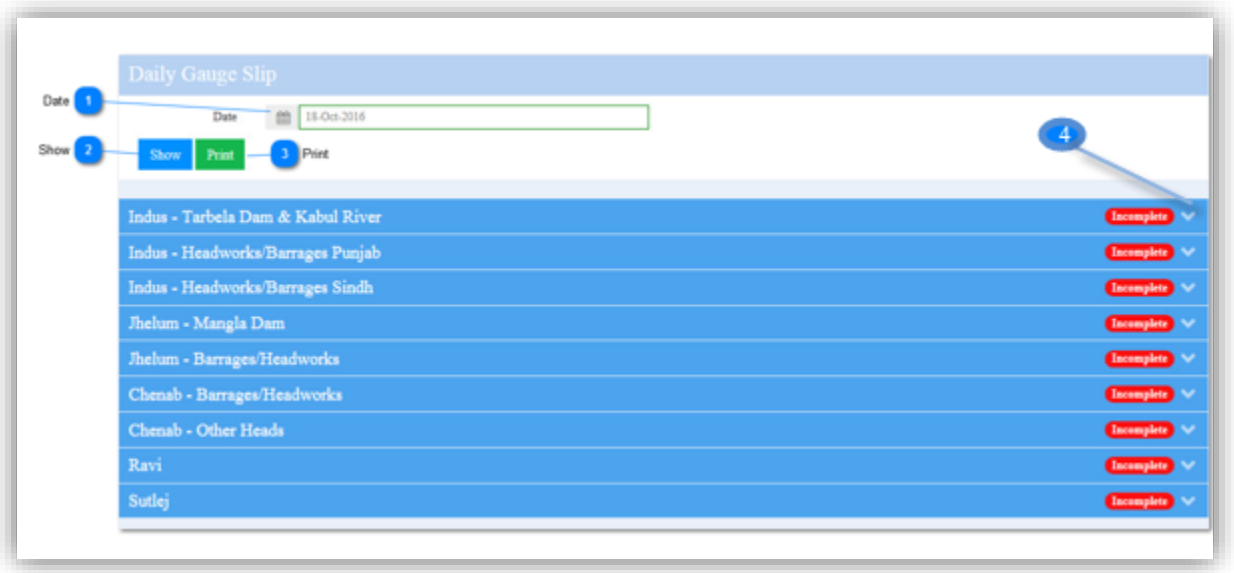


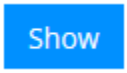
1

Date

- System auto populates the current date in Date field
- Select the date from 'Date' field
- Future Date cannot be selected

2

Show



- Click on <Show> Button
- System fetches the record as per the date selected
- If data has not been entered on current date then empty fields will be displayed
- Past values cannot be edited by any user except by Chief PMIU and PMIU Data Analyst

3

Print

- Click on <Print> button
- System displays a screen containing report of Daily Gauge Slip

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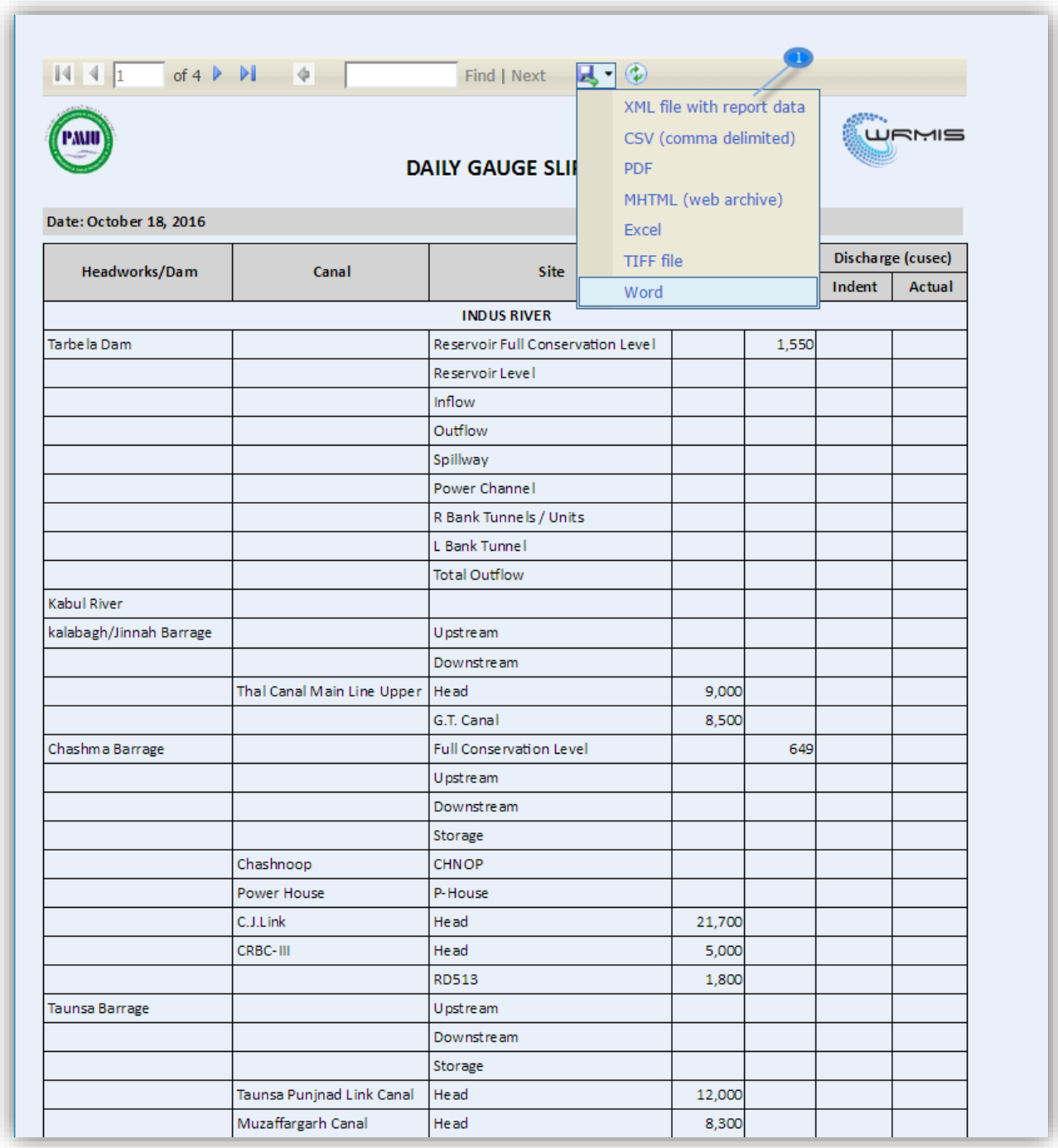

Headworks/Dam	Canal	Site			Discharge (cusec)	
					Indent	Actual
INDUS RIVER						
Tarbela Dam		Reservoir Full Conservation Level		1,550		
		Reservoir Level				
		Inflow				
		Outflow				
		Spillway				
		Power Channel				
		R Bank Tunnels / Units				
		L Bank Tunnel				
		Total Outflow				
Kabul River						
kalabagh/Jinnah Barrage		Upstream				
		Downstream				
	Thal Canal Main Line Upper	Head	9,000			
		G.T. Canal	8,500			
Chashma Barrage		Full Conservation Level		649		
		Upstream				
		Downstream				
		Storage				
	Chashnoop	CHNOP				
	Power House	P-House				
	C.J.Link	Head	21,700			
	CRBC-III	Head	5,000			
		RD513	1,800			
Taunsa Barrage		Upstream				
		Downstream				
		Storage				
	Taunsa Punjnad Link Canal	Head	12,000			
	Muzaffargarh Canal	Head	8,300			

1

Save

- Click on the icon
- System displays a list of different formats in which report can be downloaded

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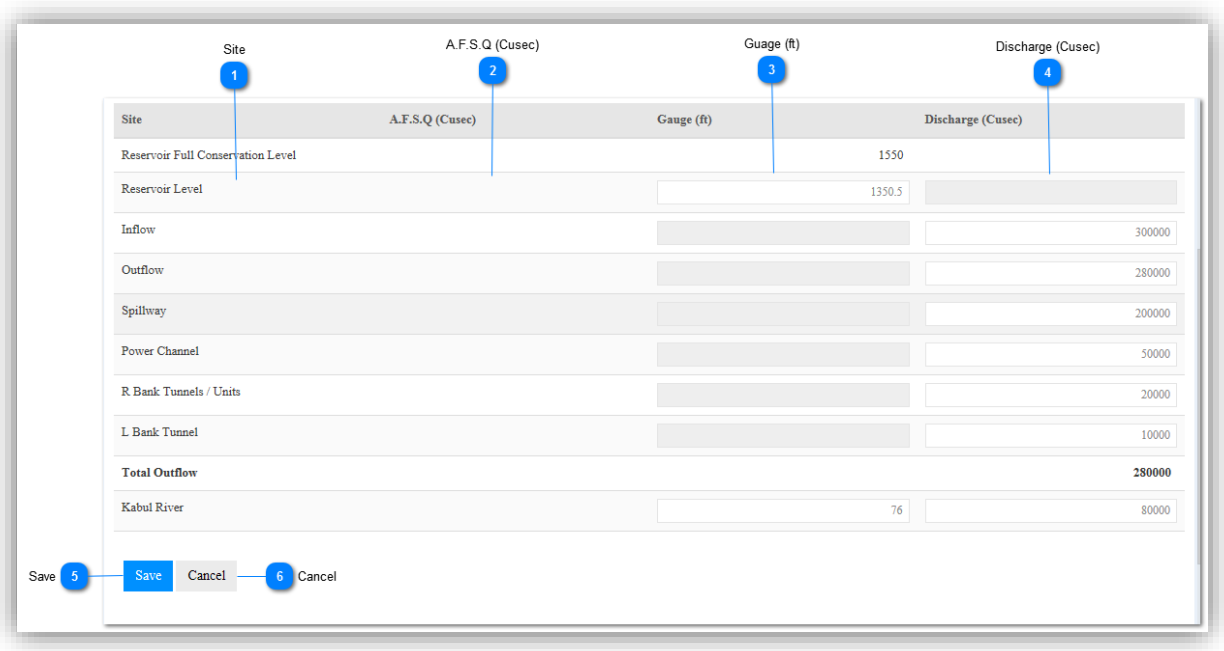
- Select the required option
- System downloads the report successfully on the local machine.

4 Expandable panel

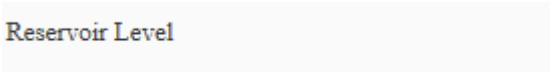
- Click on the respective icon
- System expands the collapsible panel

1.1 Indus - Tarbela Dam & Kabul River

Through this screen user can add, edit and view data of Tarbela Dam and Kabul River.



1 Site



- ‘Sites’ are retrieved by system through Database

2 A.F.S.Q (Cusec)

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- System presents all the available Authorized Full Supply Discharge in Cusec
- If AFSQ is not available, empty read-only field is shown

3

Gauge (ft.)

- Enter the gauge value for Dams and Kabul River as the value entered by gauge reader will not be populated in this field.
- Reservoir Full Conservation Level`s gauge value is auto fetched by system

4

Discharge (Cusec)

- Enter the discharge value for Dams and Kabul river
- System displays the total outflow of Tarbela Dam Total Outflow which is the total of Spillway, Power Channel, R Bank Tunnels, and L Bank Tunnels

5

Save

- Click on<Save> Button
- System saves the record in Database & displays a message “Records saved successfully”
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

6

Cancel

- By clicking on <Cancel> button system discards the entered information

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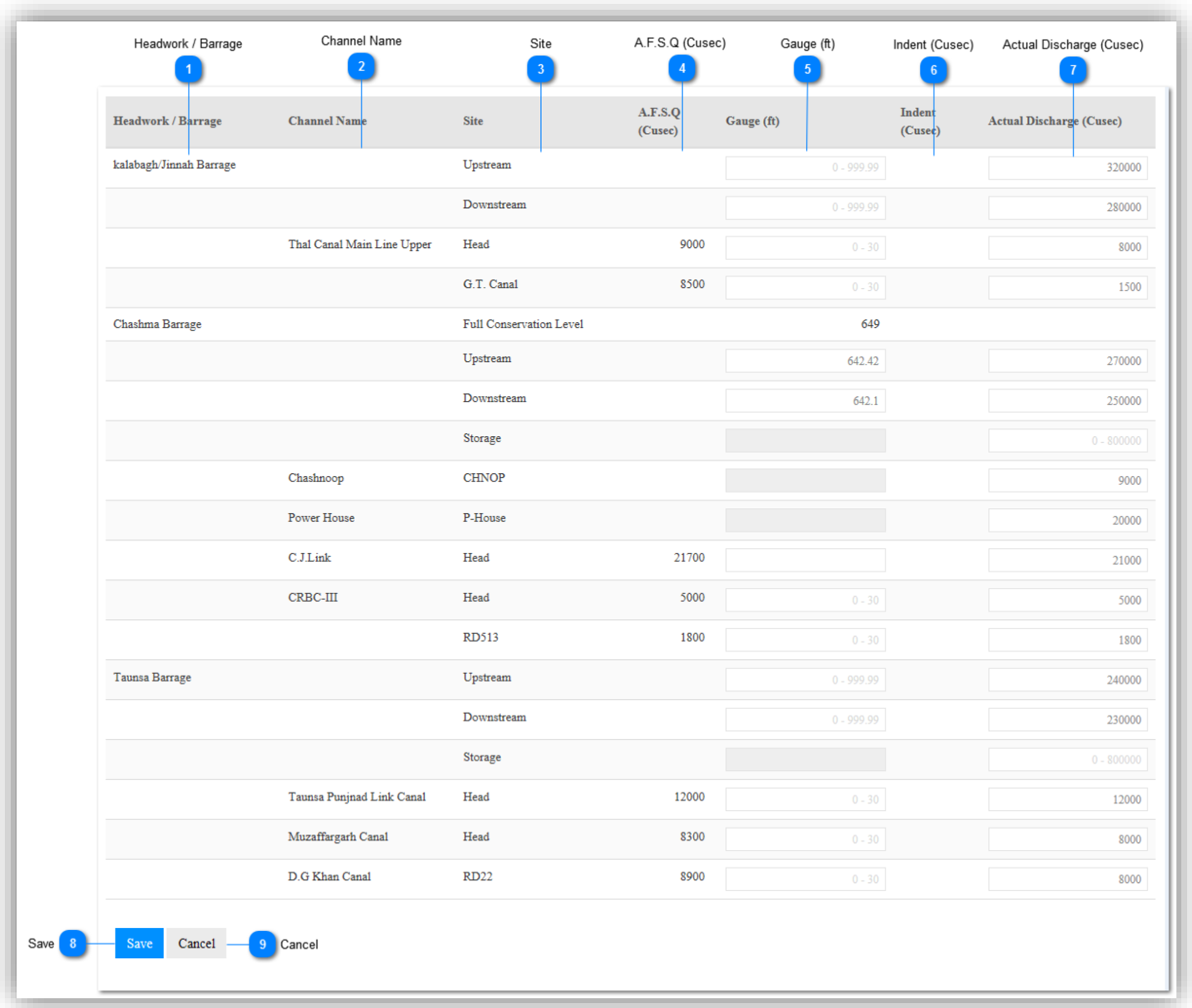
1.2 Indus - Headworks/Barrages Punjab

Through this screen user can enter, edit and view the data for Indus-Headwork/Barrages Punjab



Headwork / Barrage	Channel Name	Site	A.F.S.Q (Cusec)	Gauge (ft)	Indent (Cusec)	Actual Discharge (Cusec)
kalabagh/Jinnah Barrage		Upstream		0 - 999.99		320000
		Downstream		0 - 999.99		280000
	Thal Canal Main Line Upper	Head	9000	0 - 30		8000
		G.T. Canal	8500	0 - 30		1500
Chashma Barrage		Full Conservation Level		649		
		Upstream		642.42		270000
		Downstream		642.1		250000
		Storage				0 - 800000
	Chashnoop	CHNOP				9000
	Power House	P-House				20000
	C.J.Link	Head	21700			21000
	CRBC-III	Head	5000	0 - 30		5000
		RD513	1800	0 - 30		1800
Taunsa Barrage		Upstream		0 - 999.99		240000
		Downstream		0 - 999.99		230000
		Storage				0 - 800000
	Taunsa Punjnad Link Canal	Head	12000	0 - 30		12000
	Muzaffargarh Canal	Head	8300	0 - 30		8000
	D.G Khan Canal	RD22	8900	0 - 30		8000

1

Headwork / Barrage

kalabagh/Jinnah Barrage

- Auto fetched from Database

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2 **Channel Name**

- Auto fetched from Database and if not available then empty read only field is displayed by system

3 **Site**

Upstream

- Auto fetched from Database

4 **A.F.S.Q (Cusec)**

- System presents all the available Authorized Full Supply Discharge in Cusec
- If AFSQ is not available, empty read-only field is shown.

5 **Gauge (ft.)**

0 - 999.99

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

6 **Indent (Cusec)**

- Auto fetched from Database
- If Indent value is not available against a site, empty read-only field is shown

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7

Actual Discharge (Cusec)

- Enter the Actual Discharge in text field

8

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved successfully”.
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

9

Cancel

- By clicking on <Cancel> button system discards the entered information

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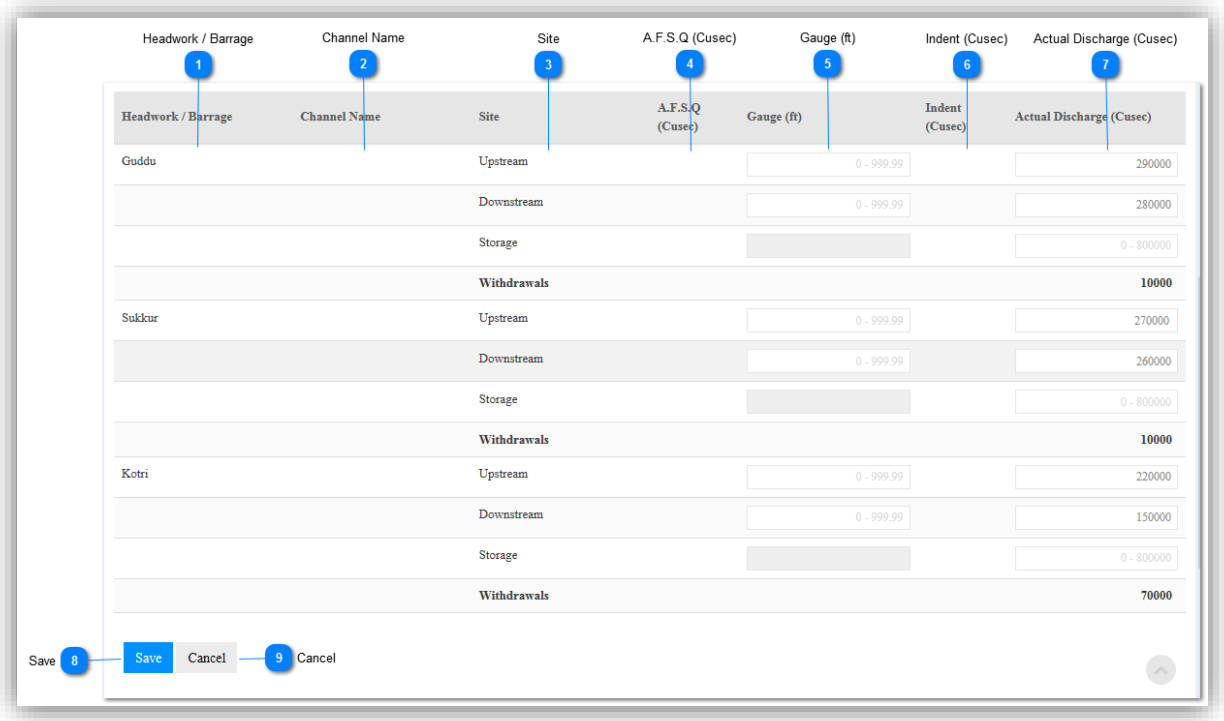
1.3 Indus - Headworks/Barrages Sindh

Data of Sindh Barrages/Headworks can be added, edited and viewed through this screen



Headwork / Barrage	Channel Name	Site	A.F.S.Q (Cusec)	Gauge (ft)	Indent (Cusec)	Actual Discharge (Cusec)
Guddu		Upstream		0 - 999.99		290000
		Downstream		0 - 999.99		280000
		Storage				0 - 800000
		Withdrawals				**10000**
Sukkur		Upstream		0 - 999.99		270000
		Downstream		0 - 999.99		260000
		Storage				0 - 800000
		Withdrawals				**10000**
Kotri		Upstream		0 - 999.99		220000
		Downstream		0 - 999.99		150000
		Storage				0 - 800000
		Withdrawals				**70000**

Save Cancel

1

Headwork / Barrage

Guddu

- Auto fetched from Database

2

Channel Name

- Auto fetched from Database and if not available then empty read only field is displayed by system

3

Site

Upstream

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- Auto fetched from Database.
- Withdrawals for Sindh barrages will be calculated as W/dls = U/S - D/S – Storage.

4

A.F.S.Q (Cusec)

- System presents all the available Authorized Full Supply Discharge in Cusec.
- If AFSQ is not available, empty read-only field is shown.

5

Gauge (ft.)

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

6

Indent (Cusec)

- Auto fetched from Database
- If Indent value is not available against a site, empty read-only field is shown

7

Actual Discharge (Cusec)

- Enter the Actual Discharge(Cusec) in text field

8

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved successfully”.
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

9

Cancel

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Cancel

- By clicking on <Cancel> button system discards the entered information

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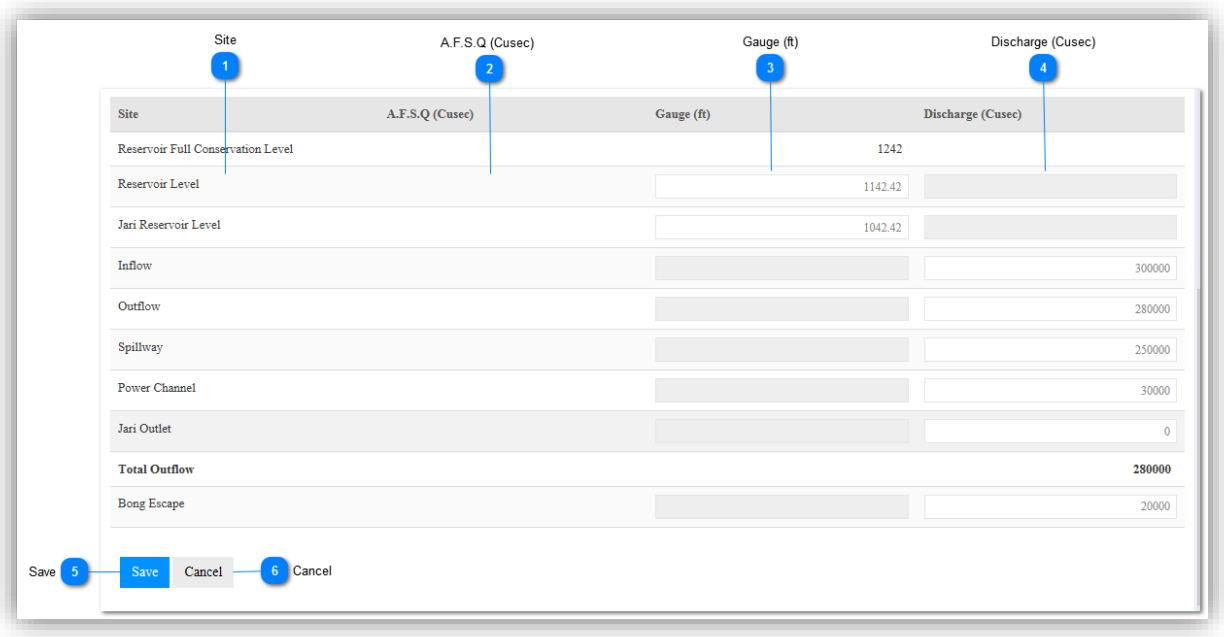
1.4 Jhelum - Mangla Dam

Through this screen user can enter, edit and view the data of Mangla Dam



1

Site

- Sites are retrieved by system through database

2

A.F.S.Q (Cusec)

- System presents all the available Authorized Full Supply Discharge in Cusec (AFSQ)• If AFSQ is not available , empty read-only field is shown

3

Gauge (ft.)

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

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4

Discharge (Cusec)

- Enter the value of discharge in text field
- Total Outflow for Mangla Dam is total of Spillway, Power Channel and Jari Outlet

5

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved successfully”.
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

6

Cancel

- By clicking on <Cancel> button system discards the entered information

1.5 Jhelum - Barrages/Headworks

Data of Jhelum Barrages/Headworks can be added, edited or viewed by using this screen

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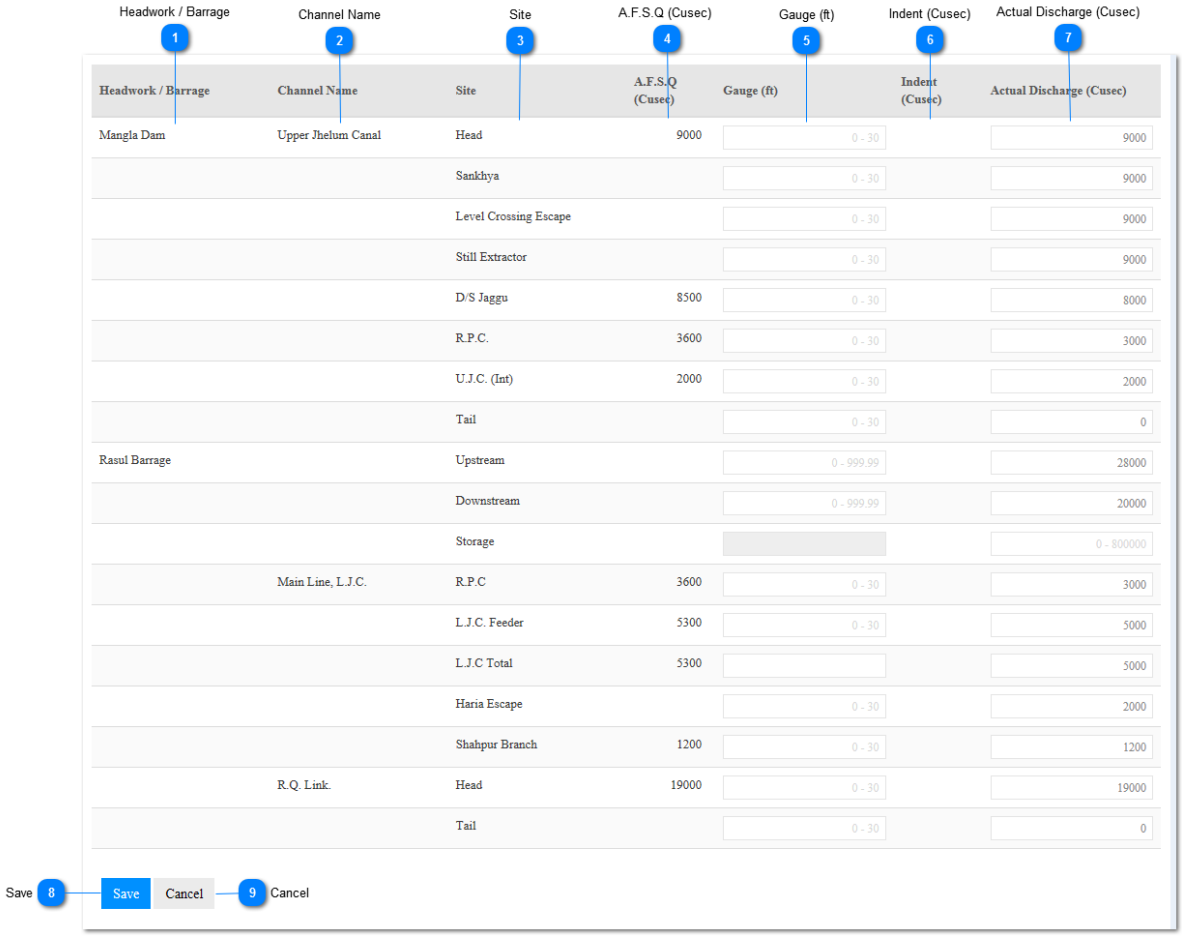

Headwork / Barrage	Channel Name	Site	A.F.S.Q (Cusec)	Gauge (ft)	Indent (Cusec)	Actual Discharge (Cusec)
Mangla Dam	Upper Jhelum Canal	Head	9000	0 - 30		9000
		Sankhya		0 - 30		9000
		Level Crossing Escape		0 - 30		9000
		Still Extractor		0 - 30		9000
		D/S Jaggu	8500	0 - 30		8000
		R.P.C.	3600	0 - 30		3000
		U.J.C. (Int)	2000	0 - 30		2000
		Tail		0 - 30		0
Rasul Barrage		Upstream		0 - 999.99		28000
		Downstream		0 - 999.99		20000
		Storage				0 - 800000
	Main Line, L.J.C.	R.P.C	3600	0 - 30		3000
		L.J.C. Feeder	5300	0 - 30		5000
		L.J.C Total	5300			5000
		Haria Escape		0 - 30		2000
		Shahpur Branch	1200	0 - 30		1200
	R.Q. Link.	Head	19000	0 - 30		19000
		Tail		0 - 30		0

1

Headwork / Barrage

Mangla Dam

- Auto fetched from Database

2

Channel Name

Upper Jhelum Canal

- Auto fetched from Database

3

Site

Head

- Sites are retrieved by system through Database

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4

A.F.S.Q (Cusec)

- System presents all the available Authorized Full Supply Discharge in Cusec
- If AFSQ is not available, empty read-only field is shown

5

Gauge (ft.)

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

6

Indent (Cusec)

- Auto fetched from Database
- If Indent value is not available against a site, empty read-only field is shown

7

Actual Discharge (Cusec)

- Enter the Actual Discharge(Cusec) in text field

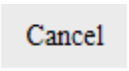
8

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved successfully”.
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

9

Cancel



- By clicking on <Cancel> button system discards the entered information

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1.6 Chenab - Barrages/Headworks

To add, edit or view Data of Chenab Barrages/Headworks this screen is used.

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Headwork / Barrage	Channel Name	Site	A.F.S.Q (Cusec)	Gauge (ft)	Indent (Cusec)	Actual Discharge (Cusec)
Marala Barrage		Upstream		0 - 999.99		200000
		Downstream		0 - 999.99		180000
		Storage				0 - 800000
	Main Line Upper (UCC)	Head	16500	0 - 30		16000
		Bombanwala U/S (MLU)		0 - 30		16000
		Bombanwala D/S (MLL)		0 - 30		16000
		U.C.C. (Int)	5300			5000
		Deg Fall		0 - 30		5000
	MR Link Canal	Head	22000	0 - 30		22000
		M.R. (Int)	1400			1400
		Sub Link	5000			5000
		Tail		0 - 30		0
Khanki Headworks		Upstream		0 - 999.99		150000
		Downstream		0 - 999.99		130000
		Storage				0 - 800000
	Lower Chenab Canal	Head	12300	0 - 30		12000
		Chenawan Escape	8143	0 - 30		8000
Qadirabad Barrage		Upstream		0 - 999.99		110000
		Downstream		0 - 999.99		80000
		Storage				0 - 800000
	QB Link canal	Head	22000	0 - 30		22000
		L.C.C. Feeder	4100	0 - 30		4000
		L.C.C. Complex U/S		0 - 30		4000
		L.C.C. Complex D/S		0 - 30		4000
		Tail		0 - 30		0
Trimmu Headworks		Upstream		0 - 999.99		280000
		Downstream		0 - 999.99		200000
		Storage				0
	Haveli Main Line	Head	5200	0 - 30		5000
		Havali Canal (Int)	800			800
		Tail		0 - 30		0
	Rangpur canal	Head	2700	0 - 30		2700
		T.P Link		0 - 30		270
	T.S.Link (Trimmu Sidhnai Link) Canal	Head	11000	0 - 30		11000
		Tail		0 - 30		0
Punjnad Headworks		Upstream		0 - 999.99		250000
		Downstream		0 - 999.99		230000
		Storage				0
	Punjnad Main Line	Head	10400	0 - 30		10000
	Abbassia Canal	Head	1300	0 - 30		1000
	Abbassia Link Canal	Head	3600	0 - 30		3000

1 **Headwork / Barrage**

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- Auto fetched from Database

2

Channel Name

- Auto fetched from Database and if not available then empty read only field is displayed by system

3

Site

- Sites are retrieved by system through Database

4

A.F.S.Q (Cusec)

- System presents all the available Authorized Full Supply Discharge in Cusec
- If AFSQ is not available, empty read-only field is shown

5

Gauge (ft.)

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

6

Indent (Cusec)

- Auto fetched from Database
- If Indent value is not available against a site, empty read-only field is shown

7

Actual Discharge (Cusec)

- Enter the Actual Discharge(Cusec) in text field

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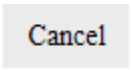
8

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved successfully”.
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

9

Cancel



- By clicking on <Cancel> button system discards the entered information

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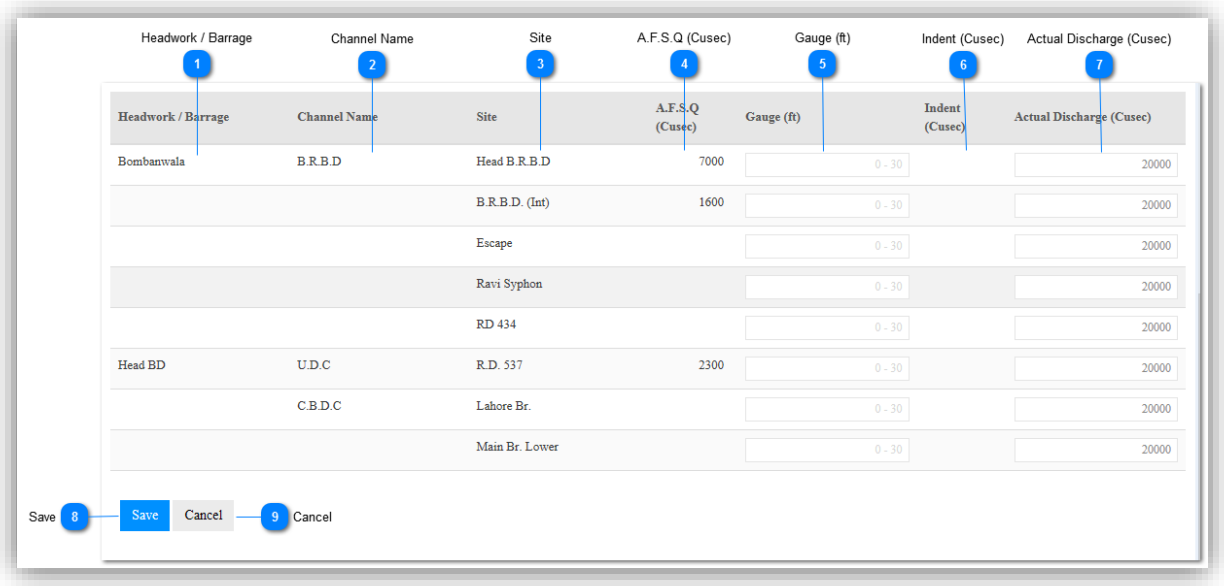
1.7 Chenab - Other Heads

This screen helps the user to add, edit and view the data of Other Heads that exist in Chenab



1

Headwork / Barrage

Bombanwala

- Auto fetched from Database

2

Channel Name

B.R.B.D

- Auto fetched from Database and if not available then empty read only field is displayed by system

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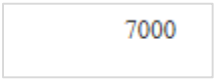
3

Site

- Sites are retrieved by system through Database

4

A.F.S.Q (Cusec)



- System presents all the available Authorized Full Supply Discharge in Cusec
- If AFSQ is not available, empty read-only field is shown

5

Gauge (ft.)

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

6

Indent (Cusec)

- Auto fetched from Database
- If Indent value is not available against a site, empty read-only field is shown

7

Actual Discharge (Cusec)

- Enter the Actual Discharge(Cusec) in text field

8

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved successfully”.
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

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9

Cancel

Cancel

- By clicking on <Cancel> button system discards the entered information

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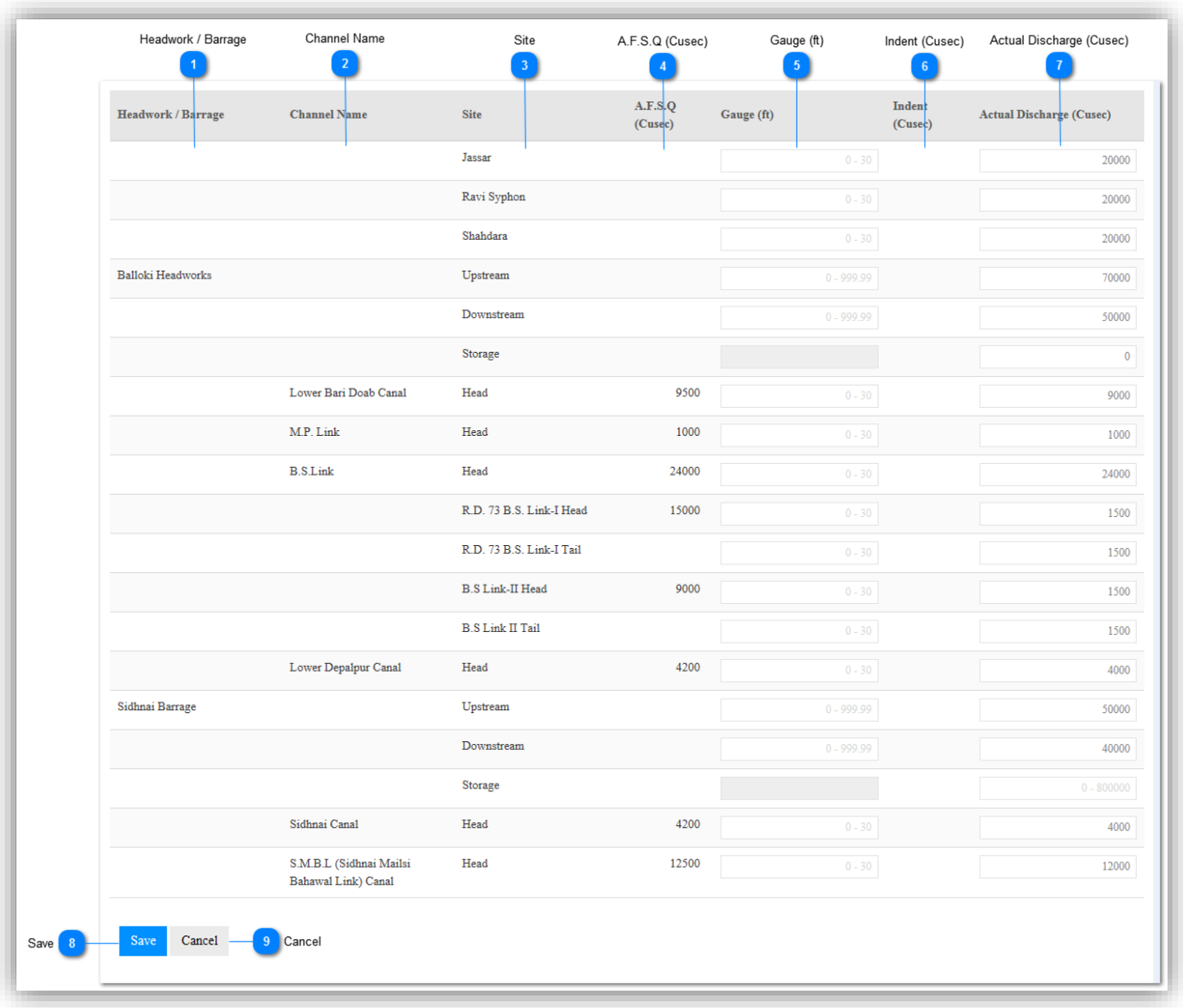
1.8 Ravi

This screen facilitates the user in a way that user can add, edit and view the gauge data and actual discharge of Ravi though it.



Headwork / Barrage	Channel Name	Site	A.F.S.Q (Cusec)	Gauge (ft)	Indent (Cusec)	Actual Discharge (Cusec)
		Jassar		0 - 30		20000
		Ravi Syphon		0 - 30		20000
		Shahdara		0 - 30		20000
Balloki Headworks		Upstream		0 - 999.99		70000
		Downstream		0 - 999.99		50000
		Storage				0
	Lower Bari Doab Canal	Head	9500	0 - 30		9000
	M.P. Link	Head	1000	0 - 30		1000
	B.S.Link	Head	24000	0 - 30		24000
		R.D. 73 B.S. Link-I Head	15000	0 - 30		1500
		R.D. 73 B.S. Link-I Tail		0 - 30		1500
		B.S Link-II Head	9000	0 - 30		1500
		B.S Link II Tail		0 - 30		1500
	Lower Depalpur Canal	Head	4200	0 - 30		4000
Sidhnai Barrage		Upstream		0 - 999.99		50000
		Downstream		0 - 999.99		40000
		Storage				0 - 800000
	Sidhnai Canal	Head	4200	0 - 30		4000
	S.M.B.L (Sidhnai Mailsi Bahawal Link) Canal	Head	12500	0 - 30		12000

Save Cancel

1

Headwork / Barrage

- Auto fetched from Database
- If Headwork/Barrage doesn't exist then an empty read only field will be displayed

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2

Channel Name

B.R.B.D

- Auto fetched from Database and if not available then empty read only field is displayed by system

3

Site

Head B.R.B.D

- Sites are retrieved by system through Database

4

A.F.S.Q (Cusec)

7000

- System presents all the available Authorized Full Supply Discharge in Cusec
- If AFSQ is not available, empty read-only field is displayed

5

Gauge (ft.)

0 - 30

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

6

Indent (Cusec)

- Auto fetched from Database
- If Indent value is not available against a site, empty read-only field is shown

7

Actual Discharge (Cusec)

20000

- Enter the Actual Discharge(Cusec) in text field

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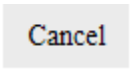
8

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved successfully”.
- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

9

Cancel



- By clicking on <Cancel> button system discards the entered information

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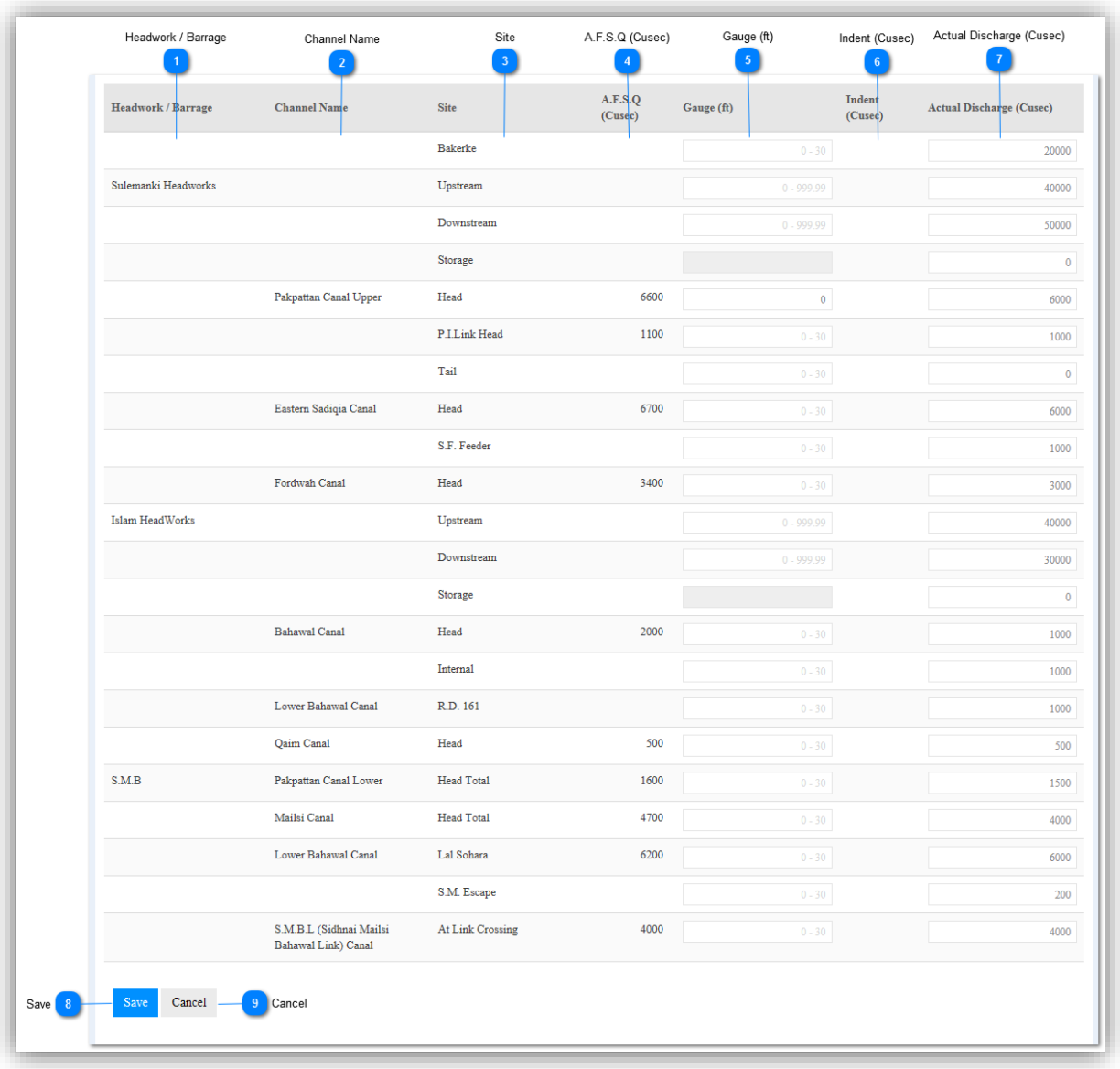
1.9 Sutlej

This screen is being used to enter, change and view the gauge value and discharge of Sutlej.



Headwork / Barrage	Channel Name	Site	A.F.S.Q (Cusec)	Gauge (ft)	Indent (Cusec)	Actual Discharge (Cusec)
		Bakerke		0 - 30		20000
Sulemanki Headworks		Upstream		0 - 999.99		40000
		Downstream		0 - 999.99		50000
		Storage				0
	Pakpattan Canal Upper	Head	6600	0		6000
		P.I.Link Head	1100	0 - 30		1000
		Tail		0 - 30		0
	Eastern Sadiqia Canal	Head	6700	0 - 30		6000
		S.F. Feeder		0 - 30		1000
	Fordwah Canal	Head	3400	0 - 30		3000
Islam HeadWorks		Upstream		0 - 999.99		40000
		Downstream		0 - 999.99		30000
		Storage				0
	Bahawal Canal	Head	2000	0 - 30		1000
		Internal		0 - 30		1000
	Lower Bahawal Canal	R.D. 161		0 - 30		1000
	Qaim Canal	Head	500	0 - 30		500
S.M.B	Pakpattan Canal Lower	Head Total	1600	0 - 30		1500
	Mailsi Canal	Head Total	4700	0 - 30		4000
	Lower Bahawal Canal	Lal Sohara	6200	0 - 30		6000
		S.M. Escape		0 - 30		200
	S.M.B.L (Sidhnai Mailsi Bahawal Link) Canal	At Link Crossing	4000	0 - 30		4000

Save Cancel

1 **Headwork / Barrage**

- Auto fetched from Database
- If Headwork/Barrage doesn't exist, an empty read only field is displayed

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2

Channel Name

- Auto fetched from Database and if not available then empty read only field is displayed by system

3

Site

- Sites are retrieved by system through Database

4

A.F.S.Q (Cusec)

- System presents all the available Authorized Full Supply Discharge in Cusec
- If AFSQ is not available , empty read-only field is displayed

5

Gauge (ft.)

- Enter the value in gauge field
- Full Conservation Level`s gauge value is auto fetched by system

6

Indent (Cusec)

- Auto fetched from Database
- If Indent value is not available against a site, empty read-only field is shown

7

Actual Discharge (Cusec)

- Enter the Actual Discharge(Cusec) in text field

8

Save

- Click on <Save> button
- System saves the record in Database & displays a message “Records saved

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successfully".

- Complete Mark is shown when all rows contain at least one entry for Gauge or Discharge or both

9

Cancel

Cancel

- By clicking on <Cancel> button system discards the entered information

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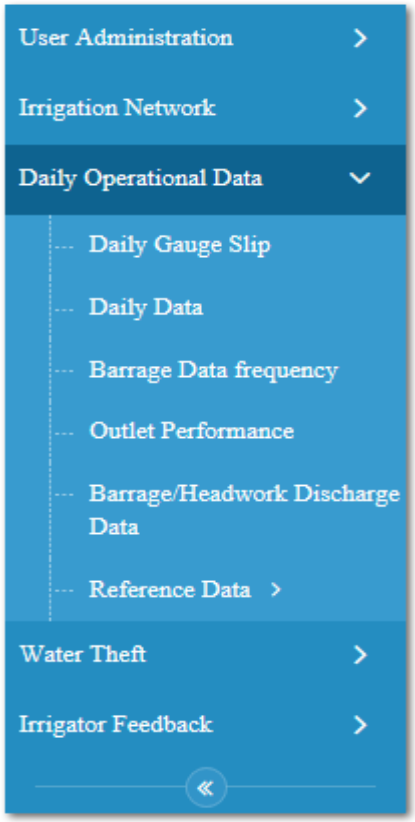
2. Search/Edit Daily Operational Data

To search or edit “Daily Data” user utilizes this screen. Primary users are XEN, SDO and PMIU Data Analyst. No other user can edit the record once PMIU Data Analyst edited it. Only Data Analyst can edit the past data. User can view all the gauge values being changed by each user in change history. Also, images being attached can be viewed through View Gauge image icon

How to Access: Main Menu -> Daily Data



For the users who have been assigned any level, relevant Irrigation boundaries will be populated in the respective dropdowns

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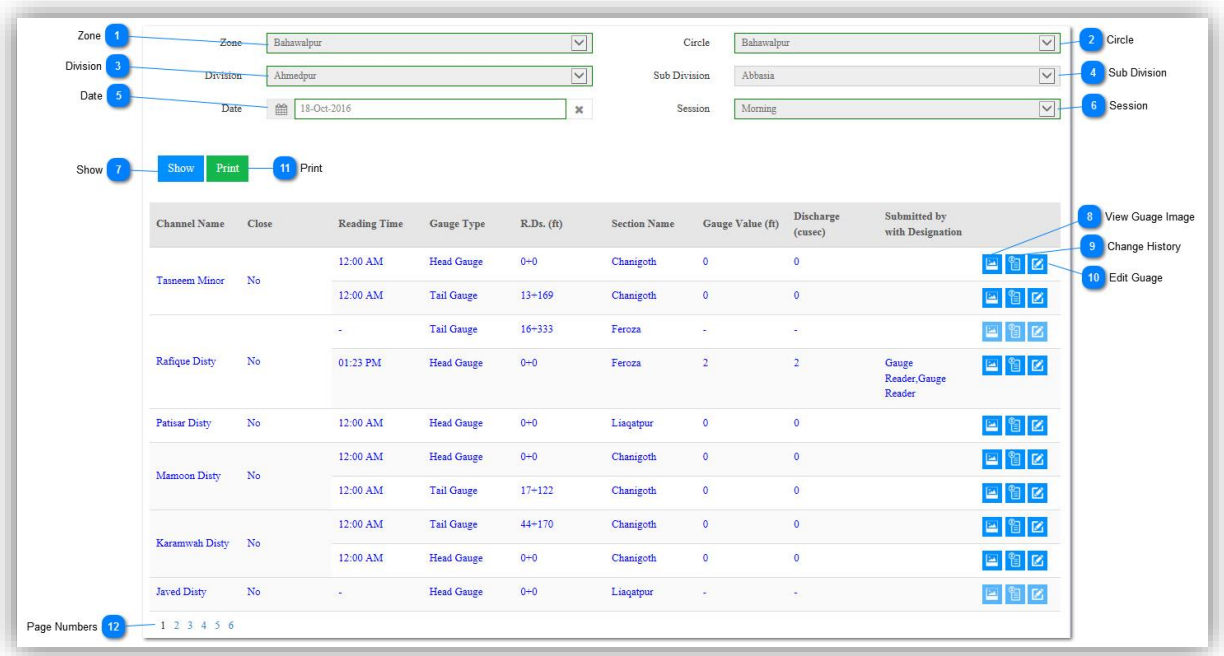
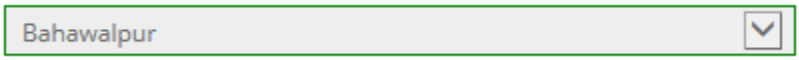
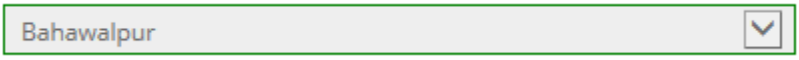


1 Zone



- Select the zone from ‘Zone’ dropdown
- On selection of zone, system enables Circle dropdown and populates all circles based on selected Zone.
- Zone is a required dropdown to search daily data record

2 Circle



- Select circle from the ‘Circle’ dropdown
- On selection of circle, relevant divisions are populated in the division dropdown.
- Circle is a required dropdown to search daily data record

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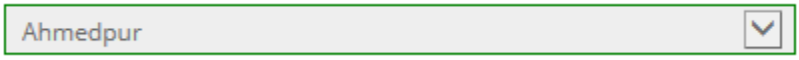
3

Division



- Select division from the 'Division' dropdown.
- On selection of division, relevant subdivisions are populated in the subdivision dropdown.
- Division is a required dropdown to search daily data record

4

Sub Division

- Select "all" from the 'Sub Division' dropdown.

5

Date

- System auto populates the current date in date field
- Select the date from 'Date' field
- Future Date cannot be selected

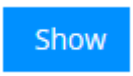
6

Session

- For Current date, system will populate session based on the time i.e.12:01 am to 12:00 pm will be morning session and 12:01 pm to 12:00 am will be considered as evening session
- Selection of Session becomes mandatory if past date is selected.

7

Show



- Click on <Show> Button , system verify all the required fields
- System displays Channel-wise list of all the Gauges within different Sub Divisions along with values sent by the respective Gauge Readers or edited by SDO/ XEN /Data Analyst.

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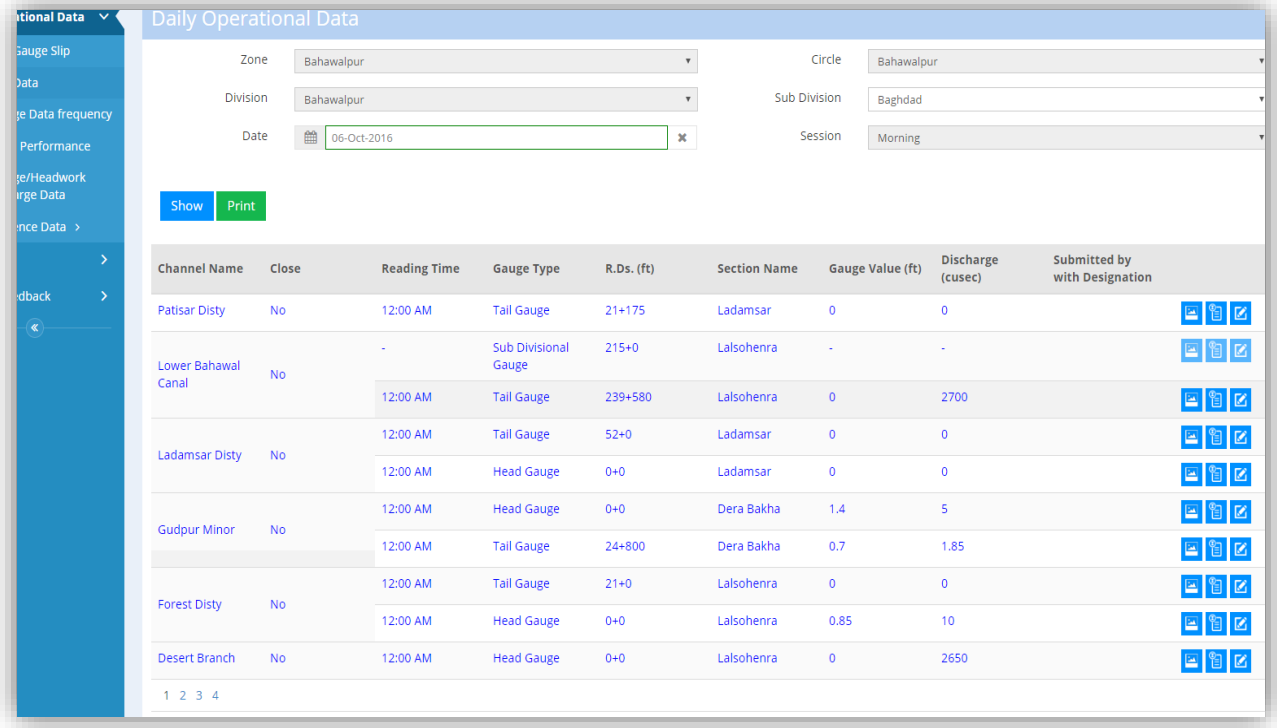
- In case specific Sub Division has been selected by XEN/Data Analyst then a Channel-wise list of all the Gauges within a Sub Division along with values sent by the respective Gauge Readers or edited by SDO/ XEN /Data Analyst.
- If Gauge Reader has not provided the value of Gauge and Discharge, the previous record will be shown in blue color and currently added record will be shown in black color



For closed channels Edit gauge, Change History and View Gauge Image buttons will be disabled.

8 View Gauge Image

- Click on View Gauge Image icon
- System displays the image in pop up
- Incase Picture is not available, system will show the default picture showing ‘Unavailability of the picture’

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9

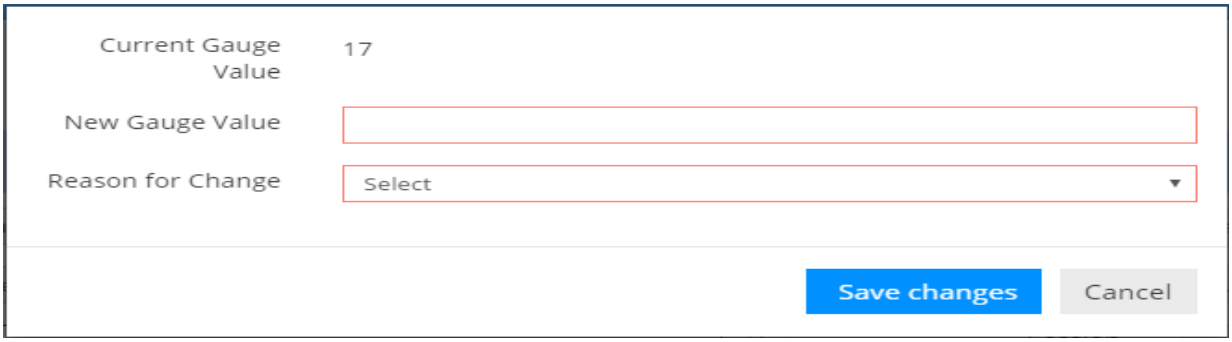
Change History

- Click on Change History image icon
- System shows the history of values changed by different users

10

Edit Gauge

- Click on Edit Gauge image icon
- A popup is displayed
- Once Data Analyst edits the record and saves it, it gets locked for Gauge Reader, SDO and XEN and these roles will not be able to edit it any further. Only PMIU Data Analyst can edit it



1

New Gauge Value

- Enter the value in ‘New Gauge Value’ field
- New Gauge Value is a required field for saving the changes

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2

Reason for Change

- Select the option from 'Reason for Change' field
- Reason for Change is a required field to save the gauge value

3

Save

- Click on <Save> button
- System edits the record successfully and displays a message " Record saved successfully"
- System displays an error message if any of the mandatory fields has not been filled.
- System auto calculates discharge value on the basis of any one of the following formulas based on the gauge type:
- For Head and Critical Gauge Discharges, where gauge is at bed level Discharge can be calculated using equation : Q = K * d ^ n where d is value of gauge
- For Discharge at Head and Critical Gauges, where gauge is at crest level Discharge can be calculated using equation: Q = C*B*H ^ 3/2 where h is value of gauge.
- For Tail (Where no channel off-takes from Tail) Tail Discharge = Authorized Tail Discharge x (Tail Gauge / Authorized Tail Gauge) ^1.5.
- For Tails (where 'n' channels off-takes from Tail) Tail Discharge = Sum of Head Discharge of 'n' off-takes from Tail.

6

Cancel

- By clicking on <Cancel> button system discards the entered/selected information and pop up gets removed.

11

Print

- Click on <Print> button.
- System displays a screen containing report of Daily Gauge Slip.

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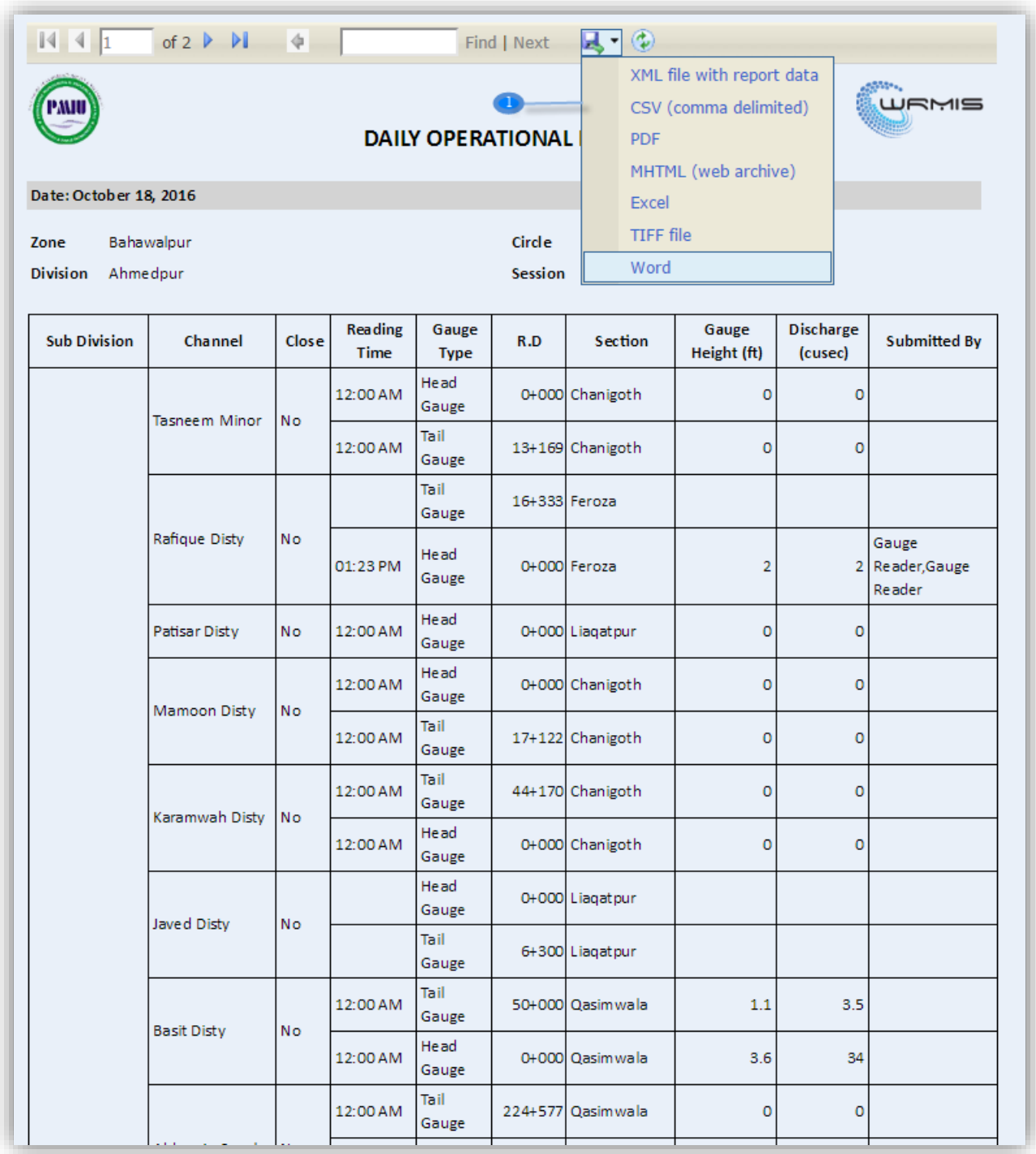

Sub Division	Channel	Close	Reading Time	Gauge Type	R.D	Section	Gauge Height (ft)	Discharge (cusec)	Submitted By
	Tasneem Minor	No	12:00 AM	Head Gauge	0+000	Chanigoth	0	0	
			12:00 AM	Tail Gauge	13+169	Chanigoth	0	0	
	Rafique Disty	No		Tail Gauge	16+333	Feroza			
			01:23 PM	Head Gauge	0+000	Feroza	2	2	Gauge Reader,Gauge Reader
	Patisar Disty	No	12:00 AM	Head Gauge	0+000	Liaqatpur	0	0	
	Mamoon Disty	No	12:00 AM	Head Gauge	0+000	Chanigoth	0	0	
			12:00 AM	Tail Gauge	17+122	Chanigoth	0	0	
	Karamwah Disty	No	12:00 AM	Tail Gauge	44+170	Chanigoth	0	0	
			12:00 AM	Head Gauge	0+000	Chanigoth	0	0	
	Javed Disty	No		Head Gauge	0+000	Liaqatpur			
				Tail Gauge	6+300	Liaqatpur			
	Basit Disty	No	12:00 AM	Tail Gauge	50+000	Qasimwala	1.1	3.5	
			12:00 AM	Head Gauge	0+000	Qasimwala	3.6	34	
			12:00 AM	Tail Gauge	224+577	Qasimwala	0	0	

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1

Save

- Click on the icon
- System displays a list of different formats in which report can be downloaded
- Select the required option
- System downloads the report successfully on the local machine.

12

Page Numbers

1 2 3 4 5 6 7 8 9 10 ... >>

- Click on a page number to move to a specific page.

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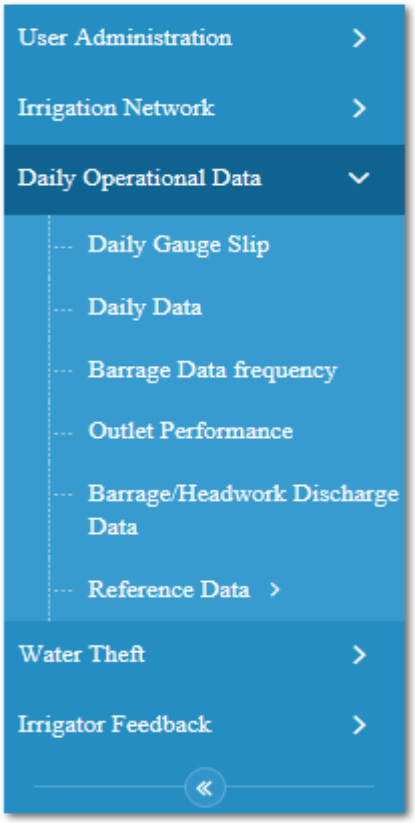
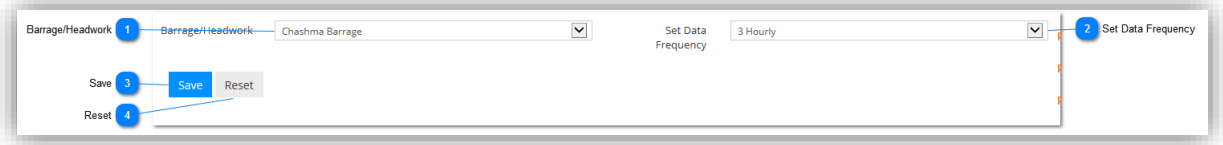
3. Barrage Data Frequency

Through this screen user can set the number of readings to be taken per day for Barrages/Headworks. By default Twice a Day is shown in 'Set Data Frequency' dropdown.

How to Access: Main Menu -> Barrage Data Frequency





1 Barrage/Headwork

- Select Barrage/Headwork's from the list of 'Barrage/Headwork' drop downs.
- On the selection of Barrage/Headwork's, System displays the last saved Data

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Frequency for Barrage/Headwork against the selected Barrage/Headwork.

- Selection of Barrage/headwork is mandatory to save the record.

2

Set Data Frequency

- The default value for Data Frequency is Twice a Day for Barrages/Headwork
- Select Frequency from 'Set Data Frequency 'drop down.
- Selecting Data Frequency is required field to save the data frequency against Barrage /Headwork.

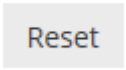
3

Save

- Click on <Save> Button, System saves the Data Frequency into the database and shows a message "Record saved successfully".
- System resets the dropdowns to 'select' option.
- System displays the Barrage Screen data according to the set Data Frequency for Barrage.
- System displays an error message if any of the mandatory fields has not been selected.
- Frequency can be changed as many times as user wants.
- If User selects the frequency which is already set; system displays the message
- 'The selected Data Frequency for Barrage is already set'.

4

Reset



- Click on <Reset> button, System resets the Data Frequency selection to previously saved value.

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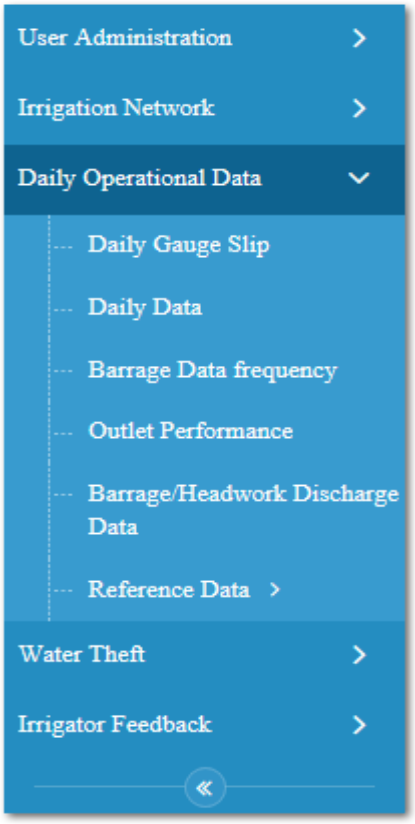
4. Search Outlet Performance

To search the channels against which outlets exist and performance has to be viewed or data has to be entered, user can utilize this screen.

How to Access: Main Menu -> Outlet Performance



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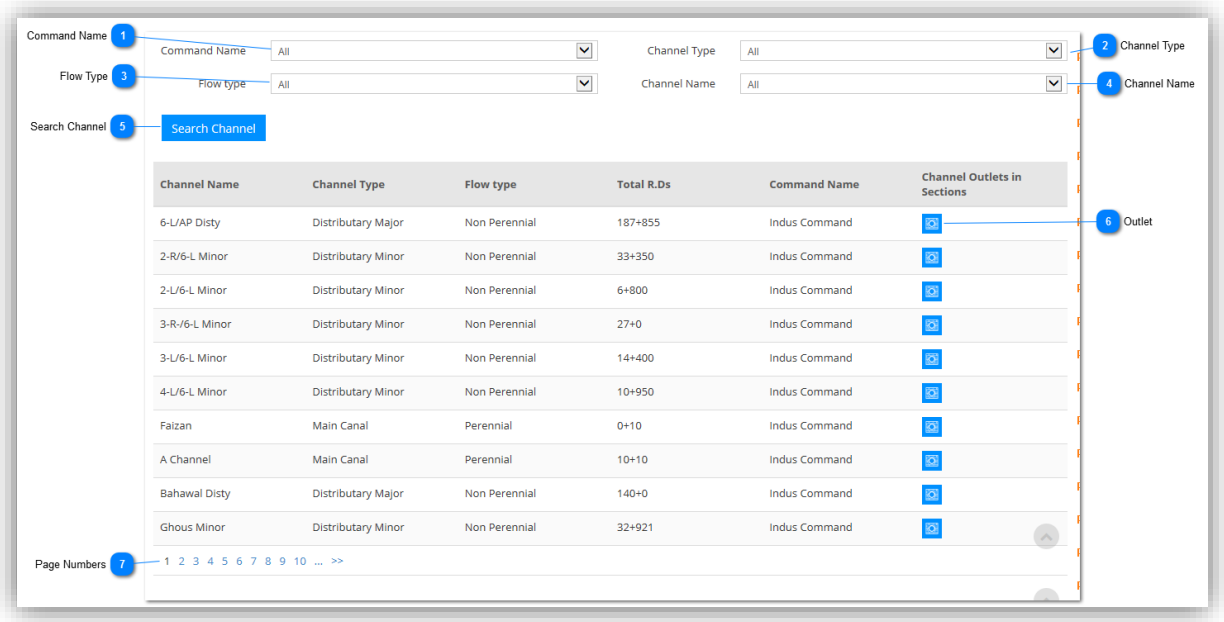


1

Command Name

- Select Command Name from ‘Command Name’ drop down.

2

Channel Type

- Select Channel Type from ‘Channel Type’ Drop down.

3

Flow Type

- Select Flow Type from ‘Flow Type’ drop down

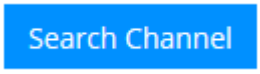
4

Channel Name

- Select Channel Name from ‘Channel Name’ drop down.

5

Search Channel



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- Click on <Search Channel> Button.
- System displays the records as per the search criteria for the specific Division/Sub Division/Section based on the assigned channels in the form of a Table.
- The system lists down the records on the basis of selected search criteria.
- If no criteria is provided, list of all channels within the Division/Sub Division are being populated.
- No Channel is available for the matching criteria, system displays a message
- 'No Channel is found for the given criteria'.

6

Outlet

- Click on Outlet image from search list.
- System list down all outlets in a table along with Outlet Performance and Performance History buttons.

7

Page Numbers

1 2 3 4 5 6 7 8 9 10 ... >>

- Click on page numbers to move the user to other pages.

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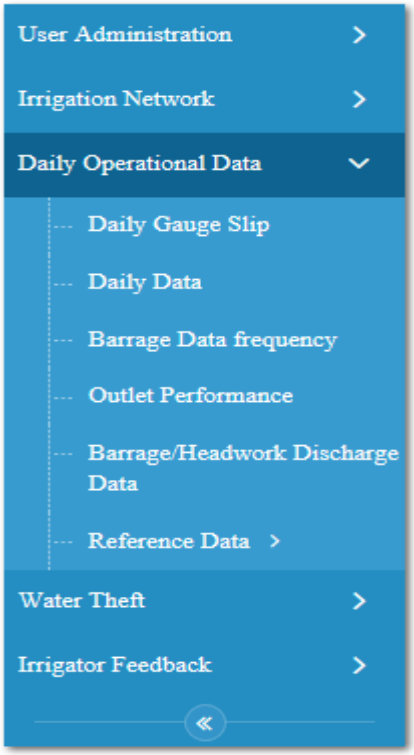
5. Locate Specific Outlet

Through this screen user can view the outlets that exist against a particular channel.

How to Access: Main Menu -> Outlet Performance-> Locate Specific Outlet



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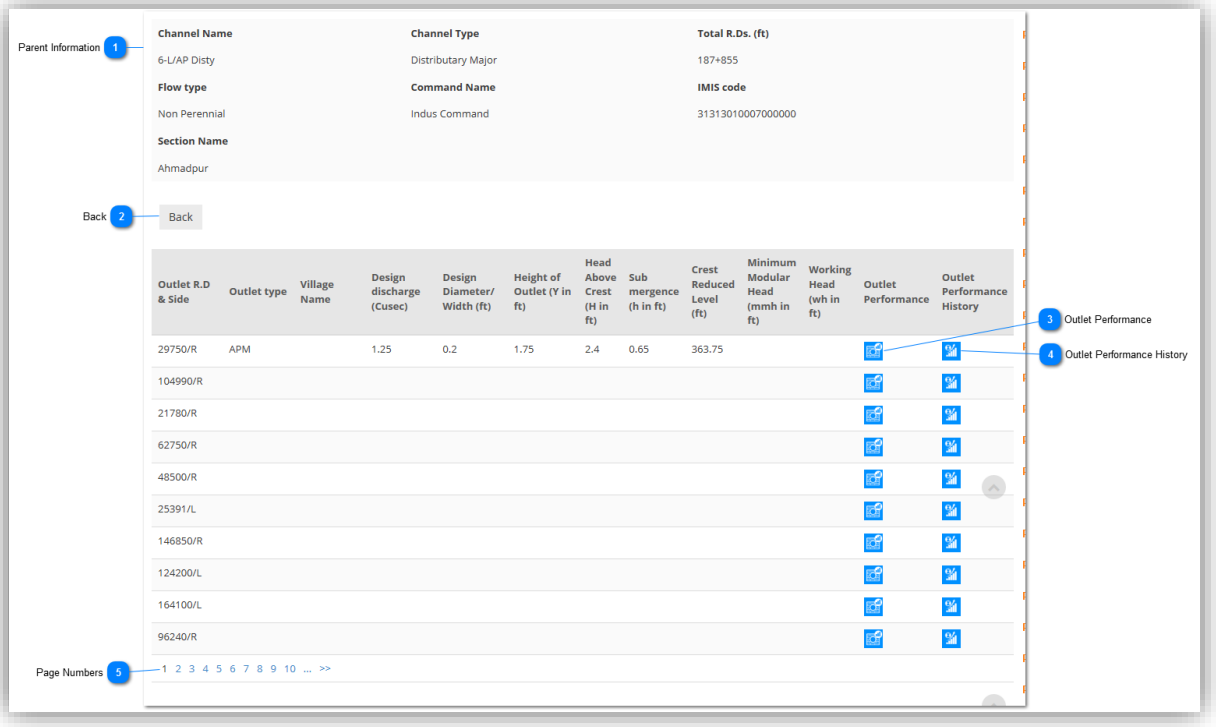

1 Parent Information

Channel Name	Channel Type	Total R.Ds. (ft)
6-L/AP Disty	Distributary Major	187+855
Flow type	**Command Name**	**IMIS code**
Non Perennial	Indus Command	31313010007000000
Section Name		
Ahmadpur		

- System displays the parent information in read only form populated from database on the selection of outlet button against particular channel.

2 Back

Back

- Click on <Back> button.
- System redirects the user at search criteria for outlet performance.

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3

Outlet Performance

- Click on Outlet Performance icon.
- System takes the user to Outlet Performance screen.

4

Outlet Performance History

- Click on Outlet Performance History icon.
- System moves the user to Outlet Performance History screen.

5

Page Numbers

1 2 3 4 5 6 7 8 9 10 ... >>

- Click on page numbers to move the user to other pages.

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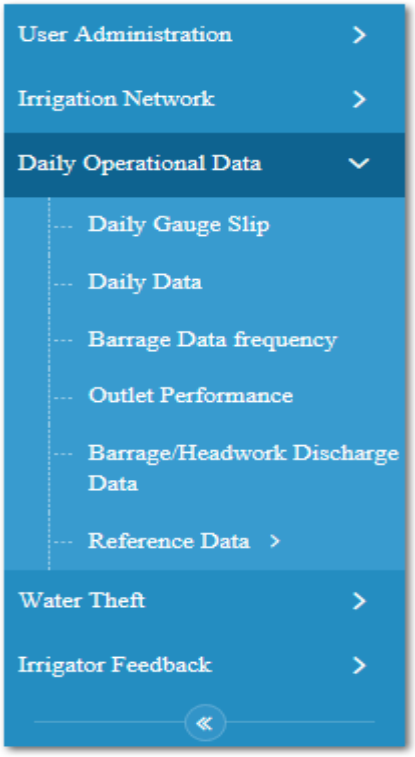
6. Add Outlet Performance

This screen provides an interface to add performance of specific outlet. SBE, SDO, ADM and MA can add Outlet Performance.

How to Access: Main Menu -> Outlet Performance-> Locate Specific Outlet->Add Outlet Performance



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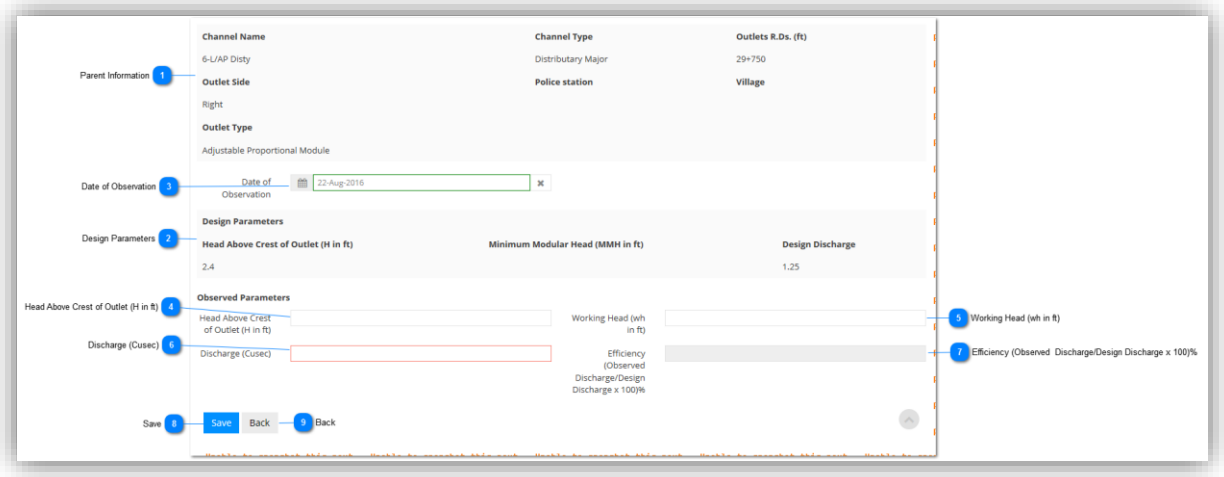

1 Parent Information

Channel Name	Channel Type	Outlets R.Ds. (ft)
6-L/AP Disty	Distributary Major	29+750
Outlet Side	**Police station**	**Village**
Right		
Outlet Type		
Adjustable Proportional Module		

- System displays the parent information in read only form populated from the database.

2 Design Parameters

Design Parameters		
Head Above Crest of Outlet (H in ft)	**Minimum Modular Head (MMH in ft)**	**Design Discharge**
2.4		1.25

- System displays the design parameters in read only form populated from the database

3 Date of Observation

- Select Date of Observation from the ‘Date of Observation’ field.
- User provides the future date, system displays the message
- ‘Future Date cannot be selected’.

4 Head Above Crest of Outlet (H in ft.)

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- Enter the value in 'Head Above Crest' of Outlet (H in ft.) Text area.

5 **Working Head (wh in ft.)**

- Enter the value in Working Head (wh in ft.) Text area.

6 **Discharge (Cusec)**

- Enter the value of Discharge(Cusec) in Text area.
- Discharge is a required field to save the outlet performance.
- After focus out of the Observed Discharge field system calculate the efficiency on the basis of provided data

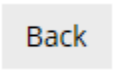
7 **Efficiency (Observed Discharge/Design Discharge x 100) %**

- System displays the efficiency on the relevant field in read only form based on the formula Efficiency = Observed Discharge / Design Discharge x 100

8 **Save**

- Click on <Save> button
- System save the data into the database along with date time and user information
- System displays an error message if any of the mandatory fields has not been filled.

9 **Back**



- Click on <Back> Button
- System redirects the user at Search Criteria for Locate Specific Outlet screen.

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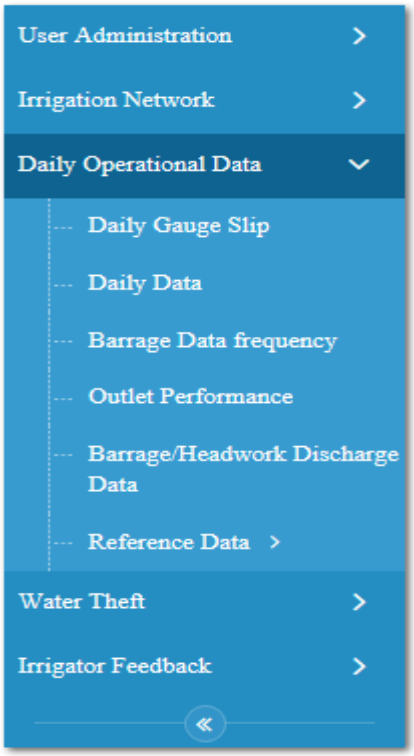
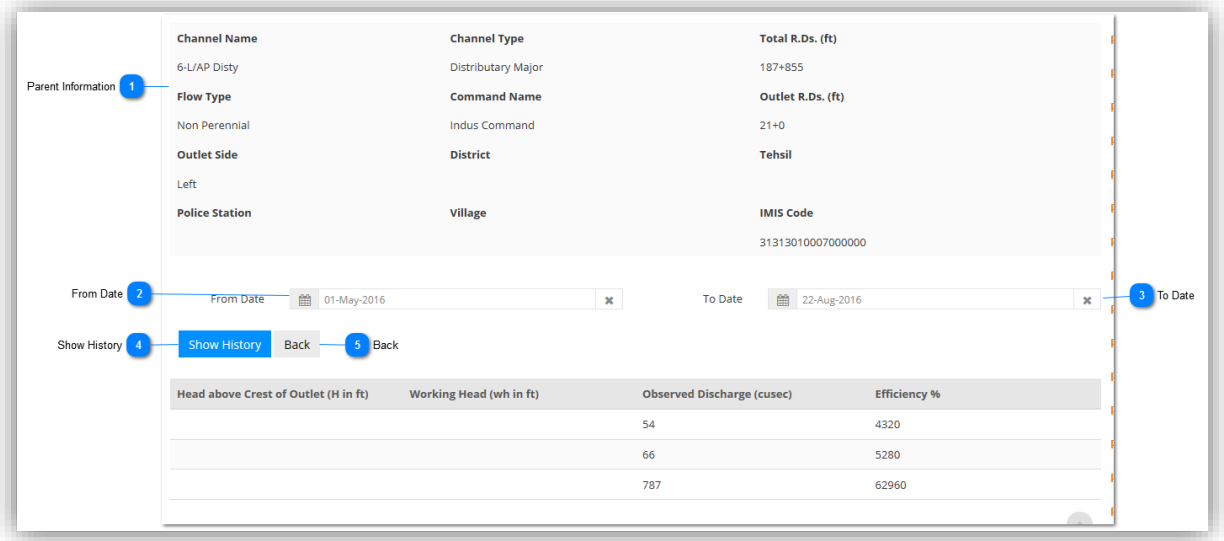
7. Outlet Performance History

User (SBE, SDO, ADM and MA) can view the history of Outlet Performance through this screen.

How to Access: Main Menu -> Outlet Performance-> Locate Specific Outlet->Outlet Performance History





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1

Parent Information

Channel Name	Channel Type	Total R.Ds. (ft)
6-L/AP Disty	Distributary Major	187+855
Flow Type	**Command Name**	**Outlet R.Ds. (ft)**
Non Perennial	Indus Command	21+0
Outlet Side	**District**	**Tehsil**
Left		
Police Station	**Village**	**IMIS Code**
		31313010007000000

- System displays the parent information in read only form populated from database on the selection of outlet history button against the respective channel.

2

From Date

- Select Date from ‘From Date’ field.

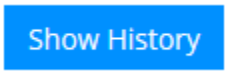
3

To Date

- Select Date from ‘To Date’ field.

4

Show History



- Click on <Show History> Button.
- System presents all relevant records based on date criteria in a table.
- ‘To Date’ cannot be lesser than ‘From date’, if so then system should display a message “To Date should be greater than or equal to From date”.
- If Record is not available for the given date range, system shows a message ‘No record is found for the given dates’ and Table is not shown.
- If From Date and To Date has not been provided system presents all available records.

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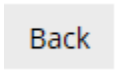
5 **Back**



- Click on <Back> Button.
- System redirects the user at Search Criteria for Locate Specific Outlet screen.

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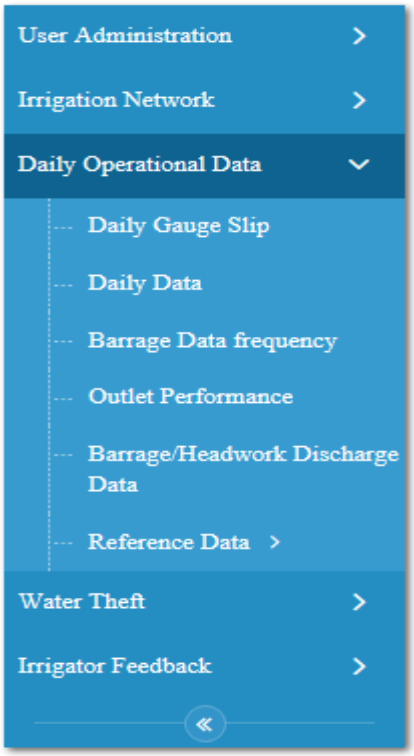
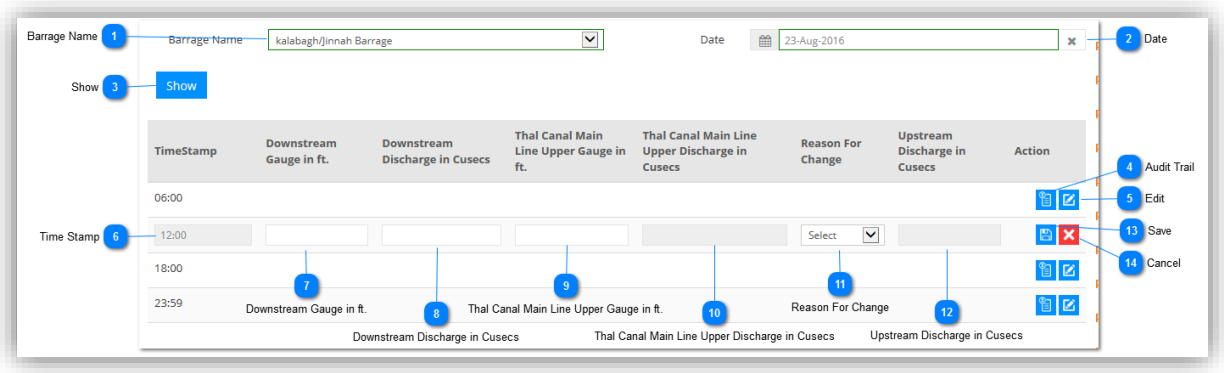
8. Barrage/Headwork Discharge Data

This screen helps the user to edit and view Barrage. Headworks Discharge Data. Primary users are XEN, SDO and PMIU Data Analyst. No other user can edit the record once PMIU Data Analyst edited it. Only Data Analyst can edit the past data. Relevant offtakes gauge and discharge headings are displayed in the grid header. User can view all the gauge values being changed by each user in change history.

How to Access: Main Menu -> Barrage/Headwork Discharge Data



© 2017, Designed and Developed by NESPAK



1

Barrage Name

- Select Barrage/Headwork from the dropdown.
- It is a required field to view or edit the data.

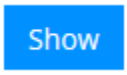
2

Date

- Select the date from Date field.
- Date is a required field to view/ alter the data.

3

Show



- Click on <Show> Button.
- System presents all the channels originating from barrage along with their filled Gauge and Discharge fields and Up Stream and Down Stream Gauges and Discharges.
- If previous day is selected, all the records are shown in read-only mode with no Edit Icon except for Chief PMIU and PMIU Data Analyst who can edit the past records also.

4

Change History

- Click on ‘Change History’ icon.
- System shows the history of changed values of the relevant gauge by each relevant user.
- First Value in the record will be the final value of the gauge.
- Every proceeding value is the updated value of the following value from bottom up.
- Incase No record is available for Audit Trail, system shows the previous entry in

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different color.

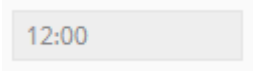
5

Edit

- Click on 'Edit' icon.
- System displays the relevant record in editable mode.

6

Time Stamp



- Time Stamp is fetched from the database based on the frequency set for Barrage/Headwork.
- If the value of Data Frequency for Barrage is Twice a Day, Time Stamp (HRS) field shows Morning or Evening Session instead of hour.

7

Downstream Gauge in ft.

- Enter the value of Downstream Gauge in the text field.

8

Downstream Discharge in Cusecs

- Enter the Downstream Discharge in the text area.

9

Thal Canal Main Line Upper Gauge in ft.

- Enter the value of gauge in the field.
- On focus out System auto calculates upper discharge (cusecs).

10

Thal Canal Main Line Upper Discharge in Cusecs

- Discharge is auto calculated and read only field.
- For Head Discharges at canal, where gauge is at bed level Discharge can be calculated using equation: Q = K * d ^ n where d is value of gauge.
- For Discharge at Head Gauges, where gauge is at crest level Discharge can be calculated using equation: Q = C*B*H ^ 3/2 where h is value of gauge.

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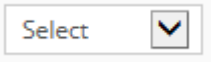
11 **Reason for Change**



- Select any option from dropdown.

12 **Upstream Discharge in Cusecs**

- System calculates upstream discharge on the basis of formula Up Stream Discharge = Down Stream Discharge + (Sum of all Canal Withdrawals).

13 **Save**

- Click on 'Save' button.
- Discharge Table parameters against the respective gauge are not available, system will show the message 'Discharge Table Parameter are not present hence Discharge cannot be calculated'.
- Value of Discharge cannot be more than 115 percent of Design Discharge but Entry is allowed with a message 'Discharge on the given Gauge is Excessive'.
- System displays an error message if any of the mandatory fields has not been filled.

14 **Cancel**

- Click on 'Cancel' icon to discard the information.

Once PMIU Data Analyst has edited and saved the specific record edit button gets locked for SDO and XEN and these roles cannot edit it any further. Only PMIU Data Analyst can edit it.

9. Add/Edit/Delete Sites for Structure/Barrage/Dam/Channel

Through this screen user can add, edit and delete the sites that exist against Barrage/Dam/Channel. Admin is going to be the primary user. By selecting a structure all previously added sties will be displayed by system with no edit icon being displayed against upstream and downstream.

How to Access: Main Menu -> Reference Data -> Sites For Structure/Barrage/Dam/Channel

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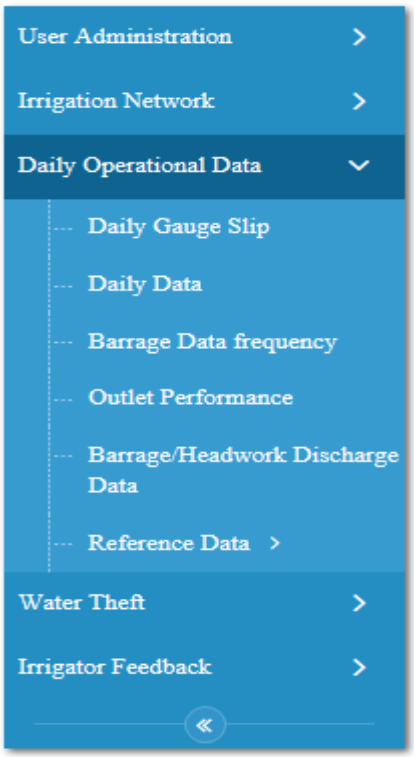

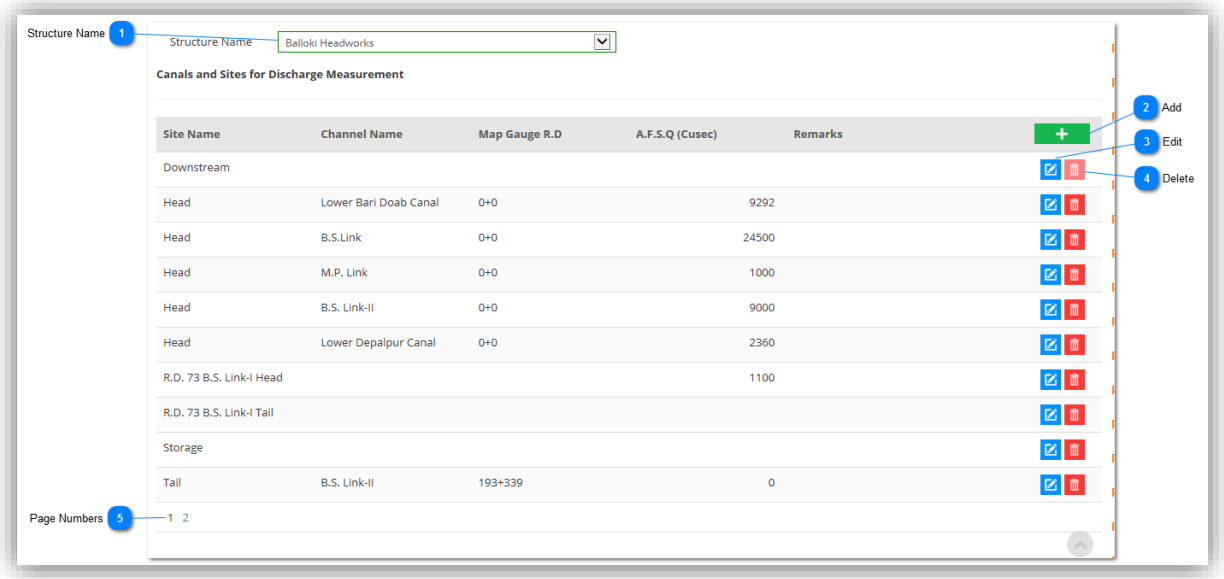

Site Name	Channel Name	Map Gauge R.D	A.F.S.Q (Cusec)	Remarks
Downstream				
Head	Lower Bari Doab Canal	0+0	9292	
Head	B.S.Link	0+0	24500	
Head	M.P. Link	0+0	1000	
Head	B.S. Link-II	0+0	9000	
Head	Lower Depalpur Canal	0+0	2360	
R.D. 73 B.S. Link-I Head			1100	
R.D. 73 B.S. Link-I Tail				
Storage				
Tail	B.S. Link-II	193+339	0	

1 **Structure Name**

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- Select the option from ‘Structure’ Dropdown.
- System displays table with relevant records.
- For every Structure two sites ‘Upstream’ and ‘Downstream’ will be displayed into the table.
- No Channel I exist against ‘Up Stream’ and ‘Down Stream’ sites.
- No Map Gauge R.D. against ‘Up Stream’ and ‘Down Stream’.
- No A.F.S.Q for ‘Up Stream’ and Down Stream’.
- Structure Name selection is a required field to view relevant sites.

2

Add

- Click on <Add> button.
- A row in the table is opened in add mode.
- Enter the site name.
- Select the channel from drop down.
- Site Name and Channel Name are collectively unique but when no channel is selected Site Name is unique.
- Site is a required field to save the record.
- Map Gauge R.D is required field in case channel has been selected by the user
- Select Map Gauge RD from dropdown.
- If a Design Discharge (A.F.S.Q) exists against a certain gauge, it will be auto populated by system.
- Enter Remarks.
- Click on <Save> button.
- If any of the mandatory fields has not been selected or entered system displays an error message.
- The message “Unique Value is required” should be displayed if unique value has not been entered/selected.

3

Edit

- Click on Edit icon present on the record.
- For ‘Up Stream’ and ‘Down Stream’ sites only Remarks field can be edited but for other sites all fields are editable.
- Edit the fields according to the need.
- Click on <Save> button.
- If any of the mandatory fields has not been selected or entered system displays an error message.
- The message “Unique Value is required” should be displayed if unique value has not been entered/selected.

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4

Delete

- Delete icon is disabled for upstream and downstream.
- Click on the delete icon.
- System verifies that if Dependency exists, a message “Record cannot be deleted. Associated with other records” is shown and system doesn`t delete the record.
- Else system deletes the record and displays a message “Record deleted successfully”.

5

Page Numbers

1 2

- Click on a page number to move to a specific page.

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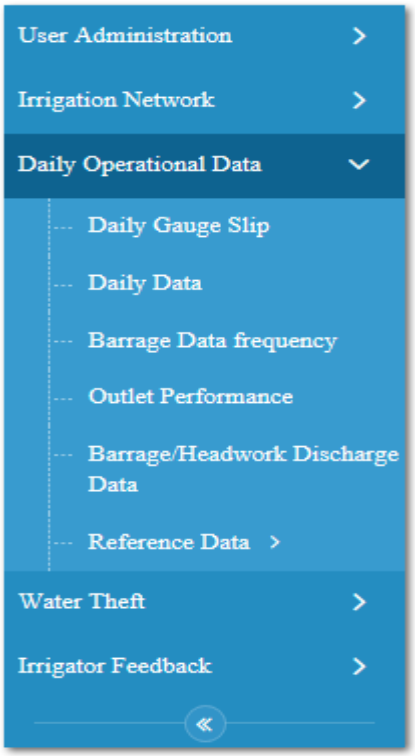
10. Add/Edit Reason for Change

Reference data of reason for change is saved through this screen which will be used by admin

How to Access: Main Menu -> Reference Data -> Add/Edit Reason for Change



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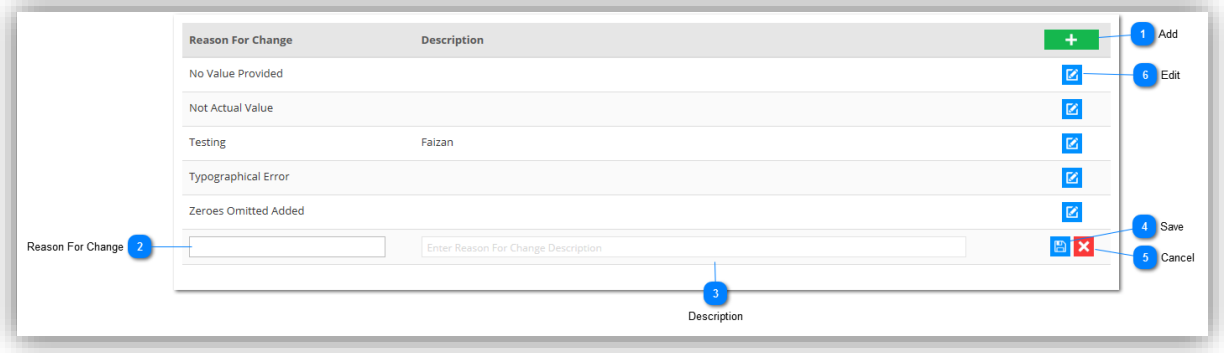

1

Add

- Click on <Add> Button to add reason for change
- System displays a new row in table

2

Reason for Change

- Enter the value in ‘ Reason For Change’ field
- Reason For Change is a required field to save the record

3

Description

- Enter the description in Text area

4

Save

- Click on ‘Save’ icon.
- System should verify that mandatory fields have been filled up.
- System should verify that Reason for Change field must be unique and record will not be saved.
- If any of the mandatory fields has not been selected or entered system displays an error message.
- The message “Unique Value is required” should be displayed if unique value has not been entered/selected.

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5

Cancel

- Click on ‘Cancel’ icon system discards the information.

6

Edit

- Click on ‘Edit’ icon
- A row id displayed in editable mode.
- Click on ‘Save’ icon
- System should verify that Reason for Change field must be unique and if not then message will be shown and record will not be saved

6

Delete

- Click on ‘delete’ icon
- System deletes the record successfully and displays a message “Record deleted successfully”.

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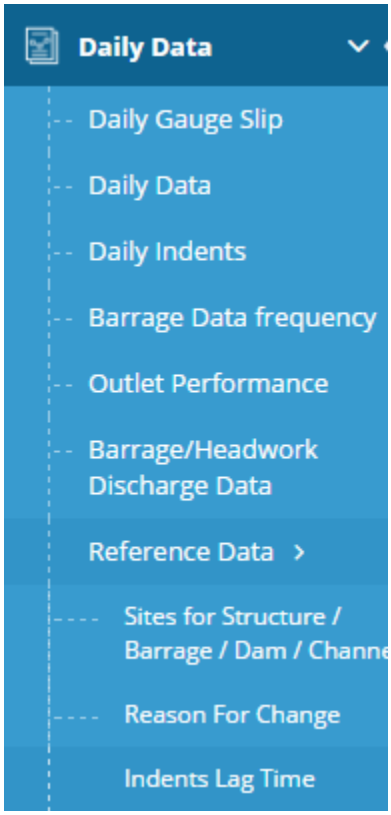
11. Indents Lag Time

How to Access: Main Menu -> Reference Data -> Indents Lag Time



- Click on Indents Lag Time from left menu
- System redirects user to Indents Lag time screen

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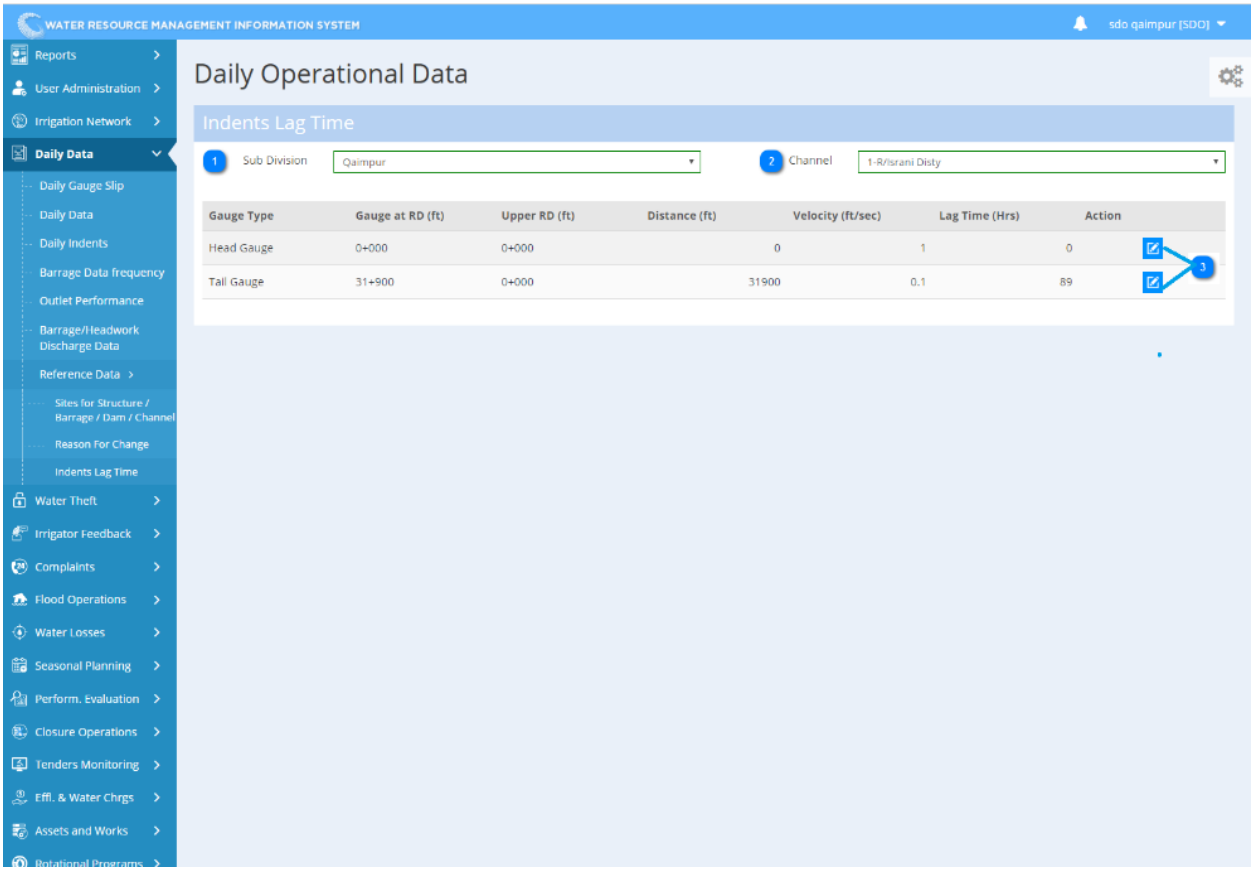

1 Sub Division

- Select “Sub Division” from the ‘Sub Division’ dropdown.

2 Channel Name

- Now select “Channel” from channel dropdown

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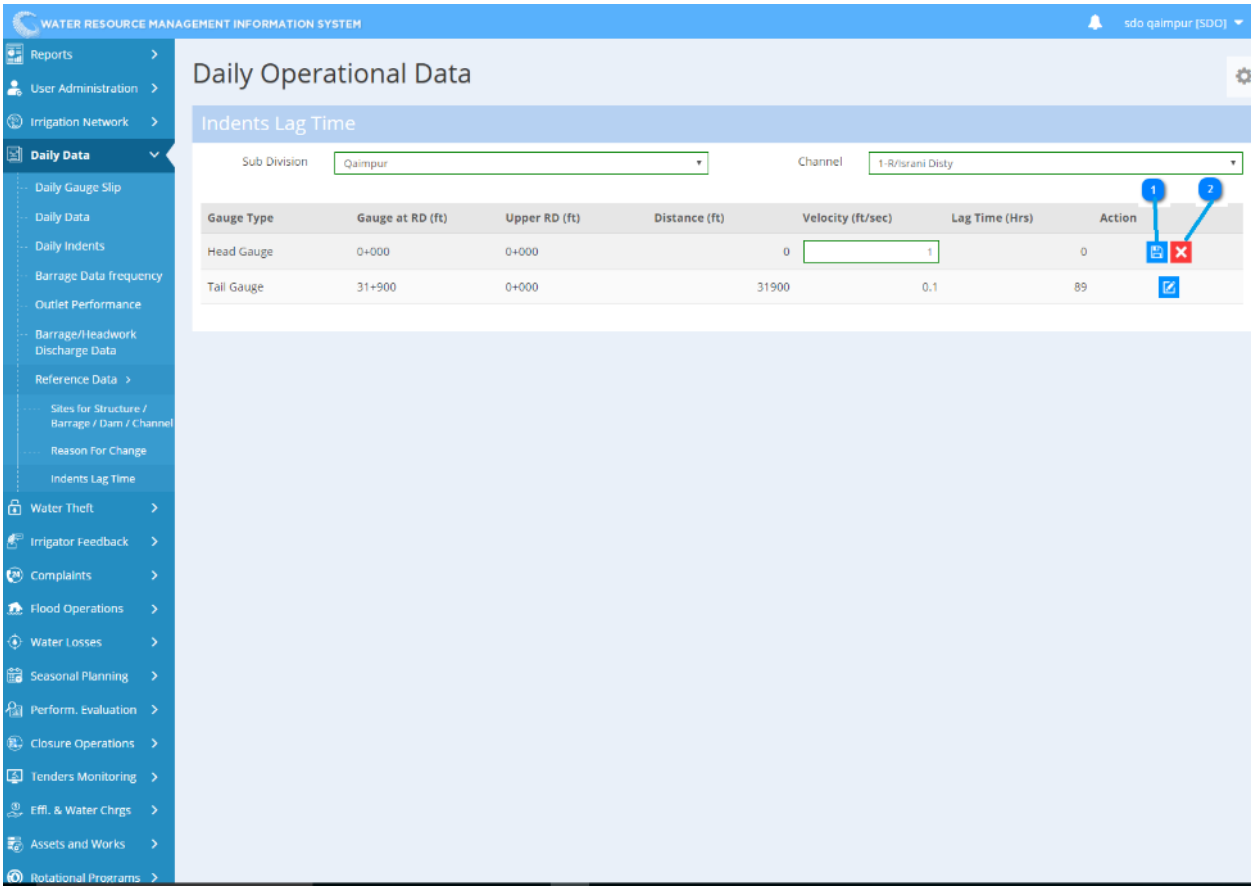
3 **Edit**

- Click on Edit icon.
- System expands record in editable mode
-



- Edit record and click on save icon (2)
- System saves record successfully

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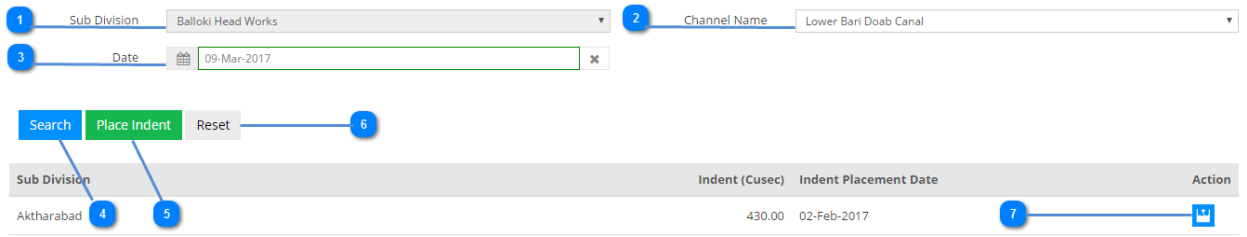
12. Daily Indents

How to Access: Main Menu -> Daily indents



1 Sub Division

- Select “Sub Division” from the ‘Sub Division’ dropdown.

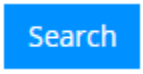
2 Channel Name

- Now select “Channel” from channel dropdown

3 Date

- Select “Date” from Date field

4 Search



- Click on “Search” button
- System displays records as per search criteria in search panel

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5 Place Indents

Place Indent

- Click on “Place Indents” button
- System navigates user to Placing Indents screen

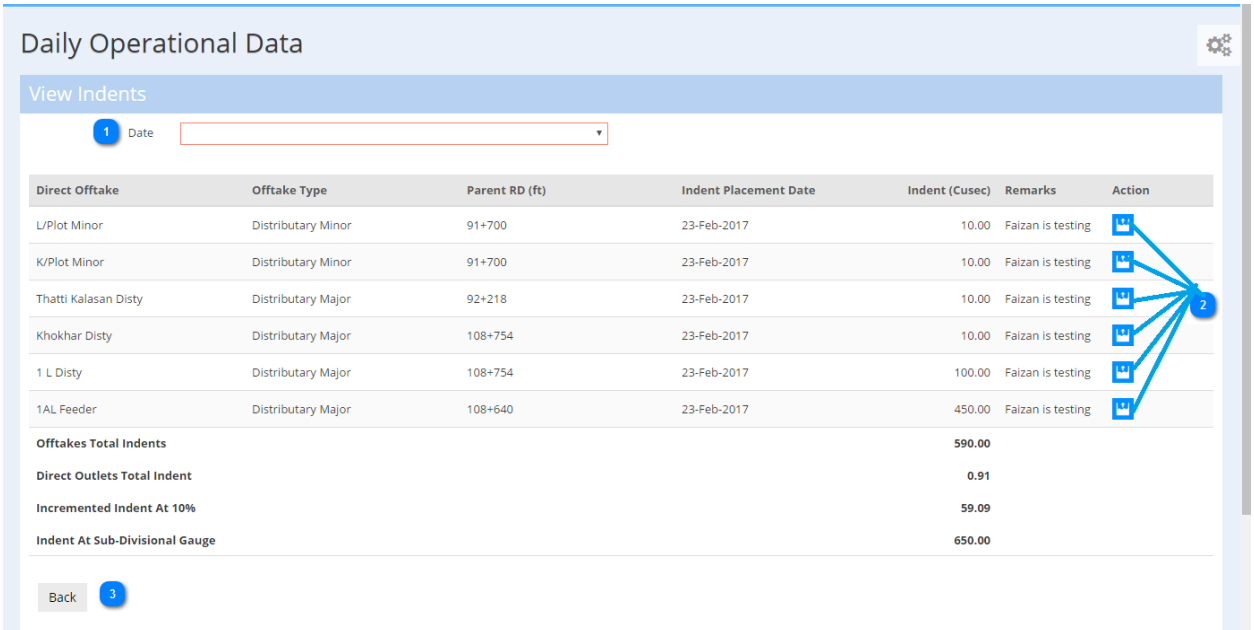
6 Reset

Reset

- Click on “Reset” button
- System resets all the selected search criteria on screen

7 Action

- Click on “Action” icon
- System navigates user to ‘View Indents’ screen



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1

Date

- Select date from “Date” field

2

Action

- Click on Action icon
- System redirects user to Indent history screen
- By clicking on Back button, user redirects to main View Indents screen

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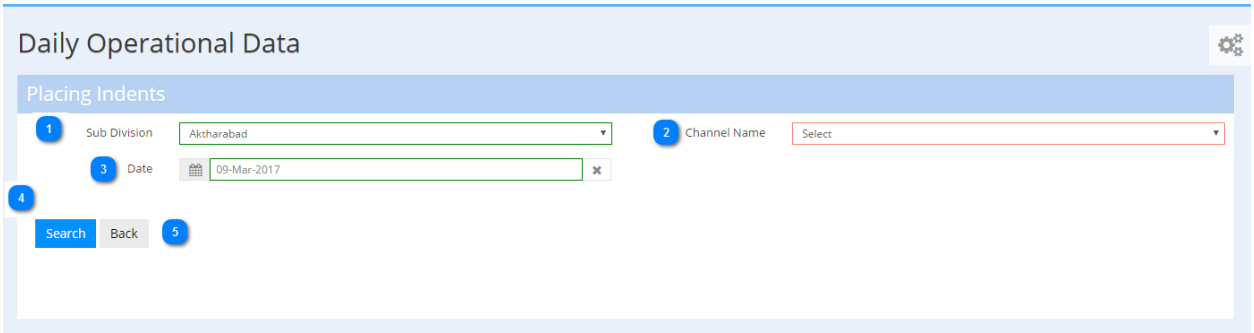
13. Search Placing Indents



1 Sub Division

- Select “Sub Division” from the ‘Sub Division’ dropdown.

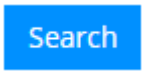
2 Channel Name

- Now select “Channel” from channel dropdown

3 Date

- Select “Date” from Date field

4 Search



- Click on “Search” button
- System displays records as per search criteria in search panel

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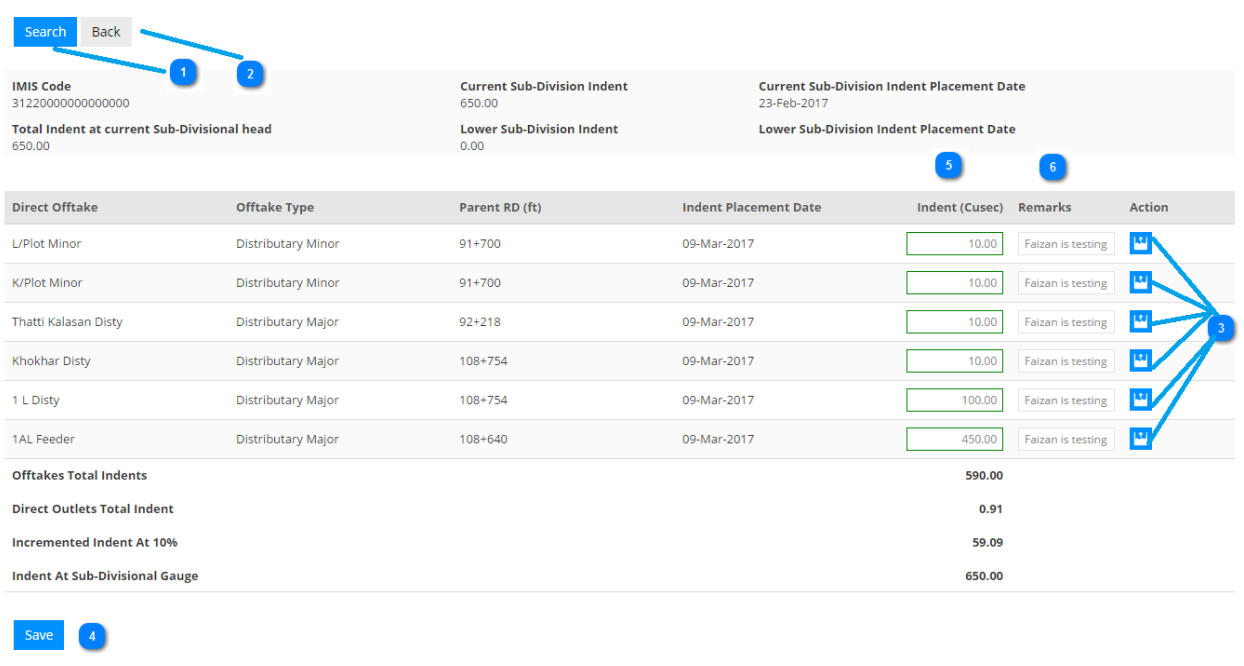
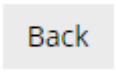


2 Back



- Click on Back button
- System navigates user to main Indents screen

3 Action

- Click on Action icon
- System navigates user to Indent History screen

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4 **Save**

- Click on “Save” button present at the end of screen
- System saves all entered records successfully

5 **Indent (Cusec)**

- Enter value in Indent (Cusec) field
- System allows user to enter value

6 **Remarks**

- Enter remarks in “Remarks” field
- System allows user to add remarks

Daily Operational Data Android

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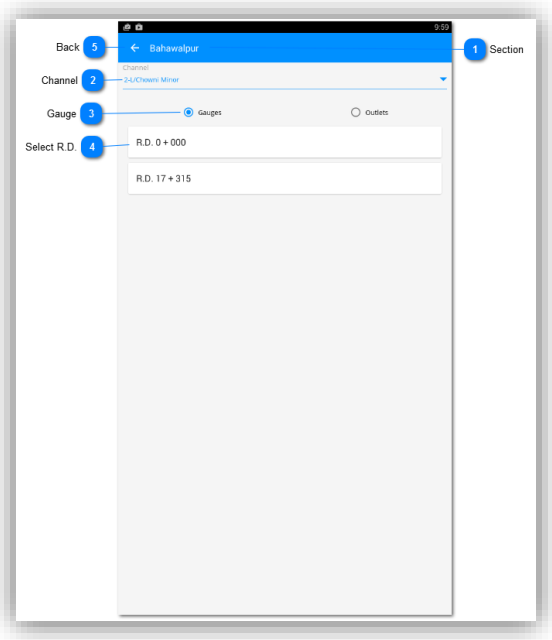
14. Gauge Inspection by ADM



Through this screen gauge reader selects the channels against which he wants to enter the gauge reading

1

Section

Bahawalpur

It is populated by the Application as user logs in and selects daily data icon from menu

2

Channel

2-L/Chowni Minor

Tap the field to select the required channel.

3

R.D.

R.D. 0 + 000

R.D. 17 + 315

Application populates the respective R.Ds existing on the selected channel, the ones that have been assigned to gauge reader.

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4 Add icon

Click on the icon
Application displays a new screen through which user can add gauge reading.

5 Back

- Click on <Back> Button
- Application redirects the user to main screen.

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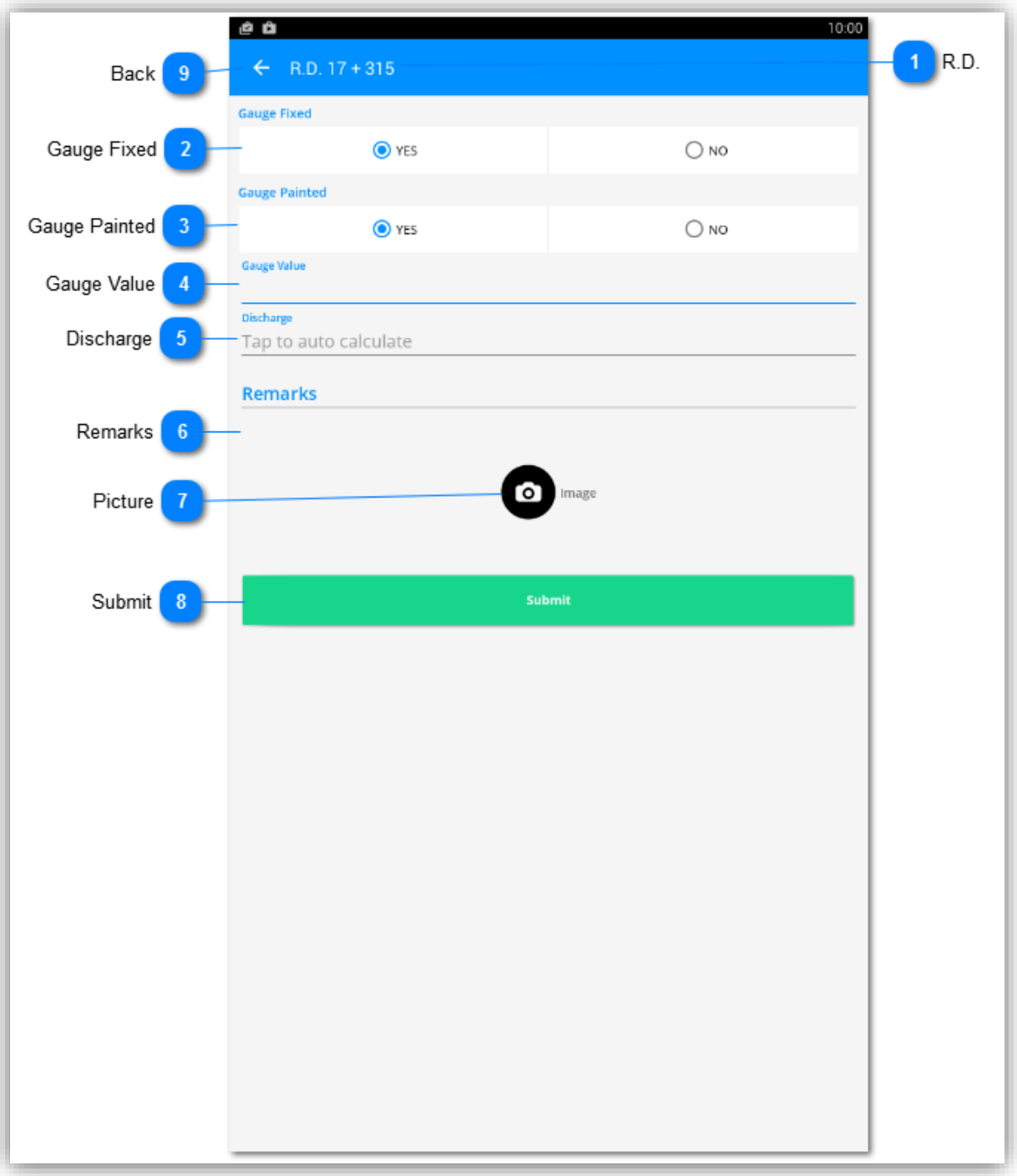
15. Gauge Details



Through this screen user (Gauge Reader) is able to add gauge reading data. If Application time is between 12:01 am to 12:00 pm; the entered record is treated as morning record else it is treated as evening record. Application has the provision to allow the user to edit the record but with the condition that: Edit Icon is only visible for 2 hours. However, edit can only be applicable before 12:00 pm (for morning) and before 12:00 a.m. (for evening)

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1

R.D.

Application displays R.D once user gets redirected to gauge reading screen.

2

Gauge Fixed

Tap on Yes/No option button to select whether gauge is fixed or not.

3

Gauge Painted

Tap on Yes/No option button to select whether gauge is fixed or not.

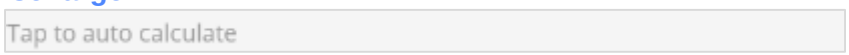
4

Gauge Value

Enter the value in the ‘Gauge Value’ field
It is a mandatory field in order to save the record

5

Discharge



- Tap on the field
- Application auto calculates the discharge on the basis of any of the following formulas
- For Head and Critical Gauge Discharges, where gauge is at bed level Discharge can be calculated using equation : Q = K*d^n where d is value of gauge
- For Discharge at Head and Critical Gauges, where gauge is at crest level Discharge can be calculated using equation: Q = C*B*H ^ 3/2 where h is value of gauge.
- For Tail (Where no channel off-takes from Tail) Tail Discharge = Authorized Tail Discharge

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x (Tail Gauge / Authorized Tail Gauge)^1.5

- For Tails (where 'n' channels off-takes from Tail) Tail Discharge = Sum of Head Discharge of 'n' off-takes from Tail
- Application should verify that Value of Discharge cannot be more than 115 percent of Design Discharge but Entry is allowed with a message 'Discharge on the given Gauge is Excessive'
- If Discharge Table parameters against the respective gauge are not available, Application shows the message ' Discharge Table Parameter are not present hence Discharge cannot be calculated'

6

Remarks

Enter the remarks in the field

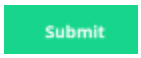
7

Picture

- Tap on the image icon
- Camera is being displayed
- Click the picture
- Click on Save button

8

Submit



- Click on <Submit> button
- Application saves the record successfully and displays a message " Record saved successfully"
- Application displays an error message if any of the mandatory fields has not been filled.
- Application checks that if Connectivity is not available, Application convert the values into an SMS format (Gauge Fixed, Gauge Painted, Channel Code, Gauge Code, Gauge Value and picture coordinates etc.) and send it via mobile network connectivity

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9

Back

- Click on <Back> Button
- Application redirects the user to previous screen.

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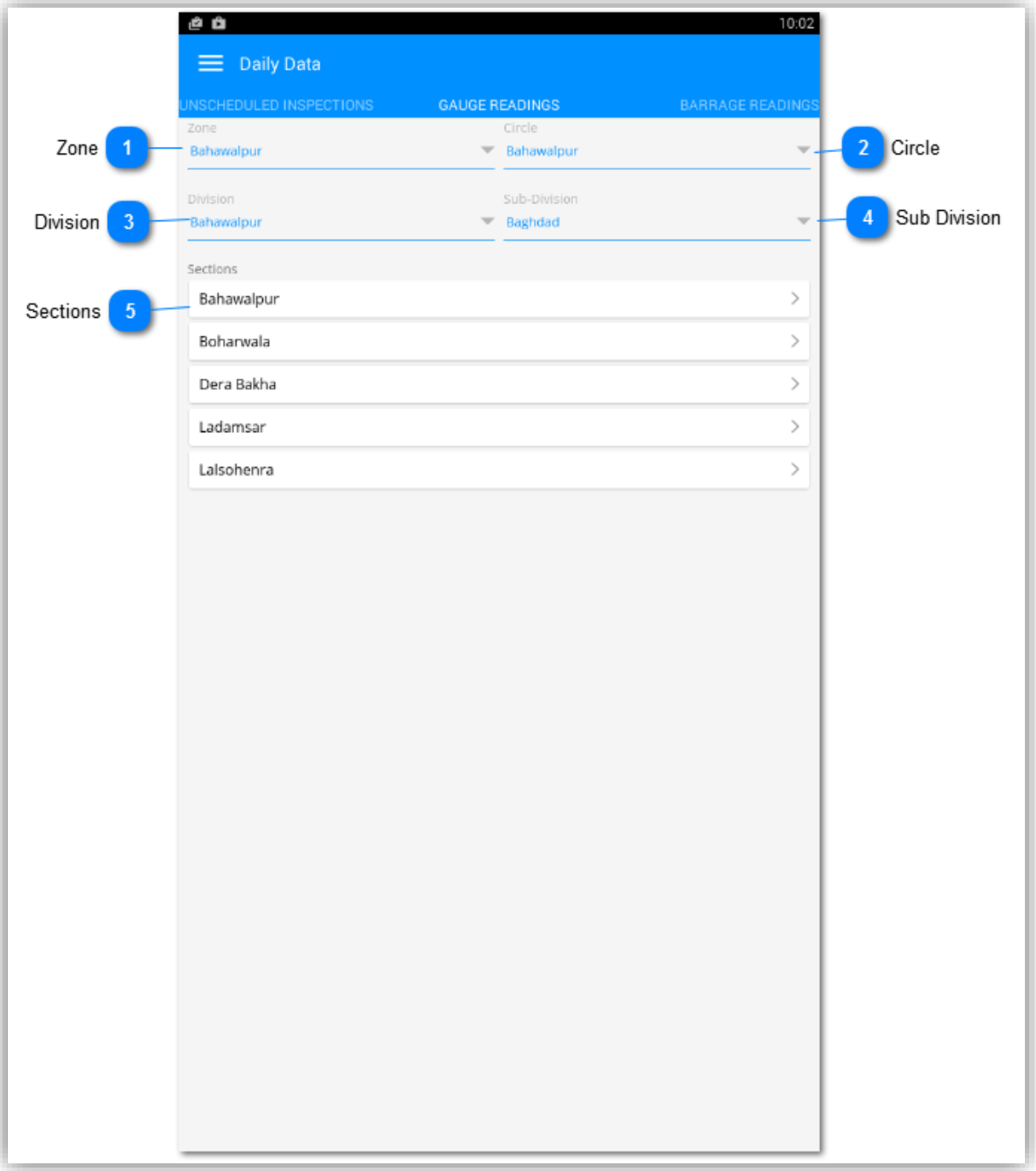
16. Gauge Reading



Through this screen user (XEN, SDO) has to select channels on the basis of locations they have been assigned. The location assigned to users will be populated in the respective fields based on designations assigned to them and user to select the required sub levels in order to enter the gauge reading

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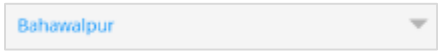
1

Zone



Auto populated from data base

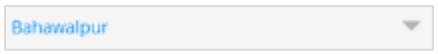
2

Circle

Auto populated from data base

3

Division



Auto populated from data base

4

Sub Division

Auto populated from data base.
In case of XEN, a list of subdivisions is displayed amongst which user needs to select the required sub division

5

Sections

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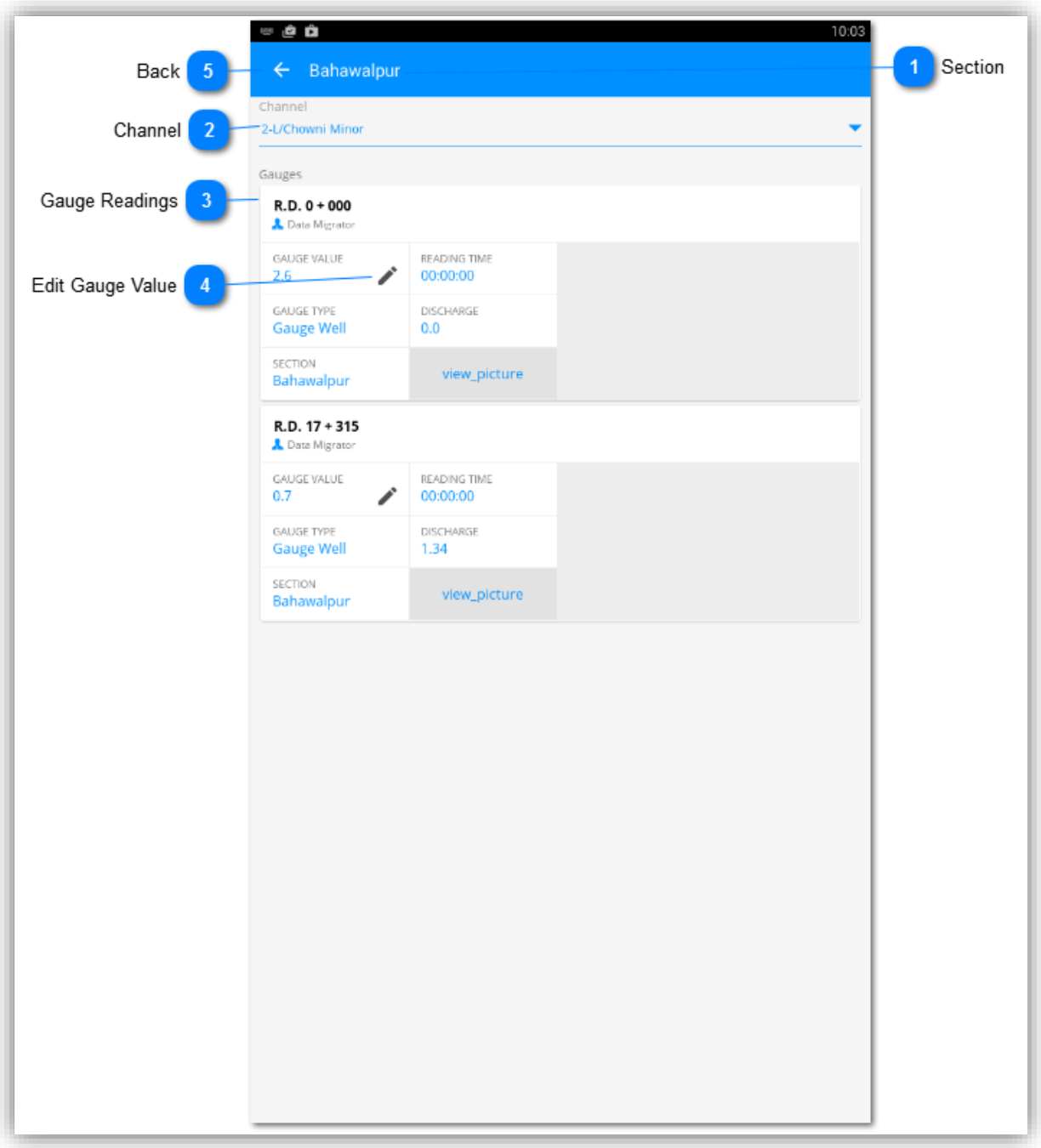
Relevant sections are displayed by the Application.

Tap the respective section

Application displays the detailed screen containing channels of specific section

16.1 Readings



Gauge Reading can be edited by user (SDO, XEN) through this screen. All the R.D`s existing on the channel within a specific section are displayed

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1

Section

Bahawalpur

Auto Populated from data base

2

Channel

Select the relevant channel from the list

3

Gauge Readings

Auto Populated from Database

4

Edit Gauge Value

Click on the icon to edit the value

5

Back

- Click on <Back> Button
- Application redirects the user to previous screen.

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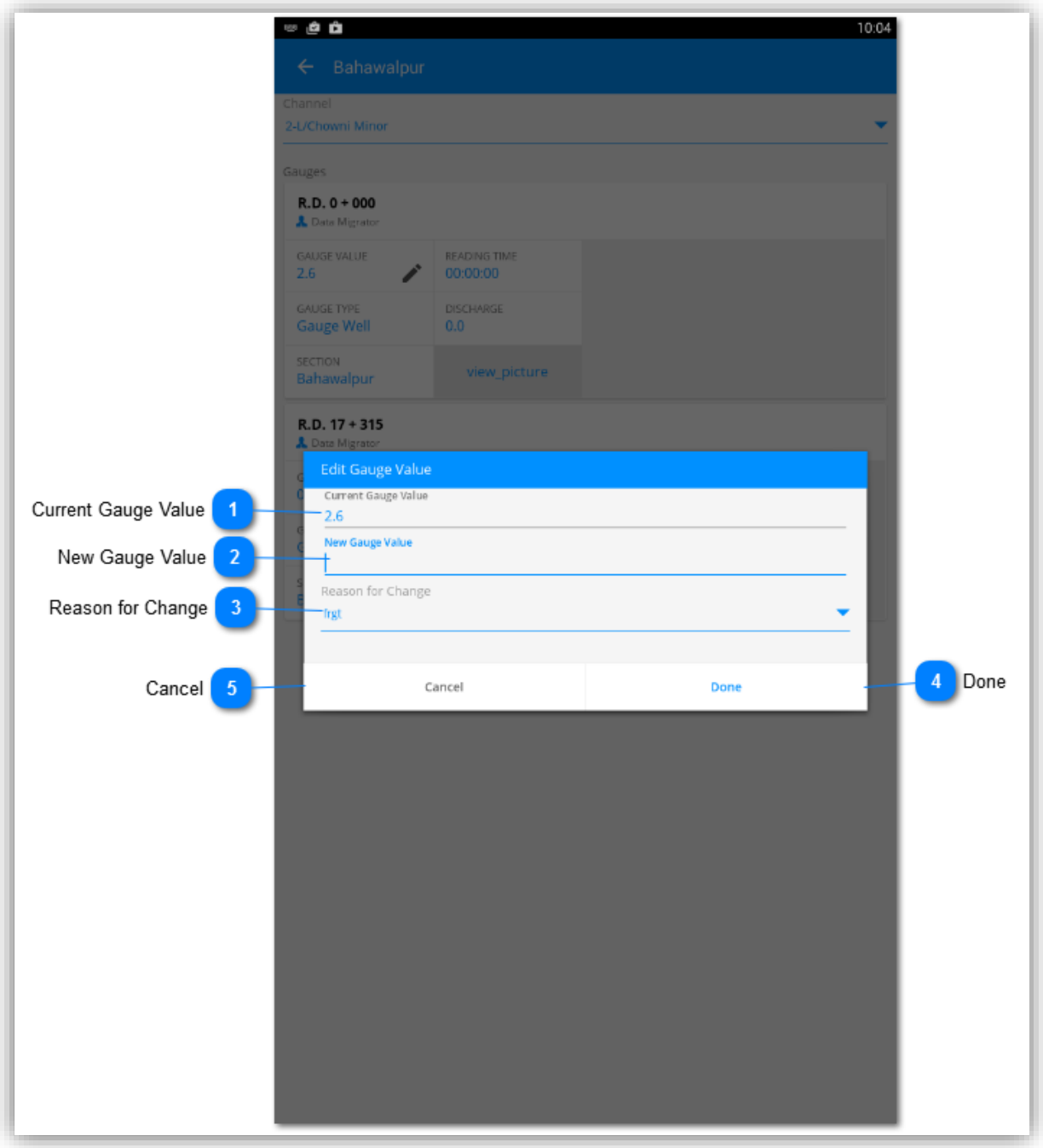
16.2 Edit Gauge Value



1 Current Gauge Value

2.6

The latest value is auto populated form data base

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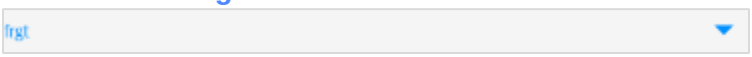
2

New Gauge Value

Enter the new value
It is a mandatory field to save the record

3

Reason for Change



Select the reason for change
It is a mandatory field to save the record

4

Done

Tap <Done> button
Application should check that if any mandatory field is missing then it should display a prompt message else it should save the record successfully
Connectivity is not available, Application convert the values into an SMS format (Channel Code, Gauge Code, Gauge Value etc.) and send it via mobile network connection.

5

Cancel

Tap <Cancel> button
Application redirects the user to previous screen

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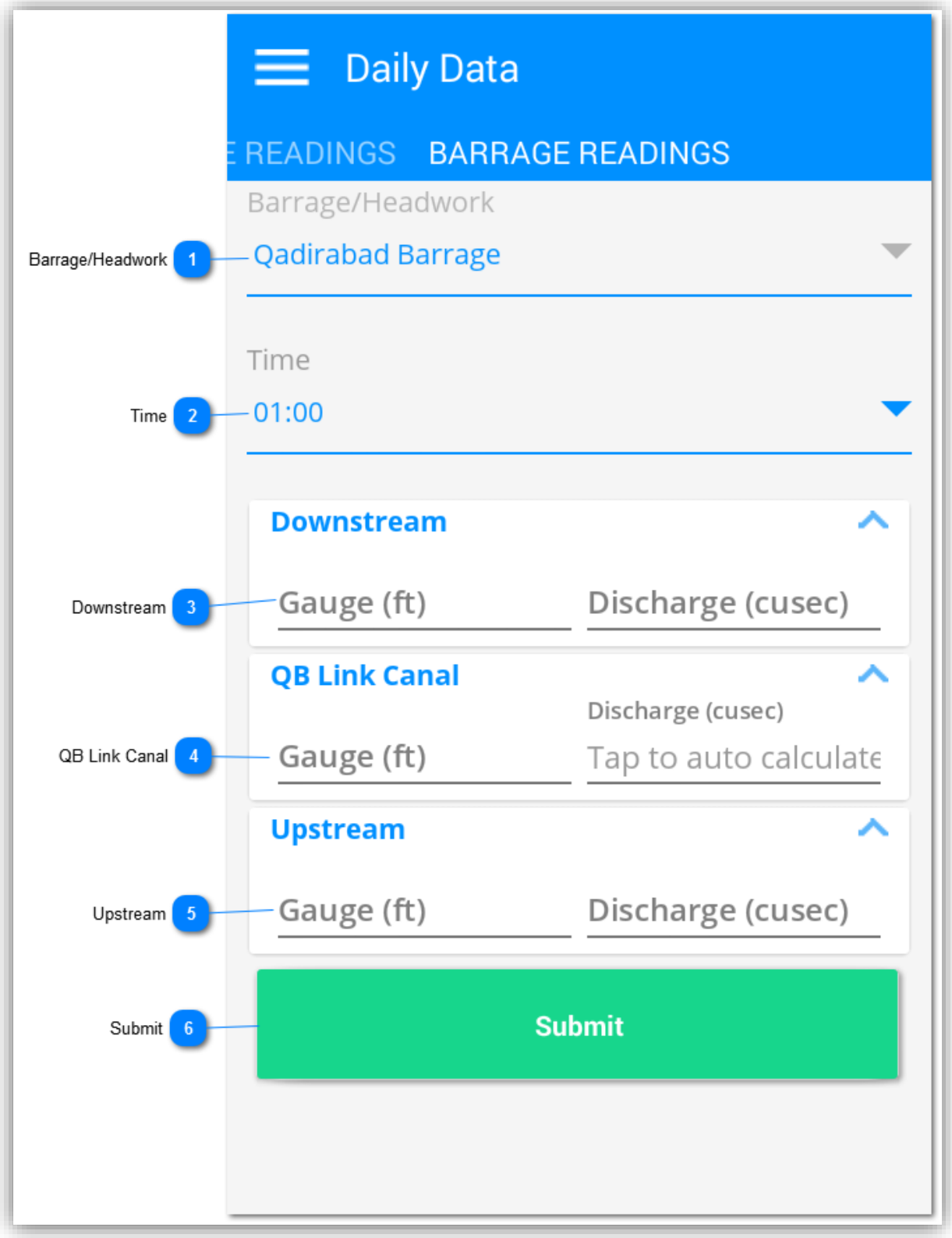
17. Barrage Readings



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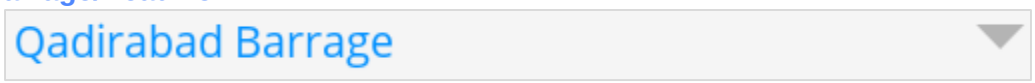
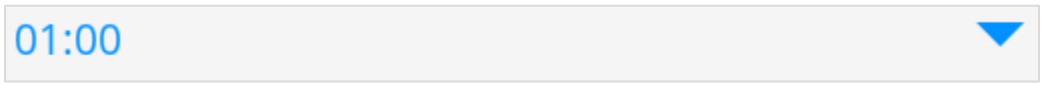
Through this screen user (SDO, XEN and Gauge Reader) add or edit Headwork/Barrage reading.
Application displays all the channels for whose respective barrage/headwork is parent

1 **Barrage/Headwork**



Select the required Barrage

2 **Time**



Select the time from the dropdown

Hour needs to be selected for hourly, 3 hourly, and 6 hourly data; for Twice-a-Day value, time is calculated by the Application as per rules valid for canal daily operation data (morning and evening readings). In that case, Time field will be disabled

3 **Downstream**

Enter the downstream gauge and discharge of barrage/headwork
It is a mandatory field to save the record

4 **QB Link Canal**

- Enter the gauge value of channel
- Tap the discharge field to view the calculated discharge
- Gauge is a mandatory field to save the record
- For Head Discharge, where gauge is at bed level Discharge can be calculated using equation : Q = K * d^n where d is value of gauge
- For Head Discharge, where gauge is at crest level Discharge can be calculated using equation: Q = C*B*H ^ 3/2 where h is value of gauge

5 **Upstream**

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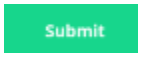
Enter the upstream gauge and discharge of barrage/headwork
It is a mandatory field to save the record
Upstream discharge is calculated by the formula
Upstream Discharge = Down Stream Discharge + (Sum of all Canal Withdrawals)

6

Submit



Click on <Submit> button
Application should check that if mandatory field has not been entered then Application should display a prompt message else it should save the record successfully.
Connectivity is not available, Application will convert the values into an SMS format (Up Stream Discharge, Down Stream Discharge, Off Take Gauges etc.) and send it via mobile network connection

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