Neptune® 360™
Import and Export Processes

Version 1.4

Neptune® 360™
Import and Export Processes

Version 1.4

Copyright

Trademarks Used in This Manual

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the software.

Neptune® 360™ Import and Export Processes v1.4
Literature No. IEP Neptune 360 02.22

Neptune Technology Group Inc.
1600 Alabama Highway 229
Tallassee, AL 36078
Tel: (800) 633-8754
Fax: (334) 263-7293

Contents

Figures

This page intentionally left blank.

Tables

This page intentionally left blank.

Chapter 1: Neptune® 360™ File Layout v1.4

This document provides information on the Neptune® 360™ file layout, required and optional fields for developing the interface to the Customer Information System (CIS) Utility Billing (UB) system. It also outlines the process to set up autobilling at a utility.

Default Record Layout

The Neptune 360 file layout is largely the same as the N_SIGHT® v4 file layout; however, changes have been made to specific fields within some record types, and some record types are not supported by Neptune 360. The layout consists of one layout used for both importing and exporting data. The data is broken down into record types with the most meaningful data contained at the beginning of the record. The following pages are a summary of all required and optional fields.

Note that a Neptune 360 file may not import into N_SIGHT® PLUS.

If the utility sends a field value in their import file, unless Neptune 360 changes it as part of its normal activities, the same field value will be returned in the export file.

Table 1 – Legend for Neptune® 360™ Record Layout

Parameter	Description
Column	Name of the column in the record.
Use	Indicator for the use of this record: required (Req) or optional (Opt). Fields marked optional must contain blanks in the file if not populated with data. Fields marked required that also have handheld (HH) as a Source should contain blanks in an import file.
Source	Indicates the system that populates data in the field: handheld (HH), Customer Information system (CIS) utility billing (UB) system vendor, or Neptune 360 host software (HS).
Offset	Position of the field in the record.
Length	Character length of the field.
Type	Field type: can be numeric (NUM), alphanumeric (A/N), or Boolean (BOO). Boolean fields are case sensitive and must be either "Y" or "N".
Comment	Additional notes concerning the field and valid layout. Quotation marks indicate the only acceptable data for the field.

Blanks have the same meaning as spaces and can be used interchangeably throughout this document.

Record Type Hierarchy

The following tables represent the layout for the record type hierarchy used in Neptune 360 v6 record layout.

Table 2 – Record Type Hierarchy - Required

Record Type	Name	Parent Record Type	Comment
Required			
Company Header	COMHD	File	Indicates start of company data. Requires one per file.
Route Header	RTEHD	Company Header	Indicates start of route. One or more per Company Header record.
Premises Detail	PRMDT	Route Header	Requires one per address.
Alternate Premises Detail	PRMD2	Route Header	This record can be used instead of the Premises Detail if using all of the address fields (City, State, Zip, Email). If using the Alternate Premises Detail, all premises in the file must use that record type. Requires one per address.
Meter Detail	MTRDT	Premises Detail	Requires one per unique meter.
Reading Detail	RDGDT	Meter Detail	Requires one per register reading.
Route Trailer	RTETR	Route Header	Indicates end of route. One per Route Header record.
Company Trailer	COMTR	Company Header	Indicates end of routes for company.
Optional			
Premises Notes	PRMNT	Premises Detail	If used, one per Premises Detail Record or Alternate Premises Detail record.
Export File Only			
Order Status	ORDST	Meter Detail	One per Meter Detail Record.

Sample Record Layouts

The following tables illustrate sample record layouts for import and export files.

One Company / One Route with Multiple Premises - Typical

Minimally, a file contains one company with one route. The Company Header record is always the first record in a file, and the Company Trailer record is always the last record in a file. Each Route Header record must have an associated Route Trailer record. A route contains one or more Premises Detail records along with its child record types.

Table 3 – One Company / One Route with Multiple Premises - Typical

COMHD				
	RTEHD			
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
	RTETR			
COMTR				

Multiple Meters per Premises or Compound Meters per Premises - Standard

When a single premises has multiple meters or a single compound meter, the preferred, standard record layout is to have one Premises Detail record followed by a Meter Detail and Reading Detail record for each meter at the premises or for each side of a compound meter. In the case of a compound meter, the Meter Detail records associated with the Premises Detail record can have identical meter numbers, but something in the meter record must be unique (Read Sequence, Meter Size, Meter Key) and each must have a unique Collection ID in its Reading Detail record.

In the table below, the first premises has two independent meters represented by MTRDT^{X} and MTRDT^{Y}. The second premises has a single compound meter represented by the duplicate MTRDT^{Z} records.

Table 4 – Multiple Meters or Compound Meter per Premises - Standard

COMHD				
	RTEHD			
		PRMDT / PRMD2		
			MTRDT^{X}	
				RDGDT
			MTRDT^{Y}	
				RDGDT
		PRMDT / PRMD2		
			MTRDT^{Z}	
				RDGDT
			MTRDT^{Z}	
				RDGDT
	RTETR			
COMTR				

Multiple Meters per Premises or Compound Meter per Premises - Alternate

An alternate record layout for multiple meters or a single compound meter at a single premises is shown in the table below. It provides the same data as the prior standard record layout. The first premises has a Premises Detail (PRMDT^{A}) record with one Meter Detail (MTRDT^{X}) record and Reading Detail (RDGDT) record, followed by a duplicate Premises Detail (PRMDT^{A}) with the Meter Detail (MTRDT^{Y}) record and Reading Detail (RDGDT) record for the other independent meter at the same premises.

The second premises has a single compound meter. The Meter Detail records associated with each of the two Premises Detail (PRMDT^{B}) records can have identical meter numbers (MTRDT^{Z}), but something in the meter record must be unique (Read Sequence, Meter Size, Meter Key) and each must have a unique Collection ID in its Reading Detail (RDGDT) record.

Table 5 – Multiple Meters per Premises or Compound Meter per Premises - Alternate

COMHD				
	RTEHD			
		PRMDT / PRMD2^{A}		
			MTRDT^{X}	
				RDGDT
		PRMDT / PRMD2^{A}		
			MTRDT^{Y}	
				RDGDT
		PRMDT / PRMD2^{B}		
			MTRDT^{Z}	
				RDGDT
		PRMDT / PRMD2^{B}		
			MTRDT^{Z}	
				RDGDT
	RTETR			
COMTR				

One Company with Multiple Routes

Each route within a company has its own Route Header and Route Trailer records

Table 6 – One Company with Multiple Routes

COMHD				
	RTEHD			
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
	RTETR			
	RTEHD			
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
		PRMDT / PRMD2		
			MTRDT	
				RDGDT
	RTETR			
COMTR				

Using Premises Notes

The Premises Notes record allows more information to be communicated to a meter reader using Neptune 360 Mobile. If used, a Premises Notes record follows the Premises Detail or Alternate Premises Detail to which it is associated and precedes the Meter Detail record.

Table 7 – Using Premises Notes

COMHD					
	RTEHD				
		PRMDT / PRMD2			
			PRMNT		
				MTRDT	
					RDGDT
		PRMDT / PRMD2			
			PRMNT		
				MTRDT	
					RDGDT
		PRMDT / PRMD2			
			PRMNT		
				MTRDT	
					RDGDT
		PRMDT / PRMD2			
			PRMNT		
				MTRDT	
					RDGDT
		PRMDT			
			PRMNT		
				MTRDT	
					RDGDT
	RTETR				
COMTR					

Export: One Company / One Route with Multiple Premises

The record layout for an export file is largely the same as the import file with a couple of notable exceptions. The Meter Detail record for each premises is followed by an Order Status record and Reading Detail record.

Table 8 – Export: One Company / One Route with Multiple Premisses

COMHD					
	RTEHD				
		PRMDT / PRMD2			
			MTRDT		
				ORDST	
					RDGDT
		PRMDT / PRMD2			
			MTRDT		
				ORDST	
					RDGDT
	RTETR				
COMTR					

There is no explicit sorting of records on export from Neptune 360. Ordering may not be the same as on import.

Export: Premises with Multiple Meters - Standard

For a single premises with multiple meters, this is the standard record layout that is used for export. As with the previous export example, each Meter Detail record is followed by an Order Status record and Reading Detail record.

Table 9 – Export: Premises with Multiple Meters - Standard

COMHD					
	RTEHD				
		PRMDT / PRMD2			
			MTRDT		
				ORDST	
					RDGDT
			MTRDT		
				ORDST	
					RDGDT
		PRMDT / PRMD2			
			MTRDT		
				ORDST	
					RDGDT
			MTRDT		
				ORDST	
					RDGDT
	RTETR				
COMTR					

Export: Premises with Multiple Meters - Alternate

This alternate record layout, which provides the same data as the standard record layout, is used for export when duplicate Premises Detail records are present.

Table 10 – Export: Premises with Multiple Meters - Alternate

COMHD					
	RTEHD				
		PRMDT /PRMD2[A]			
			MTRDT		
				ORDST	
					RDGDT
		PRMDT / PRMD2 [A]			
			MTRDT		
				ORDST	
					RDGDT
		PRMDT / PRMD2[B]			
			MTRDT		
				ORDST	
					RDGDT
		PRMDT / PRMD2[B]			
			MTRDT		
				ORDST	
					RDGDT
	RTETR				
COMTR					

Record Layouts

This section provides information on the various record layouts Neptune 360 uses.

Header Layouts

The following tables represent the Neptune 360 record layouts.

For import files, optional fields that have "UB" as a Source must contain blanks (spaces), if not populated with data. Required or optional fields that have "HH" as a Source should contain blanks (spaces).

Company Header

Table 11 – Company Header Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	COMHD.
Company Code	Req	UB	6– 9	4	A / N	
Create Date	Req	UB	10 – 17	8	NUM	YYYYMMDD.
Description	Opt	UB	18 – 57	40	A / N	
File Version	Req	UB	58	1	NUM	4 (or use 2). See "V2 File Layout" on page 43 for restrictions.
Service Orders	Opt	UB	59	1	BOO	Y or N or space.
CRLF	Req	UB	60 – 61	2		Carriage return, line feed.

Route Header

Table 12 – Route Header Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	RTEHD.
Office	Req	UB	6 – 9	4	A / N	
Cycle	Req	UB	10 – 13	4	A / N	
Route	Req	UB	14 – 23	10	A / N	
Read Date	Opt	UB	24 – 31	8	NUM	YYYYMMDD; 00000000 if not used. May be overwritten on export if configured in Neptune 360.
Deactivate Date	Opt	UB	32 – 39	8	NUM	YYYYMMDD; 00000000 if not used. May be overwritten on export if configured in Neptune 360.
Route Message	Opt	UB	40 – 119	80	A / N	
CRLF	Req	UB	120 – 121	2		Carriage return, line feed.

The Route ID in Neptune 360 is a combination of the Company Code, Office, Cycle, and Route fields.

Detail Record Layouts

This section provides the detail record layout for a premises.

Premises Detail Record Layout

Table 13 – Premises Detail Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	PRMDT.
Address 1	Opt	UB	6 – 31	26	A / N	Key field used to search and display customer information. *Highly recommed providing this information for best user experience in Neptune 360 and Neptune 360 Mobile.*
Address 2	Opt	UB	32 – 57	26	A / N	
Customer Name	Opt	UB	58 – 83	26	A / N	Key field used to search and display customer information. *Highly recommed providing this information for best user experience in Neptune 360 and Neptune 360 Mobile.*
Premises Key	Req	UB	84 – 103	20	A / N	Uniquely identifies a premises. Should always remain the same for that premises.
Account Number	Req	UB	104 – 123	20	A / N	
Account Status	Req	UB	124 – 127	4	A / N	Code indicating the current status of each account. These codes refer to one of four account status types: • ACTI – Active. • INAC – Inactive. • AWZ – Active Warn on Zero Usage. • IWU – Inactive Warn on Usage. The status code must be all uppercase.
Premises Custom 1	Opt	UB	128 – 153	26	A / N	
Premises Custom 2	Opt	UB	154 – 179	26	A / N	
Utility Pass Through	Opt	UB	180 – 307	128	A / N	Any utility – defined information.
CRLF	Req	UB	308 – 309	2		Carriage return, line feed.

Alternate Premises Detail Record Layout

Table 14 – Alternate Premises Detail Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	PRMD2.
Premises Key	Req	UB	6 – 25	20	A / N	Uniquely identifies a premises. Should always remain the same for that premises.
Customer Name 1	Opt	UB	26 – 51	26	A / N	Key field used to search and display customer information. *Highly recommend providing this for best user experience in Neptune 360 and Neptune 360 Mobile.*
Customer Name 2	Opt	UB	52 – 77	26	A / N	
Customer Contact	Opt	UB	78 – 103	26	A / N	
Account Number	Req	UB	104 – 123	20	A / N	
Account Status	Req	UB	124 – 127	4	A / N	Code indicating the current status of each account. These codes refer to one of four account status types: • ACTI – Active. • INAC – Inactive. • AWZ – Active Warn on Zero Usage. • IWU – Inactive Warn on Usage. Status code must be all uppercase.
Customer Address House Number	Opt	UB	128 – 134	7	A / N	
Customer Address HSuffix	Opt	UB	135 – 141	7	A / N	
Customer Address Unit	Opt	UB	142 – 156	15	A / N	

Table 14 – Alternate Premises Detail Record Layout (continued)

Column	Use	Source	Offset	Length	Type	Comment
Customer Address Predir	Opt	UB	157 – 158	2	A / N	
Customer Address Street	Opt	UB	159 – 183	25	A / N	Key field used to search and display customer information. *Highly recommend providing this for best user experience in Neptune 360 and Neptune 360 Mobile.*
Customer Address Suffix	Opt	UB	184 – 187	4	A / N	
Customer Address Postdir	Opt	UB	188 – 189	2	A / N	
Customer Address City	Opt	UB	190 – 215	26	A / N	
Customer Address State	Opt	UB	216 – 217	2	A / N	
Customer Address Zip	Opt	UB	218 – 228	11	A / N	Zip codes should be represented as 9 digits or as 5 digits followed by a dash and another 4 digits. Postal codes should follow ALPHA NUM ALPHA SP NUM ALPHA NUM.
Customer Phone 1	Opt	UB	229 – 238	10	A / N	
Customer Phone 2	Opt	UB	239 – 248	10	A / N	
Mail Name 1	Opt	UB	249 – 274	26	A / N	
Mail Name 2	Opt	UB	275 – 300	26	A / N	
Mail Address 1	Opt	UB	301 – 326	26	A / N	
Mail Address House Number	Opt	UB	327 – 333	7	A / N	
Mail Address HSuffix	Opt	UB	334 – 340	7	A / N	
Mail Address Unit	Opt	UB	341 – 355	15	A / N	
Mail Address Predir	Opt	UB	356 – 357	2	A / N	

Table 14 – Alternate Premises Detail Record Layout (continued)

Column	Use	Source	Offset	Length	Type	Comment
Mail Address Street	Opt	UB	358 – 382	25	A / N	
Mail Address Suffix	Opt	UB	383 – 386	4	A / N	
Mail Address Postdir	Opt	UB	387 – 388	2	A / N	
Mail City	Opt	UB	389 – 414	26	A / N	
Mail State	Opt	UB	415 – 416	2	A / N	
Mail Zip	Opt	UB	417 – 427	11	A / N	Zip codes should be represented as 9 digits or as 5 digits followed by a dash and another 4 digits. Postal codes should follow ALPHA NUM ALPHA SP NUM ALPHA NUM.
Mail Phone	Opt	UB	428 – 437	10	A / N	
Permit	Opt	UB	438	1	BOO	Y or N or blank.
Premises Custom 1	Opt	UB	439 – 464	26	A / N	
Premises Custom 2	Opt	UB	465 – 490	26	A / N	
Utility Pass Through	Opt	UB	491 – 618	128	A / N	Any utility-defined information.
Email Address	Opt	UB	619 – 668	50	A / N	
CRLF	Req	UB	669 – 670	2	A / N	Carriage return, line feed.

Premises Notes Record Layout - Optional

This section provides the record layouts for the Premises Notes.

Table 15 – Premises Notes Record Layout - Optional

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	PRMNT.
Hazard Code	Opt	UB	6 – 9	4	A / N	
Changed Hazard Code	Opt	HH	10 – 13	4	A / N	Changed value coming back from field.
Hazard Text	Opt	UB	14 – 39	26	A / N	Free form hazard text.
Changed Hazard Text	Opt	HH	40 – 65	26	A / N	
Special Instruction	Opt	UB	66 – 365	300	A / N	
Special Instruction 2	Opt	UB	366 – 665	300	A / N	
Changed Special Instruction	Opt	HH	666 – 965	300	A / N	
Changed Special Instruction 2	Opt	HH	966 – 1265	300	A / N	
Force Special Instruction	Opt	UB	1266	1	BOO	Y or N or blank.
Force Special Instruction 2	Opt	UB	1267	1	BOO	Y or N or blank.
Changed Force Special Instruction	Opt	HH	1268	1	BOO	Y or N or blank.
Changed Force Special Instruction 2	Opt	HH	1269	1	BOO	Y or N or blank.
CRLF	Req	UB	1270 – 1271	2		Carriage return, line feed.

Meter Detail Record Layout

This section provides the detail record layout for a meter.

Table 16 – Meter Detail Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	MTRDT.
Read Sequence	Req	UB	6 – 11	6	NUM	Right-justify, zero-fill.
Changed Read Sequence	Opt	HH	12 – 17	6	NUM	Changed value coming back from field.
Meter Key	Opt	UB	18 – 37	20	A / N	Additional unique identifier for the meter.
Meter Number	Req	UB	38 – 57	20	A / N	Meter serial number.
Changed Meter Number	Opt	HH	58 – 77	20	A / N	Actual meter number found in the field.
Meter Type	Opt*	UB	78 – 81	4	A / N	See field description for "Meter Type" on page 35 for more details and allowed values. *****_Required if using Trimble devices._
Changed Meter Type	Opt	HH	82 – 85	4	A / N	
Meter Size	Opt	UB	86 – 93	8	A / N	Used with Meter UOM to derive consumption multiplier. _See field description "Meter Size" on page 35 for more details and allowed values._
Changed Meter Size	Opt	HH	94 – 101	8	A / N	
Meter Manufacturer	Opt	UB	102 – 104	3	A / N	Three-character code for the meter manufacturer.
Changed Meter Manufacturer	Opt	HH	105 – 107	3	A / N	

Table 16 – Meter Detail Record Layout (continued)

Column	Use	Source	Offset	Length	Type	Comment
Meter UOM	Opt	UB	108 – 110	3	A / N	Unit of measure. Used with Meter Size to derive consumption multiplier. *See field description "Meter UOM" on page 36 for more details and allowed values.*
Changed Meter UOM	Opt	HH	111 – 113	3	A / N	
Meter Location	Opt	UB	114 – 117	4	A / N	
Changed Meter Location	Opt	HH	118 – 121	4	A / N	
Meter Location 2	Opt	UB	122 – 125	4	A / N	
Changed Meter Location 2	Opt	HH	126 – 129	4	A / N	
Read Instruction 1	Opt	UB	130 – 133	4	A / N	
Changed Read Instruction 1	Opt	HH	134 – 137	4	A / N	
Read Instruction 2	Opt	UB	138 – 141	4	A / N	
Changed Read Instruction 2	Opt	HH	142 – 145	4	A / N	
Seal Number	Opt	UB	146 – 155	10	A / N	
Changed Seal Number	Opt	HH	156 – 165	10	A / N	
Meter Install Date	Opt	UB	166 – 173	8	NUM	YYYYMMDD. Do not use zeros, leave blank if no date is provided.
Meter Custom 1	Opt	UB	174 – 199	26	A / N	
Meter Custom 2	Opt	UB	200 – 225	26	A / N	
Meter Condition Code 1	Opt	HH	226 – 229	4	A / N	
Meter Condition Code 2	Opt	HH	230 – 233	4	A / N	
Must Read Code	Opt	UB	234	1	BOO	Y or N or blank; must read if Y.
Collector Error	Opt	HH	235 – 244	10	A / N	Values it contains change based upon the collector type used.
Prev Read Date	Opt	UB	245 – 252	8	A / N	YYYYMMDD.
Constant / Multiplier	Opt	UB	253 – 258	6	A / N	Blank for water meters.
Changed Constant /	Opt	HH	259 – 264	6	A / N	

Table 16 – Meter Detail Record Layout (continued)

Column	Use	Source	Offset	Length	Type	Comment
Multiplier						
Xcoord	Opt	UB	265 – 276	12	A / N	Longitude.
Ycoord	Opt	UB	277 – 288	12	A / N	Latitude.
Xcoord2	Opt	UB	289 – 300	12	A / N	For future use.
Ycoord2	Opt	UB	301 – 312	12	A / N	For future use.
Xcoord3	Opt	UB	313 – 324	12	A / N	For future use.
Ycoord3	Opt	UB	325 – 336	12	A / N	For future use.
CRLF	Req	UB	337 – 338	2		Carriage return, line feed.

To improve accuracy of consumption calculations in Neptune 360, provide values for both the Meter Size and Meter UOM. If the Meter Size is not provided, the consumption multiplier used is based on a default of 5/8". If the Meter UOM is not provided, the consumption multiplier is based on the utility default.

Order Status Record Layout - Export File Only

This section provides the order status record layout.

Table 17 – Order Status Record Layout - Export File Only

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	HS	1 – 5	5	A / N	ORDST.
Completion Date	Opt	HH	6 – 13	8	NUM	YYYYMMDD.
Time Stamp	Opt	HH	14 – 19	6	NUM	HHMMSS.
Elapsed Time	Opt	HH	20 – 24	5	NUM	
Reader ID	Opt	HH	25 – 44	20	A / N	
Order Status	Opt	HH	45 – 46	2	A / N	• IN – Incomplete. • CO – Complete. • SK – Skipped.
Skip Code	Opt	HH	47 – 50	4	A / N	Only if order status = SK.
Comment Code 1	Opt	HH	51 – 54	4*	A / N	* *If using a Trimble device, the Comment Code is limited to 2 characters.*
Comment Code 2	Opt	HH	55 – 58	4*	A / N	* *If using a Trimble device, the Comment Code is limited to 2 characters.*
Note Back	Opt	HH	59 – 186	128	A / N	
CRLF	Req	HS	187 – 188	2		Carriage return, line feed.

Read Detail Record Layout

This section provides the read detail record layout.

Table 18 – Read Detail Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	RDGDT.
Read Type	Opt*	UB	6 – 9	4	A / N	See field description "Read Type" on page 39. **Required if using a Trimble device.*
Collection ID	Opt	UB	10 – 22	13	NUM	Indicates the unique endpoint or collection device serial number. IDs must be left-justified and space-filled to the end of the fiield. Use spaces if device provides no ID value.
For Future Use	Opt	UB	23 – 29	7	A / N	Must be blank.
Changed Collection ID	Opt	HH	30 – 49	20	NUM	
Dials	Req	UB	50 – 51	2	NUM	Range for dials is 01 to 08, inclusive.
Changed Dials	Opt	HH	52 – 53	2	NUM	Range for dials is 01 to 08, inclusive.
Decimals	Req	UB	54 – 55	2	NUM	Range for decimals is 00 to 08, inclusive.
Changed Decimals	Opt	HH	56 – 57	2	NUM	Range for decimals is 00 to 08, inclusive.
Read Direction	Opt	UB	58	1	A / N	R, L, C, or blank only.
Hi Limit	Req	UB	59 – 68	10	NUM	
Low Limit	Req	UB	69 – 78	10	NUM	
Prev Read	Req	UB	79 – 88	10	NUM	
Reading	Opt	HH	89 – 98	10	A / N	Formatted reading, using Dials value provided. See field description "Reading" on page 40 for more details.
Collector Reading	Opt	HH	99 – 108	10	A / N	Raw unadjusted reading from the endpoint.
Read Code	Opt	HH	109 – 110	2	A / N	

Table 18 – Read Detail Record Layout (continued)

Column	Use	Source	Offset	Length	Type	Comment
Re-entry Count	Opt	HH	111 – 112	2	NUM	
Days of No Flow	Opt	HH	113	1	NUM	Code indicating the range of days the endpoint recorded no flow within the past 35 days.
Reverse Flow	Opt	HH	114	1	NUM	Code indicating the category of reverse flow.
Days of Consumption	Opt	HH	115	1	NUM	Code indicating the range of days the endpoint recorded intermittent or continuous consumption within the past 35 days.
Consumption Flag	Opt	HH	116	1	NUM	Code indicating the category of consumption measured.
Previous Error Count	Opt	UB	117	1	NUM	
Current Error Count	Opt	HH	118	1	NUM	
Fatal Error	Opt	HH	119	1	NUM	
Non-Fatal Error / Flag	Opt	HH	120	1	NUM	
Voltage	Opt	HH	121 – 123	3	NUM	
MIU Type	Opt	HH	124 – 125	2	NUM	
AMR Read Type	Opt	HH	126 – 127	2	NUM	
High Power	Opt	HH	128	1	NUM	
R900 Format	Opt	HH	129 – 130	2	NUM	
Display Digits	Opt	HH	131	1	NUM	
Multiplier Applied	Opt	HH	132	1	NUM	
Gas No Flow	Opt	HH	133	1	NUM	
Current Gas Backflow Tamper	Opt	HH	134	1	NUM	
Current Gas Removal Tamper	Opt	HH	135	1	NUM	
Current Gas Magnetic Tamper	Opt	HH	136	1	NUM	
ERT Inversion Tamper	Opt	HH	137	1	NUM	

Table 18 – Read Detail Record Layout (continued)

Column	Use	Source	Offset	Length	Type	Comment
ERT Reverse Tamper	Opt	HH	138	1	NUM	
35-Day Gas Backflow Tamper	Opt	HH	139	1	NUM	
35-Day Gas Removal Tamper	Opt	HH	140	1	NUM	
35-Day Gas Magnetic Tamper	Opt	HH	141	1	NUM	
35-Day Program Flag	Opt	HH	142	1	NUM	
Reed Switch Failure Flag	Opt	HH	143	1	NUM	
Additional Flags	Opt	HH	144 – 212	69		For future use.
Register Manufacturer	Opt	UB	213 – 237	25	A / N	
Register Install Date	Opt	UB	238 - 245	8	NUM	YYYYMMDD. May be changed on export if manual updates are made within Neptune 360.
Register ID	Opt	UB	246 – 255	10	A / N	May be changed on export if manual updates are made within Neptune 360.
CRLF	Req	UB	256 – 257	2		Carriage return, line feed.

Route Trailer Record Layout

This section provides the route trailer record layout.

Table 19 – Route Trailer Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	RTETR.
Office	Opt	UB	6 – 9	4	A / N	Use the same value as in the corresponding Route Header Record.
Cycle	Req	UB	10 – 13	4	A / N	Use the same value as in the corresponding Route Header Record.
Route	Req	UB	14 – 23	10	A / N	Use the same value as in the corresponding Route Header Record.
# Premises	Opt	UB	24 – 29	6	A / N	Use blanks if total is unavailable.
# Meters	Opt	UB	30 – 35	6	A / N	Use blanks if total is unavailable.
CRLF	Req	UB	36 – 37	2		Carriage return, line feed.

Company Trailer Record Layout

This section provides the company trailer record layout.

Table 20 – Company Trailer Record Layout

Column	Use	Source	Offset	Length	Type	Comment
Record ID	Req	UB	1 – 5	5	A / N	COMTR.
Company Code	Req	UB	6 – 9	4	A / N	Use the same value as in the corresponding Company Header Record.
# Routes	Opt	UB	10 – 15	6	A / N	Use blanks if total is unavailable.
CRLF	Req	UB	16 – 17	2		Carriage return, line feed.

This page intentionally left blank.

Chapter 2: Field Descriptions

The following fields are defined in alphabetical order for your reference. Keep in mind the following:

- *Alphanumeric* means you can have a combination of numerical and alphabetical characters, which can include special characters or other punctuation marks.
- *Numeric* means the characters can be numbers only.
- *Boolean* (BOO) means the field data can only contain the uppercase characters Y or N. In some cases, a space may also be specified.

All fields (regardless of type) must contain the required number of characters as indicated by the field length. Unless otherwise indicated in a field's comments or description, field data should be left-justified and space-filled to the end of the field.

Table 21 – Field Descriptions

Field	Description
# Meters	An alphanumeric, six-character field that indicates the total number of meters.
# Premises	An alphanumeric, six-character field that indicates the total number of premisses.
# Routes	An alphanumeric, six-character field that indicates the total number of routes.
35-Day Gas Backflow Tamper	A numeric, one-digit code that indicates the tamper detection of gas backflow for R900®G.
35-Day Gas Magnetic Tamper	A numeric, one-digit code that indicates the tamper detection of magnetic tamper for R900G.
35-Day Gas Removal Tamper	A numeric, one-digit code that indicates the tamper detection for removal of R900G.
35-Day Leak	A numeric, one-digit code that indicates the range of days a potential leak was detected.
35-Day Program Flag	A numeric, one-digit code that indicates how many times the meter was programmed in the last 35 days.

Table 21 – Field Descriptions (continued)

Field	Description
Account Number	An alphanumeric, 20-character field that identifies the customer account number. If the account number is less than 20 characters, the unused space is blank. Although the CIS utility billing system master file can include the route number as part of the account number, the Neptune® 360™ system reserves a field in the route header record for the route number. Therefore, the account number field, which is in each meter record, needs to include only the account.
Account Status	An alphanumeric, four-character code that indicates the current status of each account. These codes refer to one of four account status types: • ACTI – Active. • AWZ – Active Warn on Zero Usage. • INAC – Inactive. • IWU – Inactive Warn on Usage. The account status must be all uppercase.
Additional Flags	A 69-character field for future growth.
Address 1	An alphanumeric, 26-character field containing the first line of the street name and assigned number of the residence.
Address 2	An alphanumeric, 26-character field for additional address information.
AMR Read Type	A numeric, two-digit field that indicates the AMR reading type, for example: • 00 – Itron ERT. • 01 – Advantage. • 02 – R900 ProRead. • 03 – R900 E-CODER. • 05 – R900 Gas.
Collection ID	A numeric, 13-character field that contains the unique identifier for the collection device (use spaces if the device provides no ID value). Indicates the endpoint serial number.
Collector Reading	An alphanumeric 10-character field that contains the raw unadjusted reading that comes from the endpoint.
Comment Code 1	An alphanumeric, four-character field that contains a note or comments concerning the reading. For use with Trimble devices, comment codes are limited to 2 characters.
Comment Code 2	A second alphanumeric, four-character field that contains a note or comments concerning the reading. For use with Trimble devices, comment codes are limited to 2 characters.

Table 21 – Field Descriptions (continued)

Field	Description
Company Code	An alphanumeric, four-character field that defines the entity governing the working regions and offices of a particular group of personnel. This also determines where cycles and routes are imported. The company must not change within a grouping of records in the import file.
Completion Date	A numeric, eight-digit field that represents the actual date of the reading. The date format is YYYYMMDD.
Constant / Multiplier	A multiplication factor that determines electric meter consumption. Neptune 360 does not use this field.
Consumption	An alphanumeric, six-character field that indicates the amount of water or gas billed during the last billing cycle or for the overdue amount in a collection type.
Consumption Flag	A numeric, one-digit field based on the total number of 15-minute periods of recorded consumption in the previous 24-hour period. Formerly known as Current Leak (E-CODER® registers only). • 0 – Normal – 0 to 49 15-minute periods of recorded consumption. • 1 – Intermittent Consumption – 50 to 95 15-minute periods of recorded consumption. • 2 – Continuous Consumption – all 96 15-minute periods showing consumption.
Create Date	A numeric, eight-digit field that represents the actual date the transfer file was created. The date format is YYYYMMDD.
CRLF	A carriage return, line feed. Each line should end with one of each of these in the last two positions.
Current Error Count	A numeric, one-digit field that indicates error / tamper count for R900G.
Current Gas Backflow Tamper	A numeric, one-digit field that indicates a tamper detection flag for no gas flow.
Current Gas Magnetic Tamper	A numeric, one-digit field that indicates a tamper detection flag for gas magnetic tamper.
Current Gas Removal Tamper	A numeric, one-digit field that indicates a tamper detection flag for gas removal.
Customer Address City	An alphanumeric, 26-character field that indicates the city in which the customer address is located.
Customer Address House Number	An alphanumeric, seven-character field that indicates the house number of the customer address.
Customer Address HSuffix	An alphanumeric, seven-character field that indicates the house number suffix of the customer address. For example, -A.

Table 21 – Field Descriptions (continued)

Field	Description
Customer Address Postdir	An alphanumeric, two-character field indicating direction: N, S, E, W, NE, NW, SE, SW.
Customer Address Predir	An alphanumeric, two-character field that indicates the direction: N, S, E, W, NE, NW, SE, SW.
Customer Address SSuffix	An alphanumeric, four-character field that indicates the street name suffix.
Customer Address State	An alphanumeric, two-character field that indicates the two-letter state abbreviation code for the customer address.
Customer Address Street	An alphanumeric, 25-character field that indicates the street of the customer address.
Customer Address Unit	An alphanumeric, 15-character field that indicates the unit for the customer address. For example: Apt. 1201 or Unit 7.
Customer Address Zip	An alphanumeric, 11-character field that indicates the postal zip code for the customer address.
Customer Contact	An alphanumeric, 26-character field that indicates the name of the contact person.
Customer Name	An alphanumeric, 26-character field that indicates the name of the customer.
Customer Phone 1	An alphanumeric, 10-character field that indicates the primary phone number for the customer.
Customer Phone 2	An alphanumeric, 10-character field that indicates an additional phone number of the customer.
Cycle	An alphanumeric, four-character field that identifies a group of routes in the meter reading process. These routes can be grouped according to the period in which they are to be billed, and then assigned a cycle number. When using letters, only uppercase are valid.
Date	A numeric, 10-character field that indicates the date the vehicle was used for meter reading. The valid format is YYYYMMDD.
Days of Consumption	(E-CODER registers only.) Code that indicates the range of days the endpoint recorded intermittent or continuous consumption within the past 35 days. Formerly known as Leak 35 - Days. • **0** – 0 days. • **1** – 1 to 2 days. • **2** – 3 to 7 days. • **3** – 8 to 14 days. • **4** – 15 to 21 days. • **5** – 22 to 34 days. • **6** – 35 days (intermittent or continuous consumption every day).

Table 21 – Field Descriptions (continued)

Field	Description
Days of No Flow	A numeric, one-character code that indicates the range of days the endpoint recorded no flow within the past 35 days. Formerly known as Water No Flow 35 - Days. (E-CODER registers only.) • 0 – 0 days (flow every day). • 1 – 1 to 2 days. • 2 – 3 to 7 days. • 3 – 8 to 14 days. • 4 – 15 to 21 days. • 5 – 22 to 34 days. • 6 – 35 days (no flow detected).
Deactivate Date	A numeric, eight-character field that indicates the date the route is to be deactivated in Neptune 360 after exporting.
Decimals	A numeric, two-digit field from 00 – 08 that determines the number of digits placed to the right of the decimal point on a meter reading. The value is generally set to a quantity greater than zero only when reading electric demand or electric probe meters.
Dependent WO	An alphanumeric, 20-character field reserved for future use to link related orders together.
Description	An alphanumeric, 40-character field that describes the company associated with the company code.

Table 21 – Field Descriptions (continued)

Field	Description
Dials	A numeric, two-digit field from 01 – 08 in the Reading Detail Record that indicates the number of digits expected for a meter reading. You can use this information to audit the entered reading and to control the reading field size displayed on the handheld. For readings with a decimal, the number of dials does not include the decimal even though a decimal appears in the Read field on the handheld display.
Display Digits	A numeric, one-digit field that indicates the number of digits in the main reading display. This is the actual digit count, not the raw value of the R900 reading. For example, six digits has a value of six not the raw reading value of two.
Elapsed Time	A numeric, five-digit field that represents the time in seconds that have elapsed since the reading was taken.
Email Address	An alphanumeric, 50-character field that indicates the email address used for the account, which is passed over to the Neptune 360 host software.
Entry Date	A numeric, eight-character field for the date an order was created or placed into the computer system. The format is YYYYMMDD.
ERT Inversion Tamper	A numeric, one-digit field that indicates a tamper detection flag for ERT inversion.
ERT Reverse Tamper	A numeric, one-digit field that indicates a tamper detection flag for ERT removal.
Fatal Error	A numeric, one-digit field that indicates an error for an R900.
File Version	An alphanumeric, one-character field that indicates the version of the Neptune 360 file layout used. The only valid values are **4** and **2**. See "V2 File Layout" on page 43
Force Special Instruction	A Boolean, one-character field to force the display of the Special Instruction field on a handheld device. If **Y,** the field displays notes as a hazard. If left blank, a value of **N** is assumed.
Force Special Instruction 2	A Boolean, one-character field to force the display of the Special Instruction **2** field on a handheld device. If **Y,** the field displays notes as a hazard. If left blank, a value of **N** is assumed.

Table 21 – Field Descriptions (continued)

Field	Description
Gas No Flow	A numeric, one-digit field that indicates a period for which there has been no gas flow: • **0:** < 7 Days. • **1**: 7– 14 Days. • **2:** > 14 Days. • **3:** Undefined.
Handheld ID	An alphanumeric, 20-character field supplied by the utility to identify the device used for data capture.
Hazard Code	An alphanumeric, four-character code which identifies the hazard or warning, such as a code for electric fences or warnings of potential hazards.
Hazard Text	An alphanumeric, 26-character field which provides free-form information that is returned from the reader. It can contain additional information such as, directions to help locate the meter, act as a reminder for electric fences, warnings of hazards.
High Limit	A numeric, 10-digit field that defines the highest meter reading that is expected to be captured at a particular account. This field can be either left or right-justified and the CIS assigns it.
High Power	A numeric, one-digit field used as high versus low power indicator for all R900 meters.
Last Time Read	A numeric, 14-digit field that indicates the time on the meter clock when previously probed. (YYYYMMDDHHMMSS).
Low Limit	A numeric, 10-digit field that defines the lowest meter reading that is expected to be captured at a particular account. This field can be either left or right-justified and the CIS assigns it.
Mail Address 1	An alphanumeric, 26-character field that describes the mailing address.
Mail Address House Number	An alphanumeric, seven-character field that indicates the house number of the mailing address.
Mail Address HSuffix	An alphanumeric, seven-character field that indicates the house number suffix of the mailing address.
Mail Address Postdir	An alphanumeric, two-character field that indicates the direction: N, S, E, W, NE, NW, SE, SW.
Mail Address Predir	An alphanumeric, two-character field that indicates the direction: N, S, E, W, NE, NW, SE, SW.
Mail Address SSuffix	An alphanumeric, four-character field that indicates the street name suffix.

Table 21 – Field Descriptions (continued)

Field	Description
Mail Address Street	An alphanumeric, 26-character field that indicates the street name of the mailing address.
Mail Address Unit	An alphanumeric, 15-character field that indicates the unit for the mailing address.
Mail City	An alphanumeric, 26-character field that indicates the city of the mailing address.
Mail Name	An alphanumeric, 26-character field that indicates the name of the mailing (billing) address. Different from the customer name.
Mail Phone	An alphanumeric, 10-character field that indicates the phone number for the mailing address.
Mail State	An alphanumeric, two-character field that indicates the code for the state for the mailing address.
Mail Zip	An alphanumeric, 11-character field that indicates the postal zip code for the mailing address.
Meter Condition Code 1	The first four-character, alphanumeric field that identifies the condition of the meter.
Meter Condition Code 2	The second four-character, alphanumeric field that identifies the condition of the meter.
Meter Custom 1	The first alphanumeric, 26-character field that represents the custom display for meter screens.
Meter Custom 2	The second alphanumeric, 26-character field that represents the custom display for meter screens.
Meter Install Date	A numeric, eight-digit field that represents the actual date the meter was installed. The date format is YYYYMMDD. Do not use zeros in this field.
Meter Key	A numeric, 20-character field that identifies a meter within a utility. The meter key should be a unique identifier that the CIS assigns and can be the same as the meter number.

Table 21 – Field Descriptions (continued)

Field	Description
Meter Location	An alphanumeric, four-character field that identifies where the meter or remote receptacle is located on a given property. Each code has a corresponding description. Examples of location codes are: • **BL** – Back left. • **base** – Basement. • **FtRt** – Front right.
Meter Manufacturer	An alphanumeric, three-character field that identifies the manufacturer of the meter.
Meter Number	An alphanumeric, 20-character field that identifies the meter. The meter number often consists of the meter serial number or a code which identifies the manufacturer. If there is no Collection ID associated with a meter, the meter number must be unique.
Meter Size	An alphanumeric, eight-character field that describes the size of the meter. Although any value can be specified, Neptune 360 recognizes the following values for meter size. This includes the trailing inch symbol (double quotes) for the purpose of calculating consumption: 5/8", 3/4", 1", 1-1/2", 2", 3", 4", 6", 8", 10", 12", 16", or 20". Meter Size is used with Meter UOM to derive the consumption multiplier according to Neptune's standard dial configuration. If not provided, a default of 5/8" is used. See Appendix A for a full list of recognized alternate values.
Meter Type	An alphanumeric, four-character field that indicates the method expected to read a given meter. Used in conjunction with Read Type. Meter T ype is optional; however, if Neptune 360 Handheld Support is set to YES, the Meter Type field is required, and a value must be specified. Although you can specify any value, Neptune 360 reserves the following values to indicate specific read methods: • **0001** or **ADVT** – Advantage probe. • **0002** or **R900** – R900 / radio. • **0004** or **MAN** – Manual / keyed.

Table 21 – Field Descriptions (continued)

Field	Description
Meter UOM	An alphanumeric, three-character field that identifies the unit of measure for the meter. Although any value can be specified, Neptune 360 only recognizes the following values for the meter unit of measure (UOM. • CF3 – Cubic feet. • CM3 or M3 – Cubic meters. • GAL – Gallons. • IPG – Imperial gallons. • LTR – Litres. Meter UOM is used in conjunction with Meter Size to derive the consumption multiplier according to Nepunte's standard dial configuration. If not provided, the utility's default value is used. See Appendix B for a full list of recognized alternate values.
MIU Type	A numeric, two-digit code that indicates the utility meter type: • 01 – Gas. • 02 – Water. • 03 – Other.
Multiplier Applied	A numeric, one-digit field for a flag that indicates if the multiplier of 10 is to be applied to the main reading to get the real engineering unit value.
Must Read Code	A Boolean, one-character field that indicates the meter must be read (Y) or should not be read (N).
New Tamper 1	A numeric, one-digit field that represents a value that, if changed on return to the CIS utility billing system, indicates inversion tamper on the meter.
No Flow Days	An alphanumeric, one-character E-CODER code that indicates a four (4) for no flow days, or consecutive days with zero consumption.
Non-Fatal Error / Flags	A numeric, one-digit field defined by the meter manufacturer to signal no error for the R900 electric or gas meter.
Notes Back	An alphanumeric, 128-character field that sends notes back to the CIS utility billing system.
Office	An alphanumeric, four-character field. The office field that defines the entity governing a working group of personnel. It also determines where cycles and routes are to be imported. The office must not change within a grouping of records in the import file.

Table 21 – Field Descriptions (continued)

Field	Description
Order Status	An alphanumeric, two-character field that indicates the status of the order: • IN – Incomplete. • CO – Complete. • SK – Skipped.
Permit	A Boolean, one-character field that must be Y or N to indicate a permit.
Premises Custom 1	An alphanumeric, 26-character area that contains the first set of custom display fields for the premises.
Premises Custom 2	An alphanumeric, 26-character area that contains the second set of custom display fields for the premises.
Premises Key	An alphanumeric, 20-character field that uniquely identifies the premises. Use the account number unless the CIS utility billing system vendor has a better key.
Prev Read	A numeric, 10-digit field assigned by the CIS utility billing system vendor. This field shows the meter reading for the previous billing period.
Prev Read Date	An alphanumeric, eight-character field assigned by the CIS utility billing system vendor. This field contains the month, day, and year that the previous reading was entered. Valid Format: YYYYMMDD.
Previous Error Count	A numeric, one-digit field that indicates the R900 Gas tamper. Use 8 to suppress tamper check.
R900 Format	A numeric, two-digit field that indicates the R900 reading format: • 0 – Binary. • 1 – BCD. • 2 – Data Stream (not used). • 3 – E-CODER. • 4 – MLOG.
Re-entry Count	A numeric, two-character field that indicates the number of different reads entered.
Read Code	An alphanumeric, two-character field that indicates the type of read: • AH – Admin High Fail. • AL – Admin Low Fail. • AR – Admin Read. • AU – Admin Inactive. • AZ – Admin Zero Use. • ER – External Read (Probe). • EF – External Failure (adds more for validation of radio and probe reads). • FC – Failure Read Compare.

Table 21 – Field Descriptions (continued)

Field	Description
	• KA – Keyed Alpha. • KH – Keyed High. • KI – Keyed Inactive. • KL – Keyed Low. • KN – Keyed, Negative Usage. • KR – Keyed Read. • KV – Keyed Verified. • KZ – Keyed Zero Consumption. • RA – Radio Alpha Characters (: : : : : :). • RH – Radio High Reading. • RI – Radio Inactive. • RL – Radio Low Reading. • RN – Radio Negative Consumption. • RR – Radio Read. • RT – Radio Tamper. • RV – Radio Verified. • RZ – Radio Zero Consumption.
Read Date	A numeric, eight-character field that represents the date the route is expected to be read. The date format is YYYYMMDD.
Read Direction	(This is not used in Neptune 360.) An alphanumeric, one-character field that designates the direction the meter reading is input into the handheld. This field can be one of the following: • R – Right. • L – Left. • C – Center. • Blank.
Read Instruction 1	An alphanumeric, four-character field that contains read instructions for the meter reader. Each code has a corresponding instruction code description. Certain codes can be designated as flash-and-beep or alert-and-hold to make the meter reader aware of the instruction attached to the meter. The system provides for two instruction codes per meter. Some examples include: • GK – Get key from neighbor. • LC – Low ceiling. • KOG – Keep off grass. These codes can be sent from the CIS utility billing system vendor or they can be created in Neptune 360. When using letters, only uppercase is valid.
Read Instruction 2	A second alphanumeric, four-character field for read instructions. See Read Instruction 1.

Table 21 – Field Descriptions (continued)

Field	Description
Read Sequence	A numeric, six-digit field, mandatory, right-justified, and zero-filled. This field, assigned by the CIS utility billing system, determines the order in which multiple meters at one account are to be read. All records are indexed based upon the combination of data in the Pg (Page) (priority 1 index) and the ReadSeq (priority 2 index) fields.
Read Type	An alphanumeric, four-character field that describes the type of read or measurement expected for an individual register. Used in conjunction with Meter Type the Read Type is optional. However, if using a Trimble device and Neptune 360 Handheld Support is set to YES, the Read Type field is required, and a value must be specified. Examples include: • WTR. • WAT. • HIGH. • LOW. • WATH. • WATL.
Reader ID	An alphanumeric, 20-character field that identifies the reader used. In Neptune 360, this can be the email address for a user or it can be the name of a handheld device.

Table 21 – Field Descriptions (continued)

Field	Description
Reading	An alphanumeric, 10-character field. This field is formatted where the reading is truncated to the right (according to the Dials value provided on import) and padded with 0's to the left.
Record ID	An alphanumeric, five-character field that defines the type of header or detail record. The utility cannot change record IDs set by Neptune 360.
Reed Switch Failure Flag	A numeric, one-digit code that indicates a reed switch for R900G. A reed switch is an electromagnetic switch used to control the flow of electricity in a circuit.
Register ID	An alphanumeric, 10-character field that indicates the unique register identifier.
Register Install Date	A numeric, eight-digit field that represents the actual date the register was installed. The date format is YYYYMMDD.
Register Manufacturer	An alphanumeric, 25-character field that identifies the register manufacturer.
Reverse Flow	A numeric, one-character field that indicates the level of any reverse flow event measured by a register within either the past 35-days or past 24-hours depending on register configuration. The water volumes that trigger values of 1 or 2 for Reverse Flow vary based on meter size and register UOM. Formerly known as Peak Backflow (E-CODER registers only). • 0 – No Reverse Flow indicated. • 1 – Minor Reverse Flow. • 2 – Major Reverse Flow.

Table 21 – Field Descriptions (continued)

Field	Description
Route	An alphanumeric, 10-character field (assigned by the billing system vendor) that identifies the route or book to which an account belongs. Any unused character positions to the right of this field must be defaulted to spaces. These must be left-justified, blank-filled in this field.
Route Message	An alphanumeric, 80-character field for free-form statements that are downloaded to the handheld for a particular route. The message is displayed on the handheld when the meter reader begins the route.
Seal Number	An alphanumeric, 10-character field that prompts the meter reader to verify the Seal ID. The billing system vendor can send this option or select through Neptune 360.
Skip Code	An alphanumeric, four-character field in the CS skip code table record. The Skip Code field contains a code the meter reader enters on the handheld to explain why a meter reading was not obtained at a particular account. Each code identifies a specific reason: • NOAC – No access (for example: SKNOAC). • DOG – Bad dog (for example: SKDOG). The skip code is displayed in the reading field on the handheld with a prefix of "SK" followed by the 1 to 4 character skip code.
Special Instruction 1	An alphanumeric, 300-character field that contains account instructions for the meter reader. Each code has a corresponding instruction code description. Certain codes can be designated as flash-and-beep or alert and hold to make the meter reader aware of the instruction attached to the meter. The system provides for two instruction codes per meter. Some examples include: • GK – Get key from neighbor. • LC – Low ceiling. • KOG – Keep off grass. The billing system vendor can send these codes created in Neptune 360. When using letters, only uppercase is valid.
Special Instruction 2	A second alphanumeric, 300-character field for special instructions. See Special Instruction 1.
Timestamp	A numeric, six-digit field that represents the time the meter reader read the account or the Neptune 360 host operator modified the reading. The timestamp format is HHMMSS.

Table 21 – Field Descriptions (continued)

Field	Description
Trouble Code Description	An alphanumeric, 20-character field in the CT trouble code table record that describes the corresponding trouble code. The description is sent from the CIS utility billing system vendor or created in Neptune 360.
Trouble Type	An alphanumeric, one-character field that (used only in the CT trouble code table record) indicates a particular trouble type for the corresponding trouble code. The trouble type is sent from the CIS utility billing system or sent through Neptune 360.
Utility Pass Through	An alphanumeric, 128-character field (the CIS assigns) that contains any utility-defined data (for example: account number). The Utility Pass Through field is limited to printable characters and no carriage return or line feed. This data is not transferred onto nor visible on a handheld device.
Voltage	A numeric, three-digit field that indicates the operating meter voltage.
Xcoord	A numeric, 12-character field that indicates the **longitude** (X coordinate). Coordinates must be in decimal format.
Ycoord	A numeric, 12-character field that indicates the **latitude** (Y coordinate). Coordinates must be in decimal format. Expressing coordinates as X coordinates and Y coordinates equates to longitude and latitude format. For coordinates within North America, X coordinates have a negative sign, and Y coordinates do not (always positive).

Chapter 3: Summary

This chapter provides a summary of the differences between N_SIGHT® v2, N_SIGHT® v4 and Neptune® 360™ file layouts.

V2 File Layout

The Neptune 360 file layout is similar to the N_SIGHT v2 file layout that is the predecessor to and a subset of N_SIGHT v4. When compared to N_SIGHT v4, the v2 file layout contains one less field / column at the end of the Alternate Premises Record and three fewer fields / columns at the end of the Read Detail Record. Accordingly, both records had shorter byte lengths in the v2 file layout.

The v2 file is a subset of the v4 file. The following table is a list of changes needed to make to the v4 file compatible with the v2.

Table 22 – Changes to Neptune® 360™ File Format Requirements to Support v2

Record Type	Change to Neptune 360 Requirement
Company Header	File version must be **2**.
Alternate Premises Record	Remove Email Address column.
Alternate Premises Record	Carriage return, line feed (CRLF) must be at offsets 619 – 620.
Alternate Premises Record	Total record length including CRLF must be 620 bytes.
Read Detail Record	Remove Register ID column.
Read Detail Record	Remove Register Install Date column.
Read Detail Record	Remove Register ID column.
Read Detail Record	Carriage return, line feed (CRLF) must be at offsets 213 – 214.
Read Detail Record	Total record length including CRLF must be 214 bytes.

All other Neptune 360 file layout requirements and validations described in this document apply to a v2 file.

V4 File Layout

Several record type and field-level differences exist between the N_SIGHT v4 and Neptune 360 file layouts that the following table summarizes.

Table 23 – Differences between N_SIGHT® v4 and Neptune® 360™ File Layouts

Record Type	Field Name	N_SIGHT v4	Neptune 360
Company Trailer	Record ID	Field use was optional.	Field use is required.
Company Header	N / A	Multiple companies allowed	Only one company per file is supported.
Meter Detail	Meter Number	Field was numeric.	Field is alphanumeric.
ERT Detail	N / A	Record type use was optional.	Record type not supported.
Vehicle Detail	N / A	Record type use was optional.	Record type not supported.

While Neptune 360 does support the import / export of the following hierarchy used to represent compound meters, there are limitations with its use.

- Limitation 1—The consumption multiplier is derived from the Meter Size and UOM in the Meter Detail record and there is only one Meter Detail record using this format. Since each side of a compound meter has different sizes and multipliers, consumption may not be accurate.
- Limitation 2—There must be a unique Meter Number + Collection ID combination. A manually read compound meter with this format and no Collection IDs populated is not supported.
- Limitation 3—There is only one Order Status record per Meter Detail record. To attain an Order Status of Complete, all reads for a compound meter with this format must be completed.

COMHD				
	RTEHD			
		PRMDT		
			MTRDT	
				RDGDT
				RDGDT
	RTETR			
COMTR				

Chapter 4: Autobilling via SFTP

This chapter defines the process to set up autobilling at a utility.

Enable Autobilling and Queuing

In standard system release the autobilling functionality is disabled. A system administrator configures the autobilling settings and file queuing functionality in Neptune® 360™ which then enables the SFTP features. You must contact Neptune to enable autobilling. In addition, you must limit the number of files that can be queued to a maximum of 10. The system default is 10.

You can request that a Neptune Utility Administrator be given permissions to set up autobilling for you.

The following table defines the autobilling and queuing settings.

Table 24 – Autobilling Settings

Settings	Description
General	
Enable Autobilling	Indicates whether autobilling is enabled or disabled.
Max Imports Queue	This setting is equal to the number of files being processed plus the number of files waiting to be processed. For example, 10 imports in the queue indicates one file is being processed and nine are in the queue. When autobilling is enabled, this setting defaults to 10, which is the maximum number of imports allowed in the queue. You can lower the limit.

The following image shows the Billing Automation Settings.

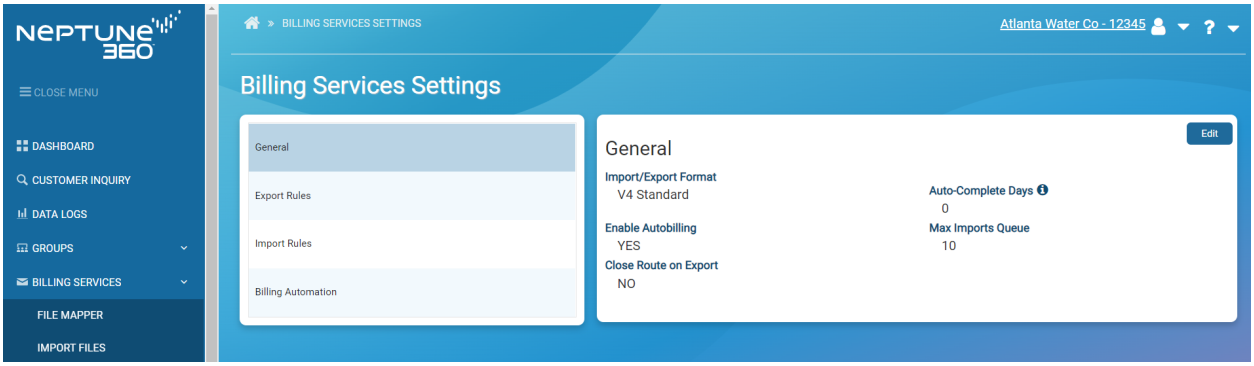


Figure 1 – Billing Services Settings

Setting Up an SFTP Site

This section provides the set up process for using autobilling with SFTP.

Billing Automation Settings for SFTP

The following table defines the autobilling settings for SFTP. You must select YES or NO for each setting option to enable and set up the autobilling function.

Table 25 – Autobilling Settings for SFTP

Settings	Description
Billing Automation / Import Automation	
Ignore Open Routes	Indicates whether the system Ignores active routes or closes active routes during an automated import.
SFTP Configuration	Indicates whether Neptune 360 configures SFTP for delivery of billing import logs and export files. This setting must be enabled for autobilling to function. When this option is enabled, you must enter an email address in the Email Errors To field. The following non-editable fields are also active when SFTP configuration is enabled. Neptune 360 Customer Support sets up these fields to share with utility system administrators: • SFTP Username. • SFTP Hostname. • SFTP Password.
Copy Import Error Logs to SFTP	When enabled, Neptune 360 copies and places any import error log onto the SFTP and provides a download link in the API response.
Copy Export to SFTP	When enabled, Neptune 360 copies and places any export onto the SFTP and provides a download link in the API response.
Email Errors To	Address to which Neptune 360 sends billing automation errors. This field is editable when you set SFTP Configuration to **Yes**.

The following image shows the options you select to set up autobilling via SFTP.

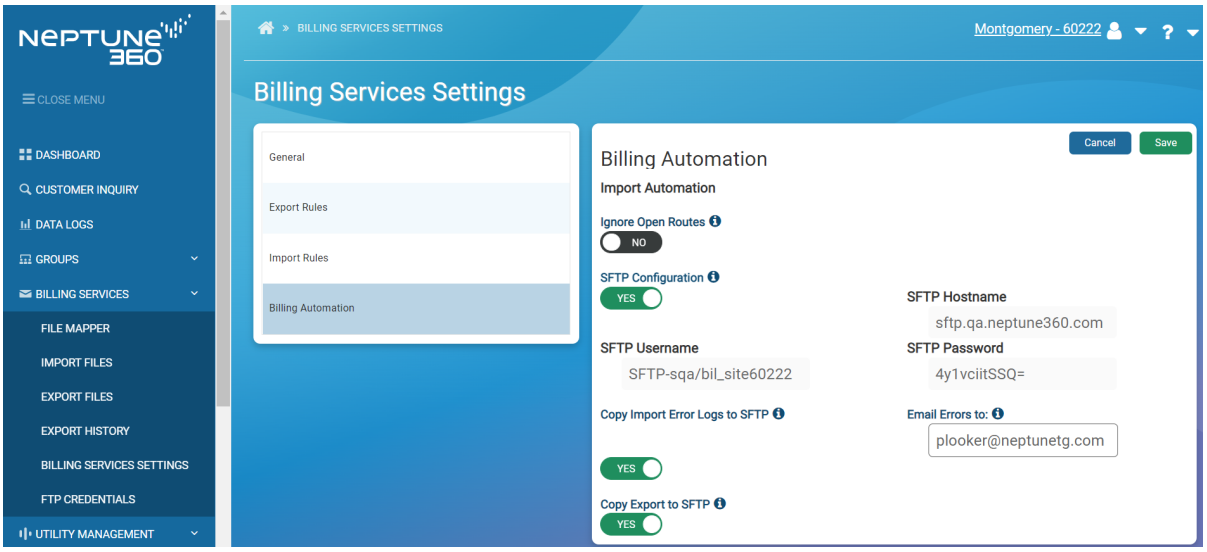


Figure 2 – Billing Automation Options

SFTP Self-Service Page

After you configure autobilling, Neptune 360 retains details of the Neptune 360 SFTP site in an SFTP Self Service page, which includes the following FTP access credentials:

- SFTP Hostname.
- SFTP Username.
- SFTP Password.

You can request these credentials from Neptune 360 Customer Support to share with utility system administrators. The following image shows the credentials.

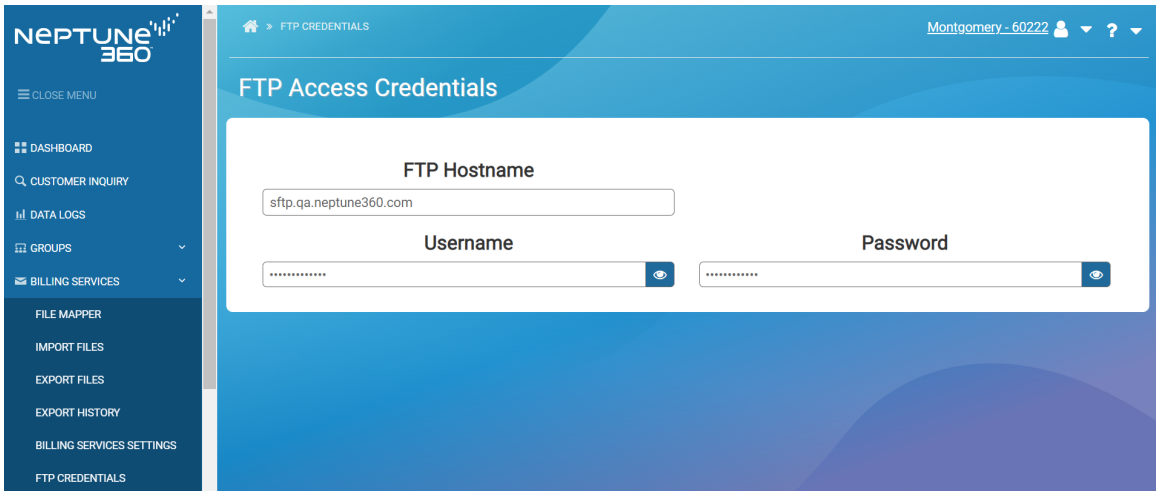


Figure 3 – FTP Access Credentials

The Username and Password are masked and you can open them to enable the information to send to a customer. You need these credentials to set up a connection to the Neptune 360 SFTP site using a Web client secure application like FileZilla. FileZilla is a utility for transferring files to or from a remote computer by the standard FTP (File Transfer Protocol) method. Neptune recommends FileZilla as it was used in the development of the autobilling feature.

Using FileZilla

FileZilla is a third-party free application you can download for transferring files. You can set up new a connection with the Neptune 360 SFTP site using the credentials for the Site Manager option.

1. Open FileZilla.
2. Click **File**, and then click **Site Manager**.

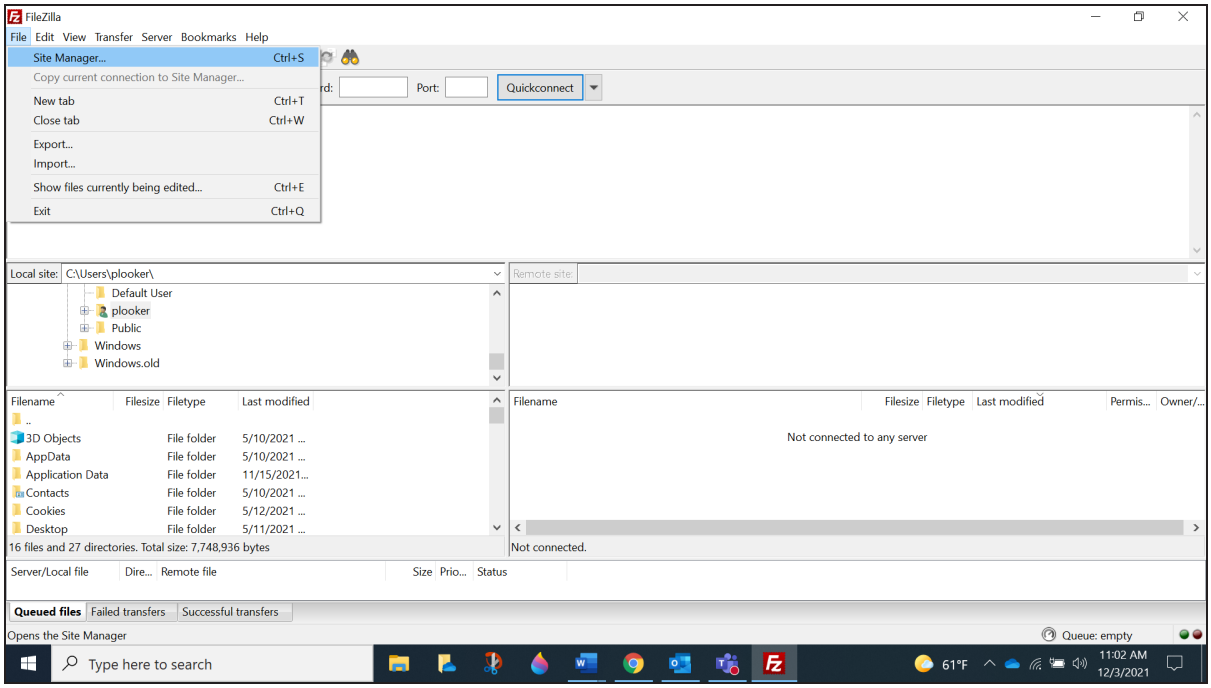


Figure 4 – FileZilla Site Manager

3. Set up a new site and enter the credentials on the right panel.

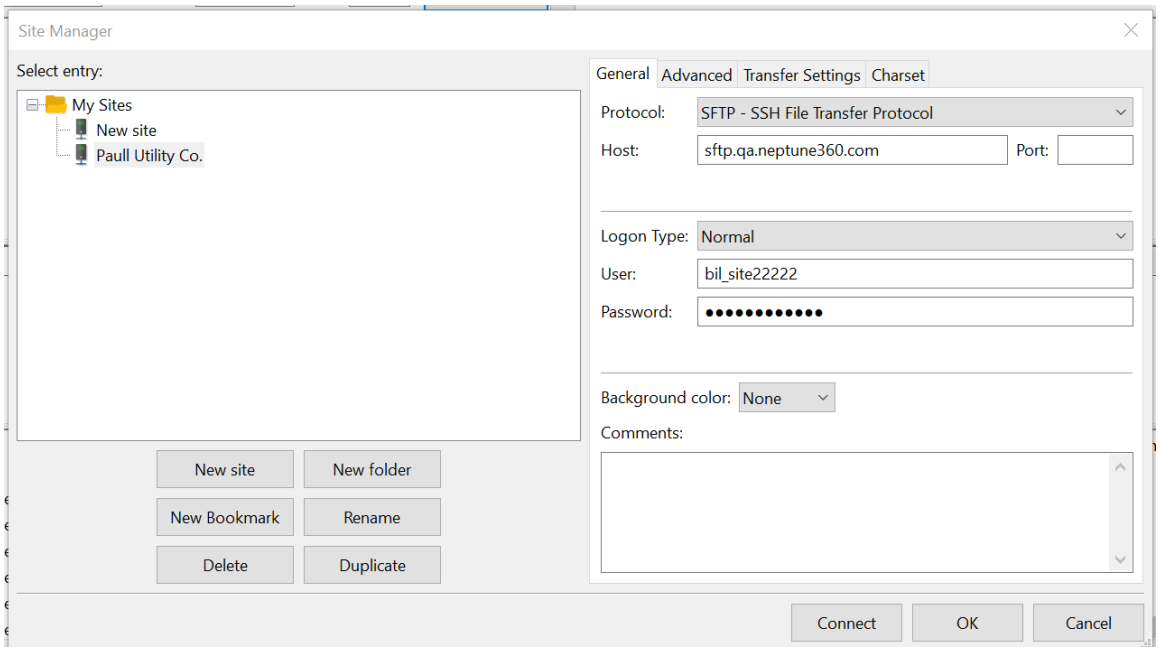


Figure 5 – Site Credentials

Ensure that the protocol selected is SFTP – SSH File Transfer Protocol.

4. Click **Connect**.
   Once connected successfully, you see a "successful" message in the top left panel.

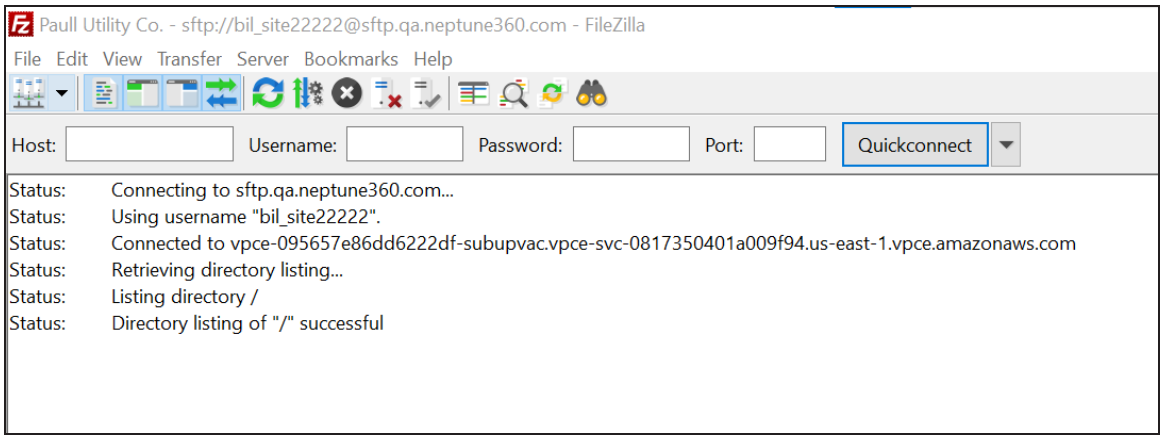


Figure 6 – Successful Message

When you use FileZilla the first time, you see the Import folder in the Remote Site panel. Underneath you see the Filename pane. You can now drag and drop your import file to the filename panel. Once you transfer a file to this folder, Neptune 360 automatically triggers the process to begin.

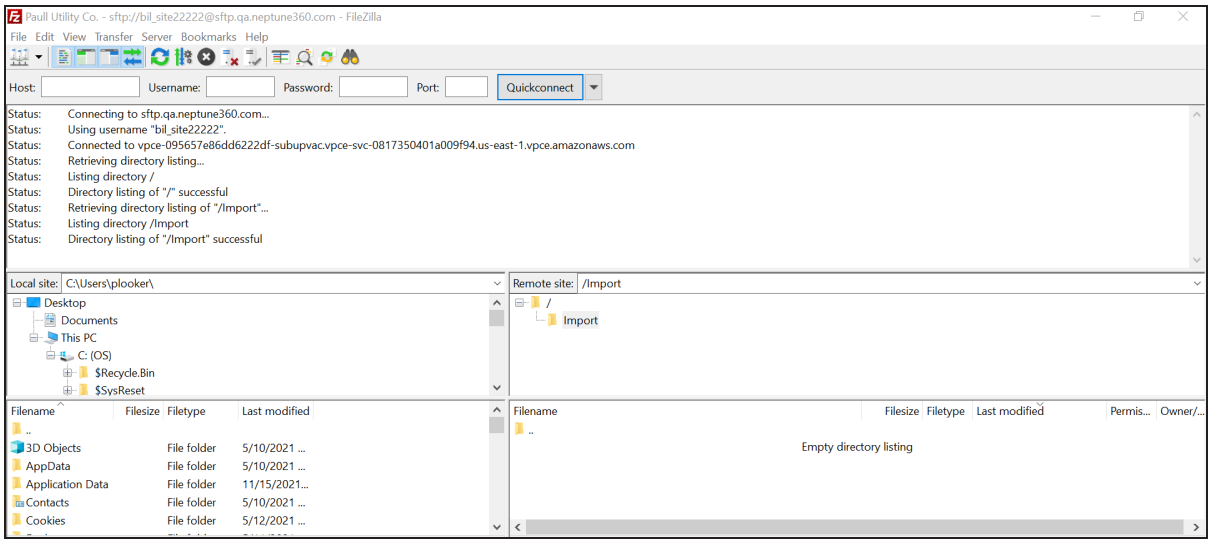


Figure 7 – FileZilla Remote Site Panel

Ensure the file format is the same format as the format set up in the General settings > Import / Export Field (see"FileZilla Site Manager" on page 48). The system expects the formats to match and validates to confirm. If the formats do not match, an error to in the connection is displayed in FileZilla. The following image shows an example of dragging and dropping an import file to the FileZilla Filename panel.

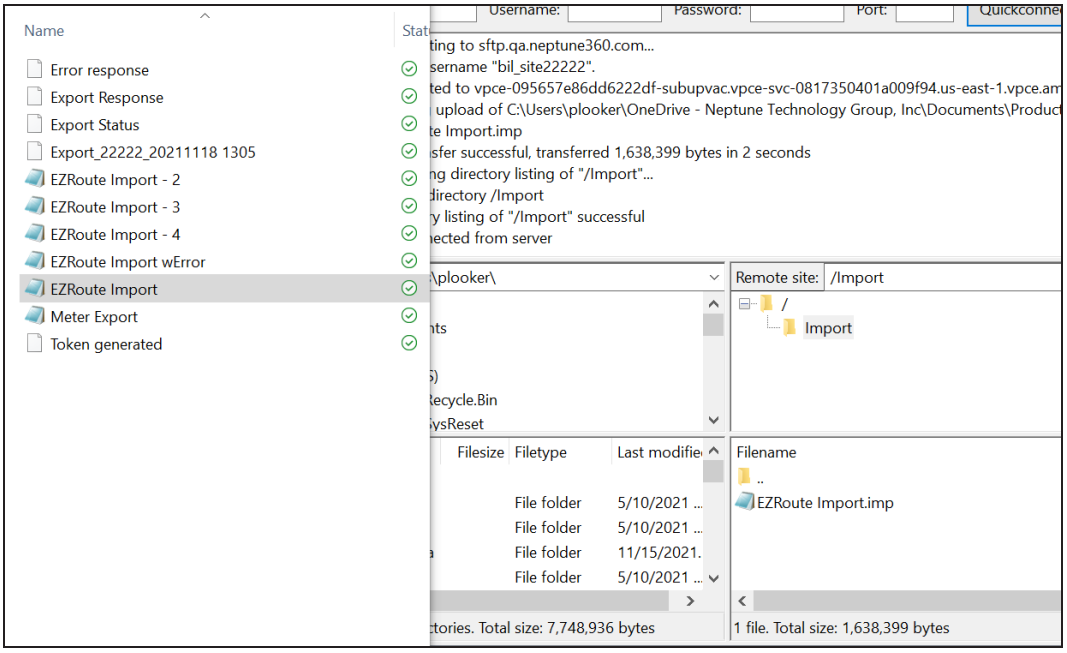


Figure 8 – FileZilla Filename Panel

Errors and Export Files Reported via SFTP

Depending on your configuration, it is possible to be:

- Notified via email of errors encountered in processing the import file, The email is sent the email address in the Neptune 360 SFTP settings, if defined.
- Sent a copy of the error file to an error folder in FileZilla, depending on whether the Copy Import Errors to SFTP field is set to YES. This folder is automatically created once Neptune 360 transfers errors.

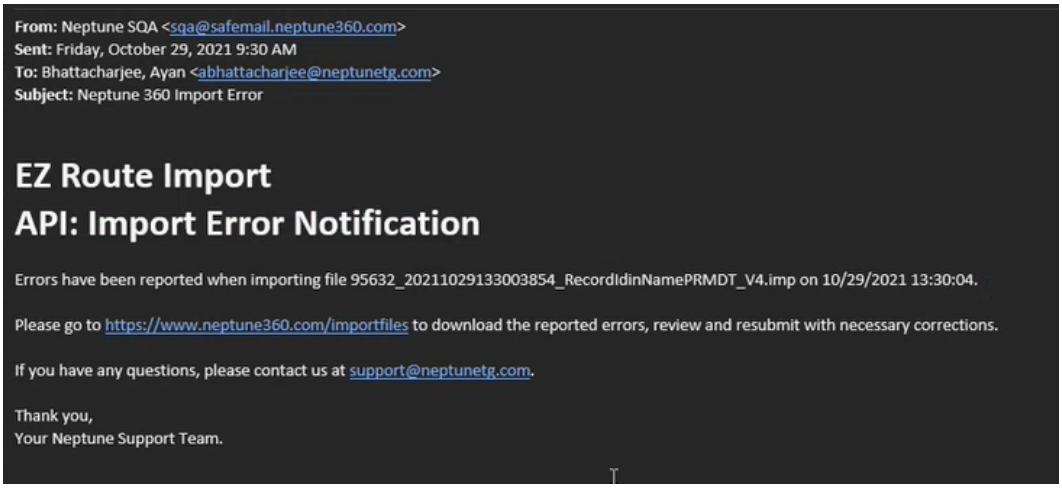


Figure 9 – Import Error Notification

- Sent a copy of the export file when created to an export folder in FileZilla depending upon whether the Copy Exports to SFTP field is set to YES. This folder is automatically created once Neptune 360 transfer exports. See the following example.

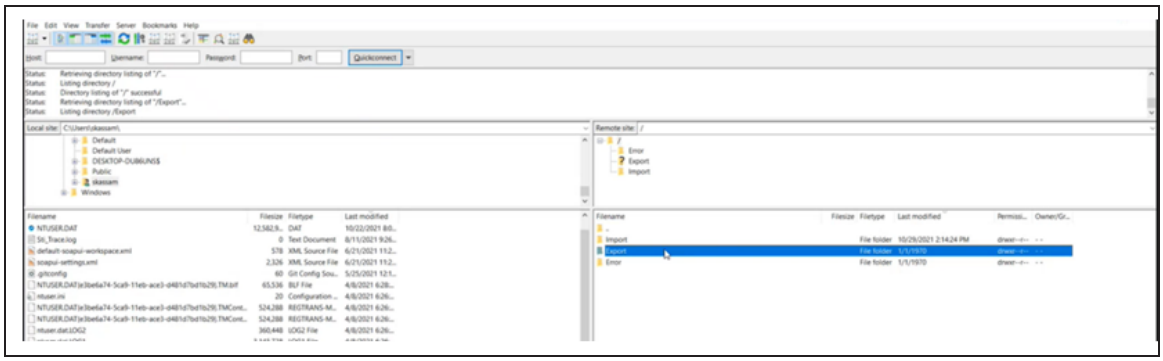
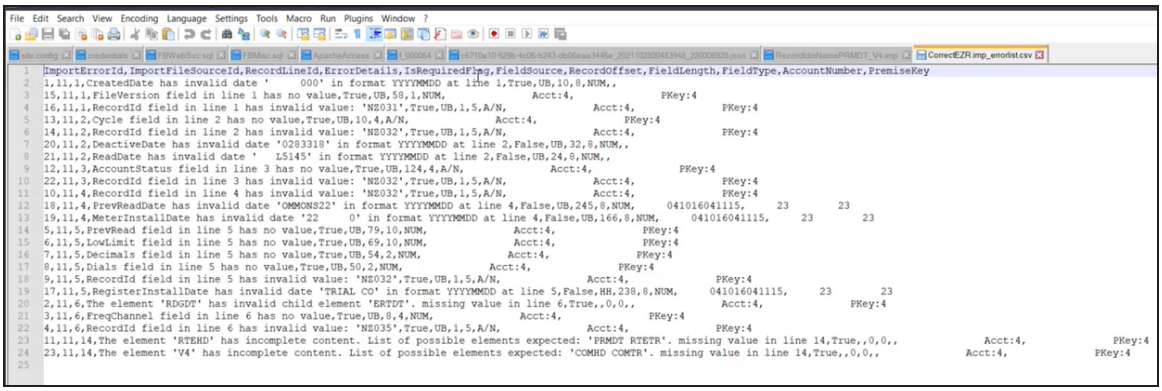


Figure 10 – Exports Folder

You can open both the error files and export files to troubleshoot issues or confirm the information. Following is an example of an error file opened below for review.



```
ImportErrorId,ImportFileSourceId,RecordLineId,ErrorDetails,IsRequiredFlag,FieldSource,RecordOffset,FieldLength,FieldType,AccountNumber,PremiseKey
1,11,1,CreatedDate has invalid date '     000' in format YYYYMMDD at line 1,True,UB,10,8,NUM,,
15,11,1,FileVersion field in line 1 has no value,True,UB,58,1,NUM,                Acct:4,                PKey:4
16,11,1,RecordId field in line 1 has invalid value: 'NZ031',True,UB,1,5,A/N,                Acct:4,                PKey:4
13,11,2,Cycle field in line 2 has no value,True,UB,10,4,A/N,                Acct:4,                PKey:4
14,11,2,RecordId field in line 2 has invalid value: 'NZ032',True,UB,1,5,A/N,                Acct:4,                PKey:4
20,11,2,DeactiveDate has invalid date '0203318' in format YYYYMMDD at line 2,False,UB,32,8,NUM,,
21,11,2,ReadDate has invalid date '   15145' in format YYYYMMDD at line 2,False,UB,24,8,NUM,,
12,11,3,AccountStatus field in line 3 has no value,True,UB,124,4,A/N,                Acct:4,                PKey:4
22,11,3,RecordId field in line 3 has invalid value: 'NZ032',True,UB,1,5,A/N,                Acct:4,                PKey:4
10,11,4,RecordId field in line 4 has invalid value: 'NZ032',True,UB,1,5,A/N,                Acct:4,                PKey:4
18,11,4,PrevReadDate has invalid date 'OMMONS22' in format YYYYMMDD at line 4,False,UB,245,8,NUM,     041016041115,     23        23
19,11,4,MeterInstallDate has invalid date '22     0' in format YYYYMMDD at line 4,False,UB,166,8,NUM,     041016041115,     23        23
5,11,5,PrevRead field in line 5 has no value,True,UB,79,10,NUM,                Acct:4,                PKey:4
6,11,5,LowLimit field in line 5 has no value,True,UB,69,10,NUM,                Acct:4,                PKey:4
7,11,5,Decimals field in line 5 has no value,True,UB,54,2,NUM,                Acct:4,                PKey:4
8,11,5,Dials field in line 5 has no value,True,UB,50,2,NUM,                Acct:4,                PKey:4
9,11,5,RecordId field in line 5 has invalid value: 'NZ032',True,UB,1,5,A/N,                Acct:4,                PKey:4
17,11,5,RegisterInstallDate has invalid date 'TRIAL CO' in format YYYYMMDD at line 5,False,HH,238,8,NUM,     041016041115,     23        23
2,11,6,The element 'RDGDT' has invalid child element 'ERTDT'. missing value in line 6,True,,0,0,,                Acct:4,                PKey:4
3,11,6,FreqChannel field in line 6 has no value,True,UB,8,4,NUM,                Acct:4,                PKey:4
4,11,6,RecordId field in line 6 has invalid value: 'NZ035',True,UB,1,5,A/N,                Acct:4,                PKey:4
11,11,14,The element 'RTEHD' has incomplete content. List of possible elements expected: 'PRMDT RTETR'. missing value in line 14,True,,0,0,,                Acct:4,                PKey:4
23,11,14,The element 'V4' has incomplete content. List of possible elements expected: 'COMHD COMTR'. missing value in line 14,True,,0,0,,                Acct:4,                PKey:4
```

Figure 11 – Error File

Disabling Autobilling

You can disable autobilling after initial set up. Contact a Neptune System Administrator or Customer Support at 800-647-4821 for details and discussion.

Chapter 5: Autobilling via API

This chapter defines the process to set up autobilling via API.

SDK Access Self-Service Page

The Automatic Billing configuration (see previous section) generates the content on the SDK Access Self-Service Page as illustrated in the following image.

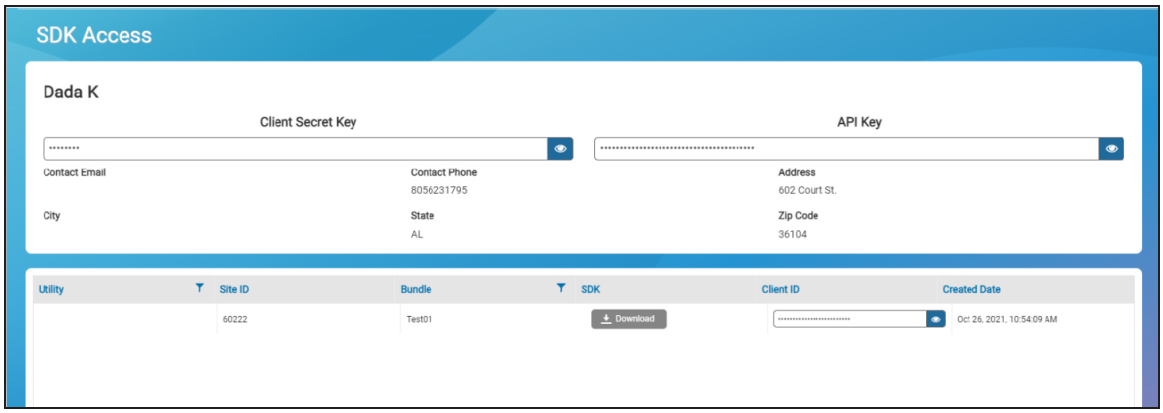


Figure 12 – SDK Access

The Client Secret Key, API Key, and Client ID are masked but can be viewed as required.

Once this page has been generated and you click **Download**, Neptune® 360™ downloads a YAML file. The YAML file contains the hierarchy of folders and paths required to use the Neptune 360 API.

The following image is an example extract of a YAML file.

```
swagger: '2.0'
info:
  version: 'c.20211116095658'
  title: 'Neptune 360 SDK'
  description: >
    The Neptune 360 SDK is a set of web service interfaces for Neptune 360. It contains tools that let you add meter/MIU information, readings, consumption,


    You have access to the web services below. Please refer to the SDK Access page in Neptune 360 to review your API key, client ID, and client secret key.
host: adss5tki4i.execute-api.us-east-1.amazonaws.com
schemes:
  - https
paths:
  /api/v1/token:
    get:
      tags:
        - 'Authentication'
      description: 'Returns a bearer token that is required for calling other web services. A bearer token is valid for 10 minutes following authentication.
      produces:
        - 'application/json'
      parameters:
        - name: 'x-api-key'
          in: 'header'
          required: true
          type: 'string'
          description: 'This is your api key. This can be found by navigating to the SDK Access page in Neptune 360.'
        - name: 'client-id'
          in: 'header'
          required: true
          type: 'string'
          description: 'This is your client id. This can be found by navigating to the SDK Access page in Neptune 360.'
        - name: 'client-secret'
          in: 'header'
          required: true
          type: 'string'
          description: 'This is your client secret key. This can be found by navigating to the SDK Access page in Neptune 360.'
      responses:
        200:
          description: 'Success'
          schema:
            $ref: '#/definitions/TokenResponse'
        401:
          description: 'Unauthorized'
        403:
          description: 'Forbidden'
```

Figure 13 – YAML File

Using Postman

Postman is a third-party application to use with Neptune 360 APIs. You can download the latest version for free. You can use Postman or a similar application to import the YAML file.

1. Click **Import** to select the YAML file to import. The import creates a new workspace automatically. You can edit the workspace name, if required.

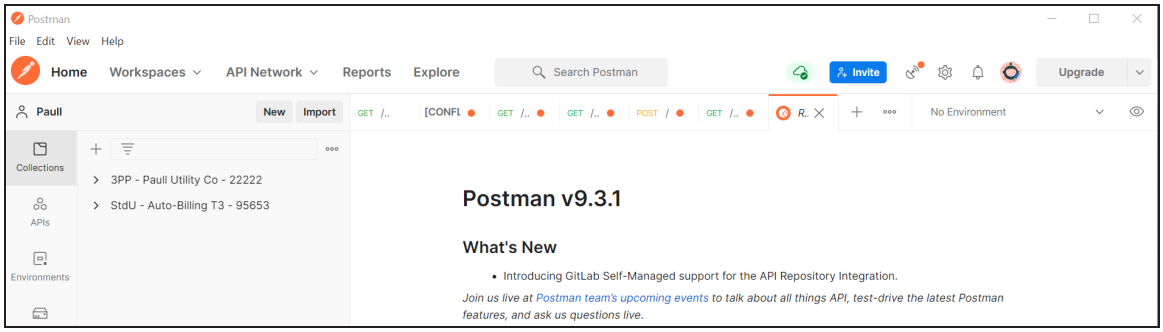


Figure 14 – Postman Initial Screen

2. Select the workspace and drop down options.
3. Select **api > v1** to see the created paths and folders for all the APIs.

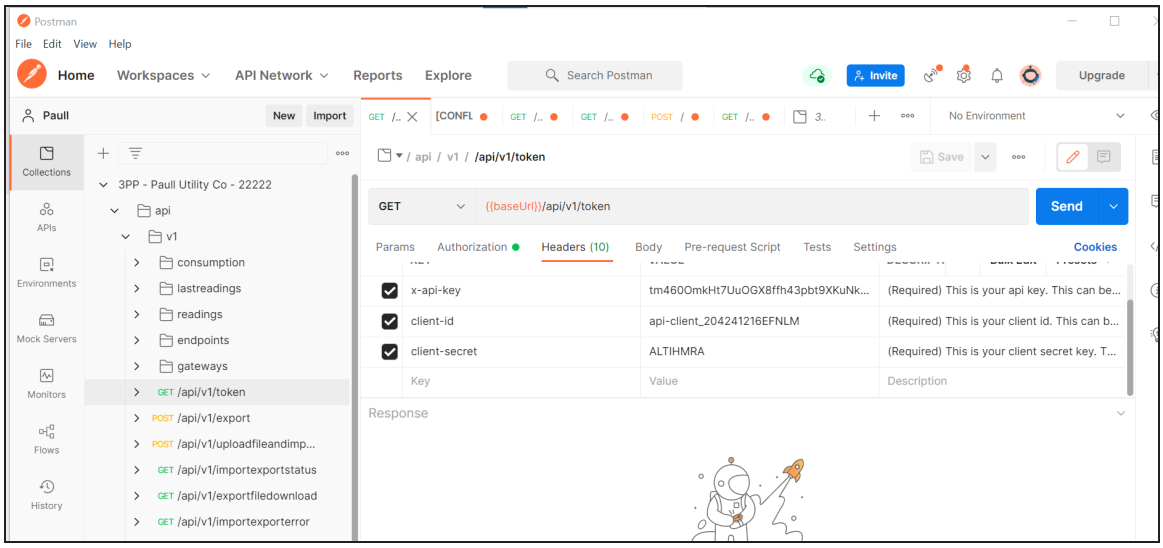


Figure 15 – Postman Workspace

The following token and the five APIs below it are used for Imports, Exports, File Statuses, and Errors.

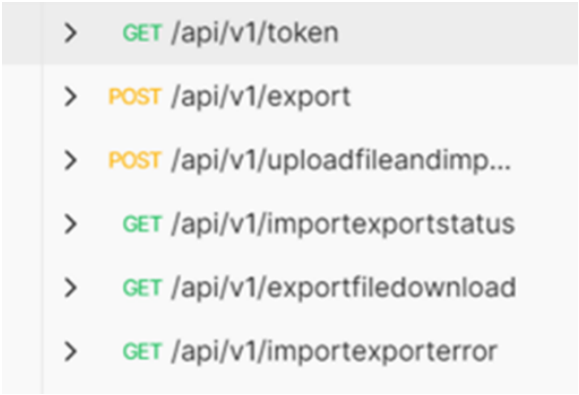


Figure 16 – APIs

4. Select an API path and enter the prompted details required for each of the following tabs.
    - Parameters.
    - Authorization.
    - Headers.
    - Body.

All other tabs are defaulted or not required.

The following image is an example of the app1/v1/token screen entry.

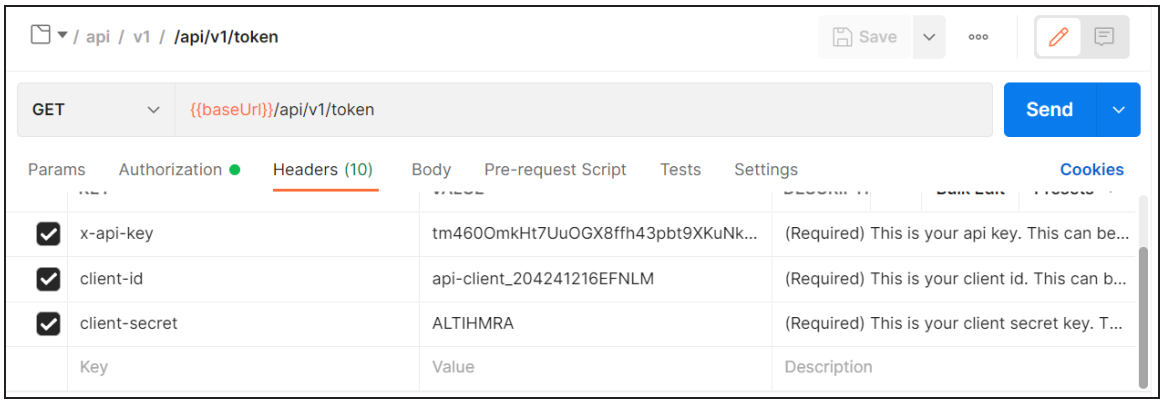


Figure 17 – API Token

A "bearer" token expires after 600 seconds (10 minutes). A new token must be regenerated if the token has expired.

See the *Neptune® 360™API Reference Guide* (PUBLICATION_RG NEPTUNE 360 API) for further details including, POST and GET code commands for each API in Neptune 360.

Chapter 6: Troubleshooting and Contact Information

Contact Information

Within North America, Neptune Customer Support is available Monday through Friday, 7:00 A.M. to 5:00 P.M. Central Standard Time, by telephone or email.

By Phone

To contact Neptune Customer Support by phone, complete the following steps.

1. Call (800) 647-4832.
2. Select one of the following options:
   - 1 if you have a Technical Support Personal Identification Number (PIN).
   - 2 if you do not have a Technical Support PIN.
3. Enter the six-digit PIN and press #.
4. Select one of the following options.
   - 2 for Technical Support.
   - 3 for maintenance contracts or renewals.
   - 4 for Return Material Authorization (RMA) for Canadian Accounts.

   You are directed to the appropriate team of Customer Support Specialists. The specialists are dedicated to you until the issue is resolved to your satisfaction. When you call, be prepared to give the following information:

   - Your name and utility or company name.
   - A description of what occurred and what you were doing at the time.
   - A description of any actions taken to correct the issue.

By Email

To contact Neptune Support by email, send your message to support@neptunetg.com.

This page intentionally left blank.

Appendix A: Meter Size

This appendix contains a table of meter sizes supported by Neptune® 360™. For each meter size, a list of valid alternate notations is provided. Values for meter size cannot exceed eight total characters.

Alpha characters in the alternate notations, such as "x", may be upper or lower case.

Table 26 – Meter Size (75, 100, 150, 200, 300, 400, 600, and 800)

Meter Size	Alternate Values
5/8	5/8", 58, 058, 0058, .625, 0.625, 5/8 in, or 5/8 in.
	5/8x1/2 or 5/8x1/2"
	5/8x3/4, 5834, or 5/8x3/4"
	5/8x5/8 or 5/8x5/8"
	15 mm or 16 mm
3/4	3/4", 34, .75, 0.75, 75, 075, 0075, 3/4 in, or 3/4 in.
	3/4 SL or 3/4" SL
	3/4 x 1, 3/4"x1", 3/4x1, or 3/4x1"
	19 mm, 20 mm
1	1", 100, 0100, 1 in, or 1 in.
	1 1/4, 1x1 1/4, 1x1 1/4", 1x1-1/4, or 1x1-1/4"
	25 mm
1 1/2	1 1/2", 1-1/2, 1-1/2", 112, 150, 0150, 1.5", or 1.5
	1 1/2x10
	1 1/2x12 or 1-1/2X12 (refers to a 1 1/2 x 12 5/8 meter)
	1 1/2x13 or 1-1/2x13
	37 mm, 38 mm, or 40 mm

Table 26 – Meter Size (75, 100, 150, 200, 300, 400, 600, and 800) (continued)

Meter Size	Alternate Values
2	2", 200, 0200, 2 in, or 2 in.
	2 x 10, 2" x 10", 2x10, or 2x10"
	2x15-1/4
	2 x 17, 2" x 17", 2x17, or 2x17"
	50 mm
3	3", 300, 0300, 3 in, or 3 in.
	75 mm
4	4", 400, 0400, 4 in, or 4 in.
	100 mm
6	6", 600, 0600, 6 in, or 6 in.
	6" x 8", 6 x 8", 6x8, or 6x8"
	150 mm
8	8", 800, 8 in, or 8 in.
	200 mm
10	10", 10 in, or 10 in.
	250 mm
12	12", 12 in, or 12 in.
	300 mm
16	16", 16 in, or 16 in.
	400 mm
20	20", 20 in, or 20 in.
	500 mm

Appendix B: Meter UOM

This appendix provides the preferred values for each meter UOM as well as valid alternate values supported by Neptune® 360™

Alpha characters may be upper or lower case. Values with only one or two characters must be left-justified and space filled to three characters.

Table 27 – Meter UOM

Meter UOM Value	Unit of Measure	Alternate Values
FT3	Cubic Feet	F3, CF3, CF, CCF, or F^3.
M3	Cubic Meters	CM3, CM, CCM, M^3, or kl.
GAL	Gallons	G, GL, or USG.
IPG	Imperial Gallons	IG.
LTR	Litres	L, LT, or DM3.

This page intentionally left blank.

Neptune Technology Group Inc.
1600 Alabama Highway 229
Tallassee, AL 36078
USA Tel: (800) 633-8754
Fax: (334) 283-7293

Neptune Technology Group
(Canada) Ltd.
7275 West Credit Avenue
Mississauga, Ontario L5N 5M9
Canada Tel: (905) 858-4211
Fax: (905) 858-0428

Neptune Technology Group Inc.
Avenida Ejercito Nacional No 418
Piso 12, Despacho 1203
Colonia Polanco V Sección
C.P. 11560 Delegación, Miguel Hidalgo
Mexico D.F.
Tel: (55) 5203-5708, (55) 5203-4032,
(55) 5203-5294

Online
www.neptunetg.com

IEP Neptune® 360™ v1.4 02.22