Decision Tables - Functions

# Introduction

The decision tables for the National Primary Drinking Water Regulations (NPDWR) (e.g., NO2, NO3, IOC, VOC, SOC, Rads, LCR, etc.) include a number of functions that must be run as the outcome of a "BRE Rule" set. This document provides specifications for those functions.

Functions should be reused as much as possible.

## Version History

|  |  |  |
| --- | --- | --- |
| Date | Revision | By |
| 3/20/2019 | Revised 2.2.24 on how to select the correct task\_ref record by using the referenced VIOCD\_RULE\_ANALYTE\_REF.  Revised 2.3.29.1 to change how the BRE selects the correct violation type record including the right violation code, rule code, and analyte code when creating a candidate violation when the PWS fails to comply with a scheduled activity task record. | Scott Peterson |
| 6/26/2019 | Added page numbers and Dropbox location | Maggie Carey, Attain LLC |

Version 12 included changes due to late changes to the Phase II/V flowcharts (e.g., 1038 does not count for 1040, NC alternate nitrate MCL, use of all previous nitrate results to determine quarter in which annual monitoring must occur). It also includes some other changes identified during testing.

Version 13 includes functions added for SOC and DDBP RLMs.

Version 14 includes changes made for the Disinfectants and Disinfection ByProducts Rules (D/DBPR).

Version 15.1 includes:

* more changes for D/DBPR including: (1) copying the specifications for calculating Arithmetic Average/Mean for chlorite from the RLM to this document and (2) adding the explicit duplicate check for RCD OD Summaries.
* action specifications for RAD RLM Part 2

Version 15.2 adds action specifications for RAD RLM Part 3

Version 15.2.1 adds the specifications for calculating and creating or updating precursor achieved removal ratios (PARR - see 2.2.26) and corrections to calculating an adjusted gross beta (GB) (see 2.2.28.10 and 2.2.28.12).

Version 15.3 adds action specifications for RAD RLM Part 5 and RAD RLM Part 4 and some missing action functions for RAD RLM Part 3.

Version 16 adds action specifications for the GWR. The first version (v16.0) includes GWR RLM 2. This version also includes these revisions to previously release specifications: updates to RLM Part 3 specs to not use sample\_result fields since there may not be a sample\_result associated to a MS x MP.

Version 16.1 adds action specifications for GWR RLM 3.

Version 16.2 adds action specifications for GWR RLM 4 and 5.

Version 16.3 includes revisions to: (1) 2.3.17 (Create candidate major Routine monitoring violation for OD Summaries); (2) 2.3.18 Create Candidate Major Routine Reporting Violation for OD Summary Revised; (3) 2.5.3.1 - 7 (Create Candidate DDBP Monitoring Schedules) and adds 2.5.5.1 - 2.5.5.3, GWR Monitoring Schedule and PA Determination creation functions.

Version 17 adds functions for LCR.

17.1 adds LCR RLM Part 2 - Sample Result Evaluation functions and other minor corrections and additions. 17.1.1 includes minor revisions.

17.2 adds LCR RLM Part 3 functions and related minor corrections.

17.3 adds LCR RLM Part 2 - Sample Summary Evaluation functions and LCR RLM Part 4 functions and other corrections.

17.4 adds LCR RLM Part 5 - MS Determination functions. 17.4.1 revises 2.2.28.5 through 2.2.28.12 (dealing with substitute and contributing results under RAD).

Version 18 adds functions for RTCR RLM Part 2 - Sample Result Evaluation, RTCR RLM Part 2 - Sample Summary Evaluation, and RTCR RLM Part 3 - Monitoring Schedule Evaluation.

Version 18.1 revises 2.3.27.2 - Create or update 90th summary (LCR).

Version 18.1.1 includes minor revisions to 2.3.27.2.

Version 18.1.2 includes more minor revisions to 2.3.27.2.

Version 18.2 includes function specifications for RTCR RLM Part 4 - RTC Determination and for RTCR RLM Part 5 - MS Determination. It also includes two new functions for RTCR RLM Part 2, both SR and SS.

Version 19 includes function specifications for CCR RLMs.

Version 19.1 includes minor revisions to the action functions for 2.5.6 LCR MS Determination Functions.

Version 20 includes new action 2.3.9.1 - VALUE MNTRG\_SCH\_MNTRG\_PRD.MR\_COMPL\_RUN\_DT.

Version 21 adds action functions to handle the situation where a PWS collected its triennial/6 year/9year samples before the last year of the MP. In this case, the BRE proposes a “Matching” MS that has a different begin date than the current one. This function is needed for LCR (tap and WQP) and D/DBP (DBP monitoring).

Version 22 adds functions to support the PN RLMs.

Version 23 contains revisions identified during testing including these:

* Updates to 2.2.4, 2.2.4.4, and 2.2.4.5 so that CV\_AGENCY\_RECEIVED\_DT is valued when MPAvg\_ComplValue are created or updated.
* Update to 2.3.27.1 - Create Candidate Initial/Routine/Follow-up Tap Monitoring Violation, by changing the spec for valuing VIO\_FED\_PRD\_BEGIN\_DT.
* Added 2.3.27.21 - CREATE A CONSUMER NOTICE OF LEAD RESULTS.
* Updated 2.3.27.5 - Create candidate Initial/Routine/Follow-up Tap Reporting Violation.
* Updated 2.3.27.17 CREATE A PROPOSED L/C TAP WAIVER.
* Revised 2.3.27.10 CREATE A CANDIDATE WQP MONITORING VIOLATION
* Revised 2.2.33.1 (Create a candidate 3 RP monitoring schedule ) and 2.2.33.2 (Create a candidate 3 Additional RT monitoring schedule)
* Expanded 2.2.33.11 - Create Candidate GWR Triggered Monitoring Schedule

Version 24 contains revisions identified and made during RTCR development.

Version 25 contains revisions made:

* to integrate the BRE with the Prime sample and results tables
* to revise 2.2.28.5.

Version 25.1 contains these minor revisions:

* 2.2.33.9 (Create a candidate 'Notify state of E. coli positive' activity.

Version 25.2 contains revisions to the RTCR create activity records.

Version 25.3 contains revisions to all the non-RTCR create activity records - namely to value DUE\_DT and to no longer value DATE\_TYPE and DATE\_TYPE\_DT.

Version 25.4 contains a revision to 2.3.9.1 - VALUE MR\_COMPL\_RUN\_DT.

Version 25.5 contains:

* revisions to 2.5.7.1 - CREATE RTCR RT MS FOR NC, GW, <= 1000 REDUCED ADOPTED, SEASONAL
* revisions to 2.5.7.2 - CREATE RTCR RT MS FOR NC, GW, <= 1000 REDUCED ADOPTED, NON-SEASONAL
* addition of 2.3.28.14 - CREATE A CANDIDATE 3D MONITORING VIOLATION (CODE 3D)

Version 25.6:

* adds action 2.3.28.15 - CREATE A CANDIDATE E. COLI MCL VIOLATION (CODE 1A) from RLM Part 3
* adds action 2.3.28.16 - Create a candidate 'Notify state of E. coli MCL violation' activity from RLM Part 3

Version 25.7 revises two RTCR Part 3 actions that create monitoring violations by using the violation type associated to the Monitoring\_Requirement rather than hardcoding the violation type:

* 2.3.28.1 - Create candidate RTCR major routine monitoring violation
* 2.3.28.3 - Create candidate RTCR minor routine monitoring violation

Version 25.8 revises two RTC Part 3 actions by changing the specification for setting the Due\_DT:

* 2.3.28.7 - Create a candidate Level 1 Assessment activity from MS
* 2.3.28.8 - Create a candidate Level 2 Assessment activity from MS

Version 25.9 updates RTCR activity creation specifications

* 2.2.33.6 - Create a candidate 'Notify state of E. coli MCL violation' activity
* 2.3.28.16 - Create a candidate 'Notify state of E. coli MCL violation' activity from RLM Part 3

Version 25.10:

* Updates four specs that create RTCR routine monitoring schedules by adding specifications for the four seasonal period columns. See 2.5.7.4 and following.
* Updates 2.3.29.1 - CREATE CANDIDATE ACTIVITY VIOLATION
* Updates 2.4.5.3, 2.4.5.4, 2.4.5.5, and 2.4.5.6.

Version 25.11:

* Updates or adds the following actions so that they value the reason code for a candidate activity
  + Updated 2.2.33.5 - Create a candidate Level 2 Assessment activity Due to EC MCL Violation
  + Updated 2.3.28.7 - Create a candidate Level 1 Assessment activity from MS Due to Insufficient Repeats
  + Updated 2.3.28.8 - Create a candidate Level 2 Assessment activity from MS Due to > 1 Level 1
  + Added 2.3.28.17 - Create a candidate Level 2 Assessment activity from MS Due to EC MCL Violation
  + Added 2.3.28.18 - Create a candidate Level 1 Assessment activity from MS Due to Multiple TC+

Version 25.12:

* Revises 2.3.29.1 for RTCR state-approved startup procedures violation because, per EPA's RTCR DEI, the violation's Compliance Period Begin Date is the "first day after the Primacy Agency requires completion of seasonal startup procedures or the first day of operation, whichever is earlier." (RTCR DEI).
* Revises 2.2.33.4 and 2.3.28.15; both of which create candidate E. coli MCL violations. Revision consist of populating new associative table vio\_sample\_result with results that were used to determine the MCL violation.
* Revises the following RTCR actions that previously only used the Sample\_Result.PA\_Received\_Dt + 1 day to value a date.
  + 2.2.33.6
  + 2.2.33.9
  + 2.2.33.10
  + 2.3.28.16

Version 25.13:

* Revises the following RTCR actions that previously used the Sample\_Result.PA\_Received\_Dt.
  + 2.2.33.6 - Create candidate 'Notify state of E. coli MCL violation'
  + 2.2.33.9 - Create a candidate 'Notify state of E. coli positive'
  + 2.3.28.16 - Create a candidate 'Notify state of E. coli MCL violation' activity from RLM Part 3

Version 26

* Revises all the GWR actions and remaining RTCR actions to use the same three dates used for the above actions 2.2.33.6, 9, and 16.

Version 26.1

* Adds two create candidate violation actions for GWR - candidate monitoring and reporting violations based on GWR OD summaries. See 2.3.24.11 and 2.3.24.12.
* Revises GWR actions 2.2.29.12, 2.2.29.13, 2.2.29.14 that create candidate activities.

Version 26.2 revises how to set the contaminant code for 2.3.19 - Create candidate treatment technique violation for OD Summary so that is uses the analyte type 'RL' from the list of analytes associated to the Rule CD.

Version 26.3 revises action 2.2.33.10 - Create candidate 'notify wholesale system of TC positive' activity.

Version 27:

* Revises action 2.3.27.21 - Create a consumer notice of lead results and
* Adds action 2.3.27.22 - Create a consumer notice and certification of lead results and
* Adds action 2.3.27.23 - Create candidate tap Increased MS

Version 28:

* Clarifies that only one sample summary should be created for paired lead and copper tap monitoring schedules (2.3.27.2.1)
* Updates specifications for creating and updating lead and copper sample summaries.
* CREATE A COMPREHENSIVE CONSUMER NOTICE OF LEAD RESULTS (2.3.27.21)

Version 28.1:

* In addition to the above changes for 28, I should have removed 2.3.27.22. It is now removed.

Version 29 incorporates SR-356: "Add Tier 3 logic to determine GWR triggered sampling locations" by adding the specifications for creating candidate GWR triggered schedules.

Version 30:

* Clarifies that LRAA and OEL are calculated at the sampling point level and that these are only calculated for 2456 and 2950 under DDBP. Additionally, it clarifies that RAA should not be created for 2456 and 2950 under DDBP.
* Adds 2.3.13.2 - CREATE CANDIDATE INCREASED BROMATE MONITORING SCHEDULE
* Clarifies 2.3.16.
* Revises 2.3.27.18 - Create 60-Day PE Activity, 2.3.27.21 - Create a Comprehensive Consumer Notice of Lead Resuklts because integration with the Prime structure required additional specifications.
* Revises 2.5.6 - LCR MS Determination Functions.

Version 30.1 revises the design for creating LRAA MCL violations.

Version 31:

* Revises design for SWTR identified during integration of SWTR into Prime
* Revises design for RADs identified during in-house SME testing
* Adds 2.3.30 - Create candidate LRAA MCL violation in BRE Part 3
* Revisions to 2.2.28.5 and 2.2.28.8
* Revised 2.3.29.1 to properly value a violation's compliance period begin date for a CCR violation (71 or 72).
* Adds 2.3.31 - CREATE/UPDATE CANDIDATE RAA MCL VIOLATION IN BRE PART 3
* Revised the BRE processes that create Lead Consumer Notices (2.3.27.21) and Lead Public Education (2.3.27.18)
* Revised specification for setting the MS end date for repeat, triggered, and 24-hour confirmation schedules (i.e., 2.2.33.1, 2.2.33.11, 2.2.2).
* Added specification 2.2.3.1
* With this version, we stopped creating new files and instead just updated the document, keeping track of changes using Dropbox's method of tracking the version history. See Dropbox (Attain\_OW)\Prime\_EPA\Requirements Documents\BRE Requirements.

# Specifications by Capability (RLM) and Function

## Rule Applicability (RLM Part 1)

### Associate WS to Rule - Applies

The following shows how to create a new record for WS\_Rule and update an existing record.

Step 1: If a record already exists in WS\_Rule with Current\_Ind = 'Y' for the water system and rule being processed, then:

Step 1a: if the outcome of the current logic is the same as the existing record, do not make any changes to the existing record and end the process.

Step 1b else, change the CURRENT\_IND to 'N' for the existing record and continue to Step 2.

Step 2: Insert a record into WS\_Rule with the following values:

|  | **WS\_Rule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
|  | WS\_RULE\_ID | Primary Key |  |
|  | WATER\_SYSTEM\_ID | Set to the water\_system\_id of the water\_system being processed. |  |
|  | RULE\_REF\_ID | Set to the Rule\_Ref.Rule\_Ref\_ID for the rule being processed. |  |
|  | CURRENT\_IND | Set to 'Y' |  |
|  | APPLIES\_IND | Set to 'Y' |  |

### Associate WS to Rule - Does Not Apply

The following shows how to create a new record for WS\_Rule and update an existing record.

Step 1: If a record already exists in WS\_Rule with Current\_Ind = 'Y' for the water system and rule being processed. then:

Step 1a: if the outcome of the current logic is the same as the existing record, do not make any changes to the existing record and end the process.

Step 1b else, virtually delete the existing record by valuing the remove\_dt with the current date and continue to Step 2.

Step 2: Insert a record into WS\_Rule with the following values:

|  | **WS\_Rule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
|  | WS\_RULE\_ID | Primary Key |  |
|  | WATER\_SYSTEM\_ID | Set to the water\_system\_id of the water\_system being processed. |  |
|  | RULE\_REF\_ID | Set to the Rule\_Ref.Rule\_Ref\_ID for the rule being processed. |  |
|  | CURRENT\_IND | Set to 'Y' |  |
|  | APPLIES\_IND | Set to 'N' |  |

## Sample and Result Evaluation (RLM Part 2 SR Eval.xlsx)

Rule Name Old Action Name New Action Name

-------------------------------------------------------------

### R\_SR2A\_1 MCL\_VIOLATION MclViolation

This table shows how to value candidate violations that are created as result of this rule ("Create Candidate MCL Violation (e.g.,1040 or 1038 x 02")) by the BRE in action "Create Candidate MCL Violation"

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" | Status codes for Violations will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data: C - Candidate P - Preliminary V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a violation. Only the BRE can use this status. |
| VIOLATION\_TYPE\_CODE | For MCL\_VIOLATION: Set to '02' For MR violations: Set to Monitoring\_Schedule.MR\_VIOLATION\_TYPE\_CD |  |
| VIO\_SEVERITY | For MCL\_VIOLATION: do not value. For MR violations, set to a derived value as follows: If number no results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link), then MJ; else MN. |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | For MCL violations: set to MPAvg\_ComplValue.COMPLIANCE\_VALUE For MR violations: do not value |  |
| VIO\_COMPL\_VALUE\_UOM | For MCL violations: set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM For MR violations: do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY | New table Violation\_Type |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Schedule.MS\_NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Schedule.MS\_NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) |  |

### R\_SR2A\_2 24\_HR\_CONFIRM 24HrConfirm

This table shows how to value candidate 24 hour confirmation monitoring schedules that are created by the BRE in action "24HRCONFIRM"  
Fields in Monitoring Schedule that are not included below are not valued.

| **ID** | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| 1 | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| 2 | MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| 3 | MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| 4 | MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| 5 | MONITORING\_REQUIREMENT\_ID | Set to MONITORING\_REQUIREMENT\_ID where MONITORING\_REQUIREMENT matches the values given in rows 6 - 12. |  |
| 6 | MS\_SAMPLE\_TYPE\_CD | CO – Confirmation  Once the database model has been implemented, this value will be used to identify the Monitoring Requirement to be used for the candidate Monitoring Schedule. | Sample\_Type\_Code will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): CO - Confirmation RT - Routine RP - Repeat TG - Triggered SP - Special |
| 7 | MS\_NUMB\_SAMPLES\_REQUIRED | 1  Once the database model has been implemented, this values will be used to identify the Monitoring Requirement to be used for the candidate Monitoring Schedule. |  |
| 8 | MS\_INTERVAL\_UNIT | 1T  Once the database model has been implemented, this values will be used to identify the Monitoring Requirement to be used for the candidate Monitoring Schedule. |  |
| 9 | MS\_INTERVAL\_UNIT\_COUNT | 1  Once the database model has been implemented, this values will be used to identify the Monitoring Requirement to be used for the candidate Monitoring Schedule. |  |
| 10 | MS\_INTERVAL\_FIXED\_DAYS | Not valued |  |
| 11 | MS\_CONTAMINANT\_CODE | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE  Once the database model has been implemented, this values will be used to identify the Monitoring Requirement to be used for the candidate Monitoring Schedule. | The Monitoring\_Schedule record to use to supply the Contaminant Code is the one selected in condition "Nitrite Routine" in RuleTable SR1B: Nitrite RT Sample Decision Table. Though its tempting to simply use the Sample\_Result.RESULT\_CONTAMINANT\_CD, under some drinking water rules, this will not work and I want this all to be coded the same way. |
| 12 | MS\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD  Once the database model has been implemented, this values will be used to identify the Monitoring Requirement to be used for the candidate Monitoring Schedule. |  |
| 13 | MONITORING\_SCHD\_BEGIN\_DATE | Sample\_Result.SAMPLE\_DATE |  |
| 14 | MONITORING\_SCHD\_END\_DATE | Set to 1 day after the following, in order of priority:  Priority 1: The result's analysis completion date (ANALYSIS\_COMPL\_DT)  Priority 2: If 1 is not avaible, then the result's analysis start date (ANALYSIS\_START\_DT)  Priority 3: If neither 1 or 2 is available, the sample's collection date plus 3 (COLLECTED\_DT plus 3 days). | Example for Priority 3:  Neither the analysis completion date nor analysis start date are value and the sample date is 5/7/18. Value the MS Frequency End Date with 5/11/18 (5/9 + 3 + 1) |
| 15 | MS\_INITIAL\_MP\_BEGIN\_DATE | Not valued |  |
| 16 | MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |
| 17 | MR\_REPORT\_DUE\_DATE\_DAYS | 10 |  |
| 18 | MONITORING\_REQUIREMENT\_TYPE |  | Note X: Once the database model has been implemented, this values will be pulled in with the Monitoring Requirement specified above. That is to say, the Monitoring Requirement record will already have this information in it. |
| 19 | MR\_CHECK\_DATE\_DAYS | 14 |
| 20 | MR\_MAKEUP\_REQUIRED\_IND | N |
| 21 | MR\_VIOLATION\_TYPE\_CD | 04 |

Please see Appendix A for information on normalizing Monitoring\_Schedule.

### R\_SR2B\_2 MONITOR\_QTRLY MonitorQuarterly - Nitrite and Nitrate

This table shows how to value candidate routine quarterly monitoring schedules that are created by the BRE in action "MonitorQuarterly"  
Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%TRIGGERED INCREASED%' |  |
| MR\_CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed. |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

#### R\_SR2B\_2 MONITOR\_QTRLY MonitorQuarterly - Vinyl Chloride

This table shows how to value candidate routine quarterly monitoring schedule for vinyl chloride.  
Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%TRIGGERED INCREASED%' |  |
| MR\_CONTAMINANT\_CODE | = '2976' |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID | But only create one vinyl chloride schedule that matches if the only difference is a different result. |

### R\_SR1B\_7 CALC\_COMPL\_VALUE CalcComplianceValue

The outcome for R\_SR1B\_7, per the RLM, is to “Calculate and store Compliance Result and Compliance Value.”

The BRE decision table only has one “performAction” function named CALC\_COMPL\_VALUE. So this function does several things:

1. Creates a Result\_To\_MSLink record that references the Sample\_Result being processed and the Monitoring\_Schedule being processed. This creation/update may involve a calculation (if the Sample Type is CO, then a calculation is involved).
2. Creates or updates a MPAvg\_ComplValue record. This creation/update involves rounding.

Following are the details.

#### Create a Result\_To\_MS\_Link record

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If there is not another result (e.g., confirmation result) associated, then:   1. If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero. 2. Else, if there is a current MCL, MRDL, ACL, or AMCL for the MS analyte being processed and:    1. If the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.    2. Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL -; then convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL, MRDL, ACL, or AMCL and set it to the converted value (note, do not update the Sample\_Result.RESULT) 3. Else (there is not a current MCL, MRDL, ACL, or AMCL for the MS analyte being processed), set to the Sample\_Result.RESULT of the Sample\_Result being processed.   If the Sample\_Result is a **confirmation sample, also** update the COMPLIANCE\_RESULT\_TEXT of the routine to which the confirmation sample is associated as follows:   1. average the COMPLIANCE\_RESULT\_TEXT for the confirmation with the COMPLIANCE\_RESULT\_TEXT for the routine. 2. Round to the least significant digits for the two (for example, if the COMPLIANCE\_RESULT\_TEXT for the confirmation is 1.223 and the COMPLIANCE\_RESULT\_TEXT for the routine is 1.32, the least significant digits is 2 and the average, when rounded would be 1.27 (1.223+1.32 = 2.543/2 = 1.2715, rounded = 1.27).   If there is another result (e.g., confirmation result) associated, then:   1. Average the result being processed with the existing result(s) (using zero for results that are less than detect as described above) 2. Proceed as described above | Create the necessary conversion table for conversions. Use this table as your conversion table.  Go ahead and create an equivalent table in Prime.    Design Note: AMCL (artificial MCL) was added to handle TOC and alkalinity, neither of which have an MCL.  Developer note: the code must not be selecting MCL records because, at the time of this design change, it used the MIN Regulatory Type for TOC. Check and change this so that it selects AMCL for TOC and Alkalinity. |
| COMPLIANCE\_RESULT\_UOM | If there is a current MCL, AMCL, MRDL, or ACL for the MS analyte being processed, Set to Regulatory\_Level.REG\_LEVEL\_UOM for the current MCL, AMCL, MRDL, or ACL for the MS analyte  Else, set to the UOM of the Result being processed | Note that, when there is not an MCL, AMCL, MRDL, or ACL and the result is less than detect, this column will be null, which should be OK because the Result will be zero. |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘Y’ |  |

#### Create/update a MPAvg\_ComplValue record

Do not create or update MPAVG\_COMPLVALUE if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T'.

Do not create or update MPAVG\_COMPLVALUE (i.e., TA\_MP\_AVG\_COMPL\_VALUE) if there is not a current Regulatory\_Level Type of MCL, AMCL, MRDL, or ACL for the MS analyte being processed.

| **MPAvg\_ComplValue Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID from the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PRD\_ID | Set to  Monitoring\_Schedule.MP\_MONITORING\_PRD\_ID from the Monitoring\_Schedule record being processed. |  |
| MP\_AVERAGE | Set to the average of the Result\_To\_MSLink.COMPLIANCE\_RESULT\_TEXT (created above) with the same monitoring\_schedule\_id, monitoring\_period\_id, and CONTAMINANT\_CD after rounding it to the least significant digits of any compliance\_result\_text used in the average. | Note that this is a text field so that the significant digits after rounding are retained even if the last digit is a zero.Example if there is more than one compliance\_result\_text:  7.25 and 6.26. The average is 6.755. This needs to be rounded to hundreths, i.e., 6.76. |
| MP\_AVERAGE\_UOM | If there is a current MCL OR AMCL for the analyte being processed, Set to Regulatory\_Level.REG\_LEVEL\_UOM for the current MCL, MRDL, or ACL for the contaminant.  Else, do not create a MP Average/Compliance Value record. |  |
| CONTAMINANT\_CD | Set to Monitoring\_Schedule.MS\_CONTAMINANT\_CODE.  Once the database is normalized, we’ll use the foreign key to the analyte table (ANALYTE\_REF) instead. At that time, Monitoring\_Schedule.MS\_CONTAMINANT\_CODE will be used to select the correct analyte record. |  |
| COMPLIANCE\_VALUE | For nitrite and nitrate:  Set to the same value as MP\_AVERAGE after rounding it to the same significant digits as the MCL.  For all others:  If the MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS >90, set to MP\_AVERAGE after rounding it to the same significant digits as the MCL.  Else (MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS ≤ 90, then:  calculate the running annual average and round it to the same significant digits as the analyte's MCL. | For other rules, this will sometimes involve another calculation.  See **Appendix B** for specifications for calculating a running annual average. |
| COMPLIANCE\_VALUE\_UOM | Set to the same value as MP\_AVERAGE\_UOM |  |
| COMPLIANCE\_VALUE\_NUMB\_RESULTS | Set to the number of MP\_AVERAGE records used to calculate the COMPLIANCE\_VALUE. | For nitrate and nitrite, it will always be 1. For other contaminants, it may be 1 or up to 4. We get into this more when we work on IOC/VOC/SOC rules. |
| COMPLIANCE\_VALUE\_TOTAL\_DAYS | For analytes with MCL Compliance Method = MPA:  Set to Monitoring\_Period. MP\_FIXED\_DAYS for the MP being processed.  For analytes with MCL Compliance Method = RAA:  (1) For MR. INTERVAL\_FIXED\_DAYS <=90, set to Set to the sum of the monitoring\_period.MP\_FIXED\_DAYS for the monitoring periods that make up the running annual average.  (2) Else set to Monitoring\_Period. MP\_FIXED\_DAYS for the MP being processed. | This is the number of days in the Monitoring Period. We’ll use a “fixed” number of days not the actual days. |
| MP\_AVERAGE\_NUMB\_RESULTS | Set to the number of results used to calculate the MP\_AVERAGE which is equal to the number of Result\_To\_MSLink records associated to the Monitoring\_Schedule being processed. | This will usually be 1 for nitrate and nitrite even if a confirmation has been collected.  It will be more than 1 if more than one routine result was reported for the same Monitoring\_Schedule. |
| COMPLIANCE\_VALUE\_TYPE | Set to Regulatory\_Level.REG\_LEVEL\_MCL\_METHOD for the current nitrite MCL. |  |

#### update Latest\_Compliant\_Sample\_Dt

| **Monitoring\_Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| CV\_AGENCY\_RECEIVED\_DT | MAX(SAMPLE\_RESULT.PA\_RECEIVED\_DT) of the Sample\_Result associated to the MSxMP to which the sample result being processed was associated. |  |
| LATEST\_COMPLIANT\_SAMPLE\_DT | Set to  Sample\_Result.Sample\_Date if it is > the date currently stored in the column. |  |

#### Create/update LRAA

LRAA are only created and updated for DBP contaminants 2950 and 2456. Note that an LRAA is unique by WS, Facility, Sampling Point, and Contaminant. For a single WS and Facility and DBP contaminant (e.g., 2950 TTHM), there could be many LRAA records, each referencing a different Sampling Point. These LRAA records are separate from RAA records and OEL records (OEL are discussed next).

| **MPAvg\_ComplValue Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID from the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PRD\_ID | Set to  Monitoring\_Schedule.MP\_MONITORING\_PRD\_ID from the Monitoring\_Schedule record being processed. |  |
| SAMPLING POINT | Set to the Sampling Point associated to the sample being processed | LRAA and OEL are calculated by Sampling Point. |
| MP\_AVERAGE | Set to the average of the Result\_To\_MSLink.COMPLIANCE\_RESULT\_TEXT (created above - now in task\_analyte\_result) with the same monitoring\_schedule\_id, monitoring\_period\_id, **FAC\_SAMPLING\_POINT\_ID**, and CONTAMINANT\_CD after rounding it to the least significant digits of any compliance\_result\_text used in the average. | Note that this is a text field so that the significant digits after rounding are retained even if the last digit is a zero.Example if there is more than one compliance\_result\_text:  7.25 and 6.26. The average is 6.755. This needs to be rounded to hundreths, i.e., 6.76. |
| MP\_AVERAGE\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant. | The logic to select a contaminant's MCL is included in the data element logic for NO2. |
| CONTAMINANT\_CD | Set to Monitoring\_Schedule.MS\_CONTAMINANT\_CODE.  Once the database is normalized, we’ll use the foreign key to the analyte table (ANALYTE\_REF) instead. At that time, Monitoring\_Schedule.MS\_CONTAMINANT\_CODE will be used to select the correct analyte record. |  |
| COMPLIANCE\_VALUE | Only applies to DBP contaminants 2950 and 2456.  If the MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS >90, set to MP\_AVERAGE for the after rounding it to the same significant digits as the MCL.  Else (MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS ≤ 90), then:  calculate the locational running annual average (LRAA) and round it to the same significant digits as the analyte's MCL. | See **Appendix B** for specifications for calculating a LRAA. |
| COMPLIANCE\_VALUE\_UOM | Set to the same value as MP\_AVERAGE\_UOM |  |
| COMPLIANCE\_VALUE\_NUMB\_RESULTS | Set to the number of MP\_AVERAGE records used to calculate the COMPLIANCE\_VALUE. |  |
| COMPLIANCE\_VALUE\_TOTAL\_DAYS | Set to the sum of the MP\_FIXED\_DAYS in the Monitoring\_Period records for the MP\_AVERAGE used to calculate the Compliance Value. | This is the sum of the number of fixed days in the Monitoring Periods used to calculate the compliance value. |
| MP\_AVERAGE\_NUMB\_RESULTS | Set to the number of results used to calculate the MP\_AVERAGE which is equal to the number of Result\_To\_MSLink (now task\_analyte\_result) records associated to the Monitoring\_Schedule x Monitoring\_Period being processed for the same Sampling Point. | Almost always, this will be one because a PWS usually only collects one sample at each sampling point during a quarter. |
| COMPLIANCE\_VALUE\_TYPE | Set to 'LRAA' |  |
| CV\_AGENCY\_RECEIVED\_DT | MAX(SAMPLE\_RESULT.PA\_RECEIVED\_DT) of the Sample\_Result associated to the MSxMP to which the sample result being processed was associated and the sampling point for the sample result being processed. |  |

#### Create/update OEL

OEL are only created and updated for DBP contaminants 2950 and 2456. Note that an OEL is unique by WS, Facility, Sampling Point, and Contaminant. For a single WS and Facility and DBP contaminant (e.g., 2950 TTHM), there could be many OEL records, each referencing a different Sampling Point. These OEL records are separate from RAA records and LRAA records.

| **MPAvg\_ComplValue Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID from the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PRD\_ID | Set to  Monitoring\_Schedule.MP\_MONITORING\_PRD\_ID from the Monitoring\_Schedule record being processed. |  |
| SAMPLING POINT | Set to the Sampling Point associated to the sample being processed | LRAA and OEL are calculated by Sampling Point. |
| MP\_AVERAGE | Set to the average of the Result\_To\_MSLink.COMPLIANCE\_RESULT\_TEXT (created above) with the same monitoring\_schedule\_id, monitoring\_period\_id, **FAC\_SAMPLING\_POINT\_ID**, and CONTAMINANT\_CD after rounding it to the least significant digits of any compliance\_result\_text used in the average. | Note that this is a text field so that the significant digits after rounding are retained even if the last digit is a zero.Example if there is more than one compliance\_result\_text:  7.25 and 6.26. The average is 6.755. This needs to be rounded to hundreths, i.e., 6.76. |
| MP\_AVERAGE\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant. |  |
| CONTAMINANT\_CD | Set to Monitoring\_Schedule.MS\_CONTAMINANT\_CODE.  Once the database is normalized, we’ll use the foreign key to the analyte table (ANALYTE\_REF) instead. At that time, Monitoring\_Schedule.MS\_CONTAMINANT\_CODE will be used to select the correct analyte record. |  |
| COMPLIANCE\_VALUE | Only applies to DBP contaminants 2950 and 2456.  If the MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS >90, set to MP\_AVERAGE for the after rounding it to the same significant digits as the MCL.  Else (MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS ≤ 90), then:  calculate the operational evaluation level (OEL) and round it to the same significant digits as the analyte's MCL. | See **Appendix B** for specifications for calculating an OEL. |
| COMPLIANCE\_VALUE\_UOM | Set to the same value as MP\_AVERAGE\_UOM |  |
| COMPLIANCE\_VALUE\_NUMB\_RESULTS | Set to the number of MP\_AVERAGE records used to calculate the COMPLIANCE\_VALUE. |  |
| COMPLIANCE\_VALUE\_TOTAL\_DAYS | Set to the sum of the MP\_FIXED\_DAYS in the Monitoring\_Period records for the MP\_AVERAGE used to calculate the Compliance Value. | This is the sum of the number of fixed days in the Monitoring Periods used to calculate the compliance value. |
| MP\_AVERAGE\_NUMB\_RESULTS | Set to the number of results used to calculate the MP\_AVERAGE which is equal to the number of Result\_To\_MSLink records associated to the Monitoring\_Schedule x Monitoring\_Period being processed for the same Sampling Point. | This will usually be 1 for nitrate and nitrite even if a confirmation has been collected.  It will be more than 1 if more than one routine result was reported for the same Monitoring\_Schedule. |
| COMPLIANCE\_VALUE\_TYPE | Set to 'OEL' |  |
| CV\_AGENCY\_RECEIVED\_DT | MAX(SAMPLE\_RESULT.PA\_RECEIVED\_DT) of the Sample\_Result associated to the MSxMP to which the sample result being processed was associated and the sampling point for the sample result being processed. |  |

### R\_SR1C\_5 ASSOC\_CO\_MS AssocCoMs

In this set of conditions, a confirmation sample result (sampleType in ‘CO’) is being processed. The BRE has determined that there is a matching confirmation schedule (nitriteConfirmation in ‘CO’) and has found a triggering routine sample result (triggerResult in ‘RT’).

This function consists of two actions: (1) associate the confirmation sample result to the confirmation (CO) monitoring schedule using the Result\_to\_MSLink table and (2) associate the confirmation sample result to the triggering routine result by populating the sample\_result.ORIGINAL\_RESULT\_ID with the Result\_ID of the routine sample result.

#### Associate CO Result to CO MS

As stated above, this action creates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed, i.e., the confirmation monitoring schedule. |  |
| MONITORING\_PERIOD\_ID | Null | If the sample is a confirmation sample (Type CO), then there will not be a MP\_Monitoring\_Prd\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed, i.e., the confirmation sample\_result. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Otherwise, set to the Sample\_Result.RESULT of the Sample\_Result being processed.  In the second case, if the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL, then first convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL. | Use the conversion table for conversions (previously specified). |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant (for NO2, that will be nitrite – 1041). | The logic to select the nitrite MCL is included in the data element logic for NO2. |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘Y’ |  |

#### Associate CO Result to RT Result

As stated above, this action updates the Sample\_Result record being populated by valuing the ORIGINAL\_RESULT\_ID with the Result\_ID of the routine sample result selected in the condition “triggerResult in ‘RT’.”

### R\_SR1C\_5 CALC\_COMPL\_VALUE CalcComplianceValue

This function was not listed in the original set of functions received from Wentong. I added it because this function, when called from R\_SR1C\_5, should UPDATE a record rather than create it. Above, under 2.2.4.2, this function creates a record.

So what follows is the specifications for updating a MPAvg\_ComplValue in this situation (i.e., when a confirmation sample result is being processed and has been linked to a routine sample result (see above Associate CO Result to RT Result).

| **MPAvg\_ComplValue Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | No change |  |
| MONITORING\_PRD\_ID | No change |  |
| MP\_AVERAGE | Calculate an average using the routine and confirmation result (that is to say, add the two results and divide by two). Then round the average as described in the Board room on Tuesday, July 15, 2014. | Note that this is a text field so that the significant digits after rounding are retained even if the last digit is a zero.  For instance, if the nitrite MCL was set to 1.0 by a state, and a result of 1.96 needed to be rounded, it would round to 2.0, which should be stored here. |
| MP\_AVERAGE\_UOM | No change |  |
| CONTAMINANT\_CD | No change |  |
| COMPLIANCE\_VALUE | Set to the same value as the recalculated MP\_AVERAGE. |  |
| COMPLIANCE\_VALUE\_UOM | No change |  |
| COMPLIANCE\_VALUE\_NUMB\_RESULTS | No change |  |
| COMPLIANCE\_VALUE\_TOTAL\_DAYS | No change |  |
| MP\_AVERAGE\_NUMB\_RESULTS | No change |  |
| COMPLIANCE\_VALUE\_TYPE | No change |  |

### R\_SR3A\_6 ASSOC\_MS\_MP AssocMsMp

This is the same function called in both R\_SR1B \_6 and R\_SR1B \_7. However, in these two “rules”, the BRE decision table only has one “performAction” function named CALC\_COMPL\_VALUE. As described above, under 2.2.4.1 Create a Result\_To\_MSLink record, the action of this current function is described: namely it creates a Result\_To\_MSLink record that references the Sample\_Result being processed and the Monitoring\_Schedule being processed.

Use the specifications from 2.2.4.1 Create a Result\_To\_MSLink record.

### SOC SR:2a\_5 Create candidate quarterly monitoring schedules for 2065 and 2067

This table shows how to value candidate two routine quarterly monitoring schedules for heptachlor and heptachlor epoxide as called for in the SOC RLM Part 3, Table SR:2a, the 5th rule. Fields in Monitoring Schedule that are not included below are not valued.

Use this logic to create two monitoring schedules: one for heptachlor and one for heptachlor epoxide.

|  | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
|  | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
|  | MS\_STATUS\_CD | Set to "C - Candidate" |  |
|  | MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
|  | MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
|  | MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows (down to RULE\_CD) |  |
|  | MONITORING\_REQUIREMENT\_TYPE | Like '%TRIGGERED INCREASED%' |  |
|  | MR\_CONTAMINANT\_CODE | = 2065 for one  = 2067 for the other |  |
|  | RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
|  | MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result . |  |
|  | MONITORING\_SCHD\_END\_DATE | Not valued |  |
|  | MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
|  | MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate Return-to-Routine Monitoring Schedule (IOC RLM Part 2, Table SR:2a, 4th Rule)

This table shows how to value candidate, return-to-routine, monitoring schedules that are created by the BRE in function MS Determine. Fields in Monitoring Schedule that are not included below are not valued.

Note that this action uses a Monitoring\_Requirement record as one of its sources. Appendix A outlines what the Monitoring\_Requirement table will look like at that time.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID  For IOC or SOC:   * if SW:True, then Where MONITORING\_REQUIREMENT\_TYPE like 'INITIAL SURFACE%' (annual) * if SW:False, then Where MONITORING\_REQUIREMENT\_TYPE like 'INITIAL GROUND%' (triennial)   For VOC, Where CFR\_REFERENCE = '141.24(f)(5)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter (if MS\_INTERVAL\_UNIT = ‘QT) or calendar year (if MS\_INTERVAL\_UNIT = ‘YR’ and MS\_INTERVAL\_UNIT\_COUNT = 1) or first day of the next 3-year, standardized monitoring period in all other cases. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

### Create PCB Result

Function called in Table SR:1d - SOC Aroclor Decision Table of SOC\_RLM\_Part\_2\_SR\_Eval\_v1. This function creates a result and associates it to the same sample as the aroclor results used to calculate the PCB result are associated (this function is called when processing an aroclor result). (Note that a PCB result is only created when ALL the aroclor results are less than detect.)

Once this is normalized, the sample info will no longer be necessary because the create PCB result should get associated to the same sample as the aroclor results used to calculate it.

To create a PCB result, the BRE needs to create one record in two tables: C\_SAMPLE\_RESULT and C\_SAMPLE\_RESULT\_CHEM. The following provides the details. (We may also need to create a new sample in the future, so that we can distinguish that the result created by the BRE was not submitted by a laboratory or water system via CMDP.)

| **Table** | **Column** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| C\_SAMPLE\_RESULT | C\_SAMPLE\_RESULT\_ID | Primary key | Generated by Prime |
|  |  |  |  |
| C\_SAMPLE\_RESULT | C\_SAMPLE\_ID | Set to C\_Sample\_ID of the C\_SAMPLE\_RESULT being processed (i.e., the aroclor c\_sample\_result record). |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| C\_SAMPLE\_RESULT | Analyte\_ID | Set to analyte\_ref.analyte\_ref\_id where analyte\_ref.ANALYTE\_CD = '2383' |  |
| C\_SAMPLE\_RESULT | DATA\_QUALITY\_ID | Set to KEY\_VALUE\_REF.KEY\_VALUE\_REF\_ID Where REF\_CATEGORY = 'SAMPLE\_RESULT\_DATA\_QUALITY' and VALUE\_DATA = 'Accepted' |  |
| C\_SAMPLE\_RESULT\_  CHEM | C\_SAMPLE\_RESULT\_ID | Primary key  Should be the same value as the Primary Key for C\_SAMPLE\_RESULT. | Generated by Prime |
| C\_SAMPLE\_RESULT\_  CHEM | RESULT | Null |  |
| C\_SAMPLE\_RESULT\_  CHEM | RESULT\_UOM\_ID | Null |  |
| C\_SAMPLE\_RESULT\_  CHEM | NOT\_DETECTED | Set to 'Y' |  |
|  |  |  |  |
| C\_SAMPLE\_RESULT | METHOD\_ID | Set to METHOD\_CODE\_REF.METHOD\_CODE\_REF\_ID Where method\_cd = 'CALCUL PRIME' |  |
| C\_SAMPLE\_RESULT | AGENCY\_RECEIVED\_DT | Set to AGENCY\_RECEIVED\_DT of the C\_SAMPLE\_RESULT being processed (i.e., the aroclor c\_sample\_result record). |  |

### Create TTHM Result

This function is called when results for 4 trihalomethanes are available as facts (see condition "Result for all 4 THM"). It creates a "result" for total trihalomethanes and associates the new result record to the same sample record to which the result being processed is associated. (We may also need to create a new sample in the future, so that we can distinguish that the result created by the BRE was not submitted by a laboratory or water system via CMDP.)

| **Table** | **Column** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| C\_SAMPLE\_RESULT | C\_SAMPLE\_RESULT\_ID | Primary key | Generated by Prime |
|  |  |  |  |
| C\_SAMPLE\_RESULT | C\_SAMPLE\_ID | Set to C\_Sample\_ID of the C\_SAMPLE\_RESULT being processed (i.e., the trihalomethane sample\_result record). |  |
| C\_SAMPLE\_RESULT | Analyte\_ID | Set to analyte\_ref.analyte\_ref\_id where analyte\_ref.ANALYTE\_CD = '2950' |  |
| C\_SAMPLE\_RESULT | DATA\_QUALITY\_ID | Set to KEY\_VALUE\_REF.KEY\_VALUE\_REF\_ID Where REF\_CATEGORY = 'SAMPLE\_RESULT\_DATA\_QUALITY' and VALUE\_DATA = 'Accepted' |  |
| C\_SAMPLE\_RESULT\_  CHEM | RESULT | If all 4 THM results have their RESULT\_LESS\_THAN\_IND = 'Y', do not value.  Else, set to the sum of the results from the 4 THM results. |  |
| C\_SAMPLE\_RESULT\_  CHEM | RESULT\_UOM\_ID | If all 4 THM results have their RESULT\_LESS\_THAN\_IND = 'Y', do not value.  Else, set to the RESULT\_UOM\_ID for the first THM result with this same field valued. |  |
| C\_SAMPLE\_RESULT\_  CHEM | NOT\_DETECTED | If all 4 THM results have their RESULT\_LESS\_THAN\_IND = 'Y', set to 'Y'.  Else, set to 'N' |  |
| C\_SAMPLE\_RESULT | METHOD\_ID | Set to METHOD\_CODE\_REF.METHOD\_CODE\_REF\_ID Where method\_cd = 'CALCUL PRIME' |  |
| C\_SAMPLE\_RESULT | AGENCY\_RECEIVED\_DT | Set to AGENCY\_RECEIVED\_DT of the C\_SAMPLE\_RESULT being processed. |  |

### Create HAA5 Result

This function is called when results for 5 haloacetic acid are available as facts (see condition "Result for all 5 HAA"). It creates a "result" for total Haloacetic acids and associates the new result record to the same sample record to which the result being processed is associated. (We may also need to create a new sample in the future, so that we can distinguish that the result created by the BRE was not submitted by a laboratory or water system via CMDP.)

| **Table** | **Column** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| C\_SAMPLE\_RESULT | C\_SAMPLE\_RESULT\_ID | Primary key | Generated by Prime |
|  |  |  |  |
| C\_SAMPLE\_RESULT | C\_SAMPLE\_ID | Set to C\_Sample\_ID of the C\_SAMPLE\_RESULT being processed (i.e., the haloacetic acid sample\_result record). |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| C\_SAMPLE\_RESULT | Analyte\_ID | Set to analyte\_ref.analyte\_ref\_id where analyte\_ref.ANALYTE\_CD = '2456' |  |
| C\_SAMPLE\_RESULT | DATA\_QUALITY\_ID | Set to KEY\_VALUE\_REF.KEY\_VALUE\_REF\_ID Where REF\_CATEGORY = 'SAMPLE\_RESULT\_DATA\_QUALITY' and VALUE\_DATA = 'Accepted' |  |
| C\_SAMPLE\_RESULT\_  CHEM | RESULT | If all 5 HAA results have their RESULT\_LESS\_THAN\_IND = 'Y', do not value.  Else, set to the sum of the results from the 5 HAA results. |  |
| C\_SAMPLE\_RESULT\_  CHEM | RESULT\_UOM\_ID | If all 5 HAA results have their RESULT\_LESS\_THAN\_IND = 'Y', do not value.  Else, set to the RESULT\_UOM\_ID for the first HAA result with this same field valued. |  |
| C\_SAMPLE\_RESULT\_  CHEM | NOT\_DETECTED | If all 5 HAA results have their RESULT\_LESS\_THAN\_IND = 'Y', set to 'Y'.  Else, set to 'N' |  |
|  |  |  |  |
| C\_SAMPLE\_RESULT | METHOD\_ID | Set to METHOD\_CODE\_REF.METHOD\_CODE\_REF\_ID Where method\_cd = 'CALCUL PRIME' |  |
| C\_SAMPLE\_RESULT | AGENCY\_RECEIVED\_DT | Set to AGENCY\_RECEIVED\_DT of the SAMPLE\_RESULT being processed. |  |

### Create Candidate DBP Routine Monitoring Schedule

DDBP RLM Part 2, Table SR2:DBP - Evaluate DBP Result includes several create monitoring schedule functions (for example: "Create candidate Subpart H 3300-9999 Routine Monitoring Schedule", " Create candidate Subpart H 1-5M Routine Monitoring Schedule", "Create candidate GW 500-9999 Routine Monitoring Schedule." Instead of writing the design for each unique situation, the following is the template for creating these candidate monitoring schedules for 2950 (total trihalomethanes) and 2456 (haloacetic acids). Each time the RLM says to create candidate monitoring schedules in this table, it means to create two monitoring schedules that are exactly alike except one references a monitoring requirement for 2950 and the other for 2456. These two analytes are referred to collectively as "DBP".

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 3 rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE%'  AND  (Like 'H %' if the "Fed Primary Source" In (SW, SWP, GU, GUP) or Like '%GW%' if the "Fed Primary Source" In (GW, GWP))  AND then use the "Population Served" for the WS being processed to select the range that matches (for example, a Subpart H system serving 22,500 would select Like '%10000-49999%') |  |
| MR\_CONTAMINANT\_CODE | '2950' for the first MS, '2456' for the second MS |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | * If the INTERVAL\_FIXED\_DAYS for the monitoring requirement selected for the candidate MS = 90, set to the first day of the calendar quarter that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.   + If this date is not valued, then the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. * If the INTERVAL\_FIXED\_DAYS <> 90, set to the first day of the calendar **year** that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.   + If this date is not valued, then the first day of the calendar year that immediately follows the CREATE\_DT for the Result |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate DBP Increased Monitoring Schedule

Each time the RLM says to create candidate increased monitoring schedules in this table, it means to create two monitoring schedules that are exactly alike except one references a monitoring requirement for 2950 and the other for 2456. These two analytes are referred to collectively as "DBP".

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 4 rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%INCREASED%'  AND  (Like ' H %" if the "Fed Primary Source" In (SW, SWP, GU, GUP)  or Like 'GW %' if the "Fed Primary Source" In (GW, GWP))  AND then use the "Population Served" for the WS being processed to select the range that matches (for example, a Subpart H system serving 22,500 would select Like '%10000-49999%') |  |
| CONTAMINANT\_CODE | '2950' for the first MS, '2456' for the second MS |  |
|  |  |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | * If the INTERVAL\_FIXED\_DAYS for the monitoring requirement selected for the candidate MS = 90, set to the first day of the calendar quarter that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.If this date is not valued, then the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. * Else set to the first day of the calendar **year** that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE. If this date is not valued, then the first day of the calendar year that immediately follows the CREATE\_DT for the Result | Though the Interval\_Fixed\_Days should always be 90 for DBP Increased monitoring, the else clause was added just in case. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate ROUTINE Precursor Monitoring Schedule

Each time the RLM says to create candidate routine precursor monitoring schedules in this table, it means to create three or more monitoring schedules.

The location and number of monitoring schedules depends on the number of monitoring schedules that the MS being processed is packaged with. For example, say the BRE is processing a MS for TOC (2920) and that MS is associated to TP1 and that MS is packaged with a TOC (2920) MS at Intake #1 and an alkalinity MS at Intake #1 and it is also packaged with a TOC (2920) MS at Intake #2 and an alkalinity MS at Intake #2. This function would create 5 MS: one for TOC at TP1, one for TOC at Intake #1, one for TOC at Intake #2, one for alkalinity at Intake #1, and one for alkalinity at Intake #2. It would then also package all five together. Each of the MS created would call for 1 sample per month.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Existing Precursor Monitoring Schedules Packaged** | | | **Candidate Precursor Monitoring Schedules to Create** | | |
| **Location** | **Cont\_Cd** | **MR\_Type** | **Frequency** | **Cont\_Cd** | **MR\_Type** | **Frequency** |
| TP1 | 2920 | %REDUCED TREATED% | 1 RT/1QT | 2920 | %ROUTINE TREATED% | 1 RT/1MN |
| Intake #1 | 2920 | %REDUCED SOURCE% | 1 RT/1QT | 2920 | %ROUTINE SOURCE% | 1 RT/1MN |
| Intake #1 | 1927 | %REDUCED SOURCE% | 1 RT/1QT | 1927 | %ROUTINE SOURCE% | 1 RT/1MN |
| Intake #2 | 2920 | %REDUCED SOURCE% | 1 RT/1QT | 2920 | %ROUTINE SOURCE% | 1 RT/1MN |
| Intake #2 | 1927 | %REDUCED SOURCE% | 1 RT/1QT | 1927 | %ROUTINE SOURCE% | 1 RT/1MN |

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE%' and like '%[LOCATION]%' for the MS being processed where [LOCATION] is either 'TREATED' or 'SOURCE' from the MONITORING\_REQUIREMENT\_TYPE for the MS being processed. |  |
| CONTAMINANT\_CODE | Same as the respective MS in the package being processed (i.e., either 2920 or 1927) |  |
| NUMB\_SAMPLES\_REQUIRED | = 1 |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then set to the first day of the calendar month that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate ROUTINE Bromate Monitoring Schedule

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE%' |  |
| CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then set to the first day of the calendar month that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate ROUTINE Chlorite Monitoring Schedule

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE%' |  |
| CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then set to the first day of the calendar month that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create/Update Candidate LRAA MCL Violation

This table shows how to value candidate LRAA MCL violations. This function is only called under the DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | For LRAA MCL, set to VIOLATION\_TYPE\_REF. VIOLATION\_TYPE\_CD  Where VIOLATION\_TYPE\_NM Like '%LRAA%' | Currently this is VIOLATION\_TYPE\_REF\_ID = 87 and it should not change. |
| VIO\_SEVERITY | Set to the number of sampling points associated to the violation via the VIO\_SAMPLE\_RESULT and including the sampling point of the result being processed (so, if creating the violation for the first time, this will be set to 1). | To get the count of the sampling points already associated to an existing violation, you can use the following sql:  SELECT COUNT(C\_SAMPLE.FAC\_SAMPLING\_POINT\_ID) AS NUMB\_SP  FROM VIOLATIONS,  VIO\_SAMPLE\_RESULT,  C\_SAMPLE\_RESULT,  C\_SAMPLE  WHERE VIOLATIONS.VIOLATIONS\_ID = VIO\_SAMPLE\_RESULT.VIOLATIONS\_ID  AND VIO\_SAMPLE\_RESULT.SAMPLE\_RESULT\_ID = C\_SAMPLE\_RESULT.C\_SAMPLE\_RESULT\_ID  AND C\_SAMPLE.C\_SAMPLE\_ID = C\_SAMPLE\_RESULT.C\_SAMPLE\_ID  AND VIOLATIONS.VIOLATIONS\_ID = [violation\_id of the existing violation] |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | For LRAA MCL violations: set to the TA\_MP\_AVG\_COMPL\_VALUE.COMPLIANCE\_VALUE.  If more than one COMPLIANCE\_VALUE exceeds, set to the highest COMPLIANCE\_VALUE. |  |
| VIO\_COMPL\_VALUE\_UOM | For MCL violations: set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM For MR violations: do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | When initially creating the candidate violation, set to 1.  When updating an existing candidate violation, set to the the current value plus 1. |  |
| VIOLATIONS. MCL\_VIOL | Value with REG\_LEVEL.REG.LEVEL\_MEASURE\_TEXT for the MCL being used. | For example, 0.080 for TTHM or 0.060 for HAA5 |
| VIOLATIONS. MCL\_VIOL\_UOM | Value with KEY\_VALUE\_REF.KEY\_DATA referenced by REG\_LEVEL. REG\_LEVEL\_UOM\_ID for the MCL being used | 'MG/L' |

### Create/Update Candidate Inadequate Precursor Removal Violation

This table shows how to value candidate inadequate precursor removal violations. This function is only called under the DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set set to VIOLATION\_TYPE\_REF. VIOLATION\_TYPE\_CD  Where VIOLATION\_TYPE\_REF\_ID = 40 |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Set to MP\_AVG\_COMPL\_VALUE.COMPLIANCE\_VALUE of the record being processed. |  |
| VIO\_COMPL\_VALUE\_UOM | Set to MP\_AVG\_COMPL\_VALUE.COMPLIANCE\_VALUE\_UOM of the record being processed. |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |

### Create/Update Candidate Acute Chlorine Dioxide MRDL Violation

This table shows how to value candidate acute chlorine dioxide MRDL violations. This function is only called under the DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set set to VIOLATION\_TYPE\_REF. VIOLATION\_TYPE\_CD  Where VIOLATION\_TYPE\_REF\_ID = 38 |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | When initially creating the candidate violation, set to 1.  When updating an existing candidate violation, set to the the current value plus 1. |  |

### Create/Update Candidate Chlorite MCL Violation

This function is only called under the DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set set to VIOLATION\_TYPE\_REF. VIOLATION\_TYPE\_CD  Where VIOLATION\_TYPE\_REF\_ID = 59 |  |
| VIO\_SEVERITY | Set to 1 if initially creating the record. If updating the record, add 1 to the value already recorded. |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | When initially creating the candidate violation, set to 1.  When updating an existing candidate violation, set to the current value plus 1. |  |

### Calculate Arithmetic Mean and Compare to MCL

MCL compliance for chlorite is unique. It is based on an "arithmetic average" as follows: "Compliance [with the MCL] is based on an arithmetic average of each three sample set taken in the distribution system." Three sample sets are all collected on the same day at the same facility. This function consists of a calculation and then a comparison of that calculation to an MCL. The calculation is not stored (because the occurrence of these is extremely low). The functions consists of comparing the Arithmetic Average (or Mean) for chlorite to the MCL for chlorite.

**Calcuating the Arithmetic Average/Mean**

SELECT AVG(SAMPLE\_RESULT.RESULT)

FROM SAMPLE\_RESULT

LEFT JOIN RESULT\_TO\_MS\_LINK

ON SAMPLE\_RESULT.RESULT\_ID = RESULT\_TO\_MS\_LINK.RESULT\_ID

WHERE RESULT\_TO\_MS\_LINK.RESULT\_ID IS NULL

AND SAMPLE\_RESULT.SMP\_WATER\_SYSTEM\_ID = [SMP\_WATER\_SYSTEM\_ID of the Sample\_Result being processed]

AND SAMPLE\_RESULT.SMP\_STATE\_ASSIGNED\_FAC\_ID = [SMP\_STATE\_ASSIGNED\_FAC\_ID of the Sample\_Result being processed]

AND SAMPLE\_RESULT.SAMPLE\_DATE = [SAMPLE\_DATE of the Sample\_Result being processed]

AND SAMPLE\_RESULT.SAMPLE\_COMPLIANCE\_IND = 'Y'

AND SAMPLE\_RESULT.SAMPLE\_TYPE\_CD IN ('RT', 'TG')

AND SAMPLE\_RESULT.SAMPLE\_REJECT\_REASON\_CD IS NULL

GROUP BY SAMPLE\_RESULT.SMP\_WATER\_SYSTEM\_ID,

SAMPLE\_RESULT.SMP\_STATE\_ASSIGNED\_FAC\_ID,

SAMPLE\_RESULT.SAMPLE\_DATE,

SAMPLE\_RESULT.RESULT\_CONTAMINANT\_CD

HAVING SAMPLE\_RESULT.RESULT\_CONTAMINANT\_CD = '1009'

AND COUNT(SAMPLE\_RESULT.RESULT\_ID) = 3

**Select Chlorite MCL**

To select the chlorite MCL, use this logic:

SELECT REGULATORY\_LEVEL.REG\_LEVEL\_MEASURE\_TEXT,

REGULATORY\_LEVEL.REG\_LEVEL\_UOM\_CD

FROM REGULATORY\_LEVEL

WHERE REGULATORY\_LEVEL.REG\_LEVEL\_RULE\_CD = 'DDBP'

AND reg\_level\_contaminant\_cd = [Sample\_Result.RESULT\_CONTAMINANT\_CD - in this case, 1009]

and REGULATORY\_LEVEL.REG\_LEVEL\_TYPE\_CD = 'MCL'

And

(REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT IS NULL

AND REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= [Sample\_Result.SAMPLE\_DATE])

OR

(REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= [Sample\_Result.SAMPLE\_DATE]

and REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT >= [Sample\_Result.SAMPLE\_DATE]);

The significant digits is determined by counting the number of characters following the decimal point in REGULATORY\_LEVEL.REG\_LEVEL\_MEASURE\_TEXT (for chlorite, is will be 1 (the MCL 1.0 unless a PA has made it more stringent)

**Compare AA to MCL**

See if the AA is greater than the MCL

### Create/Update Candidate Bromate MCL Violation

This function is only called under the DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set set to VIOLATION\_TYPE\_REF. VIOLATION\_TYPE\_CD  Where VIOLATION\_TYPE\_REF\_ID = 2 |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to the first day of the calendar quarter for the same calendar quarter as the MP\_END\_DT for the MONITORING\_PERIOD being processed. |  |
| VIO\_FED\_PRD\_END\_DT | Set to the MP\_END\_DT for the MONITORING\_PERIOD being processed. |  |
| VIO\_COMPL\_VALUE\_TEXT | Set to MP\_AVG\_COMPL\_VALUE. COMPLIANCE\_VALUE being processed. |  |
| VIO\_COMPL\_VALUE\_UOM | Set to MP\_AVG\_COMPL\_VALUE. COMPLIANCE\_VALUE\_UOM being processed. |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to the MP\_BEGIN\_DT for the MONITORING\_PERIOD being processed. | This is intentionally different that the VIO\_FED\_PRD\_BEGIN\_DT |
| VIO\_STATE\_PRD\_END\_DT | Set to the MP\_END\_DT for the MONITORING\_PERIOD being processed. |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |

### Create/Update Candidate Operational Evaluation (OEL) Report Requirement

This function creates or updates a record in the Activity table. (This table was added during LT2 development. It was added because primacy agencies require PWS to do a number of activities besides submitting sample analytical results: activities like submitting a sampling plan - an LT2 requirement - also required under some other rules, notifying the state that they recycle spent filter backwash - a FBRR requirement - and many more.)

For DDBP, the primary activity is to conduct an operational evaluation and report its findings.

Before creating a new candidate operational evaluation report, check to see if a duplicate already exists. A duplicate will be for the same water system, facility, and monitoring period (note that analyte is NOT part of the duplicate check).

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID | This relationship will be added soon (requested 4/16/15) |
| TASK\_REF\_ID | Set to task\_ref\_ID that references VIOCD\_RULE\_ANALYTE\_REF with violaton code = '35' and Rule Code = 'DDBP' and analyte code = analyte code from the compliance value |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to MP\_AVG\_COMPL\_VALUE.FACILITY\_ID |  |
| MONITORING\_PERIOD\_ID | Set to MP\_AVG\_COMPL\_VALUE.MONITORING\_PERIOD\_ID |  |
| DUE\_DT | Set to Sample\_Result.PA\_Received\_Dt + 90 days.  If the Sample\_Result.PA\_Received\_Dt is null, set to the result's analysis completion date (c\_sample\_result.ANALYSIS\_COMPL\_DT) + 90 days.  If the result's analysis completion date is null, set to the result's analysis start date (c\_sample\_result.ANALYSIS\_START\_DT) + 90 days.  If result's analysis start date is null, set to  the sample's collection date (COLLECTED\_DT) + 93 days. |  |

### Create/Update RDC OD Summary

Public water systems (PWS) are required to measure disinfectant residual concentrations in samples they collect under the Revised Total Coliform Rule (rTCR). These are reported either as field results or sample results. The following shows how to populate a RDC OD Summary that is created or updated by the BRE. When determining whether there is an existing record, include the CREATE\_USER\_ID because users will also be permitted to enter an RDC OD Summary for the same WS, Facility, and monitoring period (i.e., same WATER\_SYSTEM\_ID, FACILITY\_ID, MONITORING\_PERIOD\_ID, OD\_SUMMARY\_TYPE\_REF\_ID, and CREATE\_ID).

| **Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| OD\_SUMMARY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID being processed |  |
| FACILITY\_ID | Set to FACILITY\_ID being processed |  |
| MONITORING\_PERIOD\_ID | Set to MONITORING\_PERIOD\_ID being processed (the MP to which the result as linked) |  |
| SAMPLE\_CAT\_ID | Set to 35398 | Category = "Operational Data" |
| OD\_SUMMARY\_TYPE\_REF\_ID | Set to 9 | "DSRD" |
| ANALYTE\_REF\_ID | Set to MR\_CONTAMINANT\_CODE from the MONITORING\_REQUIREMENT being processed |  |
| FOR\_COMPLIANCE\_IND | Set to 'Y' |  |
| COLLECTED\_FROM\_DT | If the COLLECTED\_FROM\_DT is null, set to SAMPLE\_RESULT.SAMPLE\_DATE.  If the SAMPLE\_RESULT.SAMPLE\_DATE is < the current value, set to SAMPLE\_RESULT.SAMPLE\_DATE. |  |
| COLLECTED\_TO\_DT | If the COLLECTED\_TO\_DT is null, set to SAMPLE\_RESULT.SAMPLE\_DATE.  If the SAMPLE\_RESULT.SAMPLE\_DATE is > the current value, set to SAMPLE\_RESULT.SAMPLE\_DATE. |  |
| SAMPLES\_COLLECTED | When initially created, set to 1.  When updating an existing record, set to the current value plus 1. |  |
| SMPLS\_BYND\_MEA\_LVL | If SAMPLE\_RESULT.RESULT is null or zero, then:   * If initially creating the RDC OD Summary, set to 1 * Else (i.e., updating the record), se to current value plus 1   Else, if SAMPLE\_RESULT.RESULT  < (less than)  SELECT REGULATORY\_LEVEL.REG\_LEVEL\_MEASURE\_TEXT  FROM REGULATORY\_LEVEL  WHERE REGULATORY\_LEVEL.REG\_LEVEL\_CONTAMINANT\_CD = [MR\_CONTAMINANT\_CODE being processed]  AND REGULATORY\_LEVEL.REG\_LEVEL\_TYPE\_CD = 'MIN'  AND  ((REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT IS NULL  AND REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= Sample\_Date)  OR  (REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= Sample\_Date  and REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT >= Sample\_Date)) | The SQL selects the 'MIN' level for the MS contaminant on the day the sample was collected. |
| CREATE\_USER\_ID | Same User ID we use for all records created by Prime |  |
| PA\_RECEIVED\_DT | If null, set to SAMPLE\_RESULT.PA\_RECEIVED\_DT.  If SAMPLE\_RESULT.PA\_RECEIVED\_DT is > the current value, set to SAMPLE\_RESULT.PA\_RECEIVED\_DT. | The PA\_RECEIVED\_DT for the OD Summary is the latest of the PA\_RECEIVED\_DT for the SAMPLE\_RESULTs used to create/update the record. |

### Create/Update PARR

#### Introduction

The precursor achieved removal ratio (PARR) is only calculated for finished TOC monitoring schedules. These are identified in Prime as monitoring schedules that reference a monitoring requirement for '2920' with its MONITORING\_REQUIREMENT\_TYPE like '%TREATED%'.

As a result, there will be 2 mp\_avg\_compl\_value records for monitoring period associated to a finished TOC schedule as indicated in the diagram below.

**monitoring\_schedule x monitoring\_requirement**

OR4100041 WTP-D 2920 1 RT/QT ‘%TREATED%’

**mntrg\_sch\_mntrg\_prd**

**monitoring\_period**

07/01/2011-09/30/2011

**mp\_avg\_compl\_value**

**typ mpa cval**

RAA 0.95 1.05

PARR 0.15 0.25

PARR are calculated for each Monitoring Period to which the finished TOC monitoring schedule is associated. A running annual average of PARR are also calculated and stored for each Monitoring Period to which the finished TOC monitoring schedule is associated.

The PARR records are very much like the RAA records in MP\_AVG\_COMPL\_VALUE. There are two main differences:

* the value that is recorded in MP\_AVERAGE is calculated differently and is much more complex (it is explained later)
* the calculation for RAA is different in that, when a PWS fails to collect a sample for a quarter (or month), the zero for the MP Average is used in the calculation rather than ignored like it is for MCLs (the reason is that the PAR is a minimum value, not a maximum value, so a zero hurts the average rather than helps it).

One other difference for some PARR monitoring schedules is that a lot of the schedules are monthly rather than quarterly. The way we've designed the RAA calculations should handle monthly RAA with no changes. (Note that the condition "Quarterly Monitoring" actually means quarterly or more frequent.)

The MP\_Average and Compliance\_Value for PARR should be calculated/recalculated whenever any result used to calculate it is entered or revised. The PARR-related results are these:

1. A TOC (2920) result that gets associated to a monitoring\_schedule, which references a monitoring\_requirement where MONITORING\_REQUIREMENT\_TYPE like '%TREATED%' via the Result\_to\_MS\_Link table.
2. A TOC (2920) result that gets associated to a monitoring\_schedule, which references a monitoring\_requirement where MONITORING\_REQUIREMENT\_TYPE like '%SOURCE%' via the Result\_to\_MS\_Link table.
3. An alkalinity (1927 or 1067) result that gets associated to a monitoring\_schedule, which references a monitoring\_requirement where MONITORING\_REQUIREMENT\_TYPE like '%SOURCE%' via the Result\_to\_MS\_Link table.

So it is clear that at least 3 different monitoring schedules are involved: the one to which the result that is being evaluated was associated and 2 (or more) others that are packaged with it.

The actual calculation uses values from MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE for these 3 (or more) monitoring schedules.

1) the MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE that was just created or updated while processing the current result;

2) the MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE(s) associated to one of the packaged schedules (it could be the MS used in the "Source TOC", "Source Alk", or "Treated TOC" conditions with this name); and

3) the MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE(s) associated to another of the packaged schedules (it could be the MS used in the "Source TOC", "Source Alk", or "Treated TOC" conditions with this name) but would be different than the one in 2)).

So, for example, assume the BRE is processing this sample\_result:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **WS\_ID** | **FAC\_**  **State\_ID** | **SR\_ID** | **Smpl**  **Type** | **Sample**  **Date** | **Anlt**  **Code** | **Rslt** | **UOM** |
| OR4100012 | CH-A | 2413843 | RT | 01/08/2010 | 2920 | 2.18 | MG/L |

This result would be linked to the following MS x MP by the time the action "Create/Update PARR" is called.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **WS\_ID** | **FAC\_ID** | **CONT** | **FREQ** | **MS\_ID** | **MR\_ID** | **MP\_ID** | **MP\_BEGIN** | **MP\_END** |
| OR4100012 | CH-A | 2920 | 1 RT/1QT | 369423 | 905 | 489 | 01/01/2010 | 03/31/2010 |

The above MS is packaged with the following two MS:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **WS\_ID** | **FAC\_ID** | **CONT** | **FREQ** | **MS\_ID** | **MR\_ID** |
| OR4100012 | CH-A | 1927 | 1 RT/1QT | 369422 | 907 |
| OR4100012 | WTP-A | 2920 | 1 RT/1QT | 369425 | 903 |

So, in addition to using the MP\_AVERAGE for the result that is being processed, the PARR calculation would use the MP\_AVERAGE for the 1927 schedule and 2920 schedule in the second table above for the same monitoring\_period to which the result being processed was associated.

Note that the conditions in the decision table only call for the PARR calculation when at least all three of these kinds of monitoring schedules (i.e., treated TOC, source TOC, and source alkalinity) exist.

#### PARR

##### Calculation

If the Source TOC MP\_Average is zero, set the MP\_AVERAGE to 1.00 for the PARR record.

If the MP\_AVERAGE\_NUM\_RESULTS for the Treated TOC MP\_AVERAGE is zero, set the MP\_AVERAGE to 0 for the PARR record.

If the MP\_AVERAGE\_NUM\_RESULTS for the Source TOC MP\_AVERAGE is zero, set the MP\_AVERAGE to 0 for the PARR record.

Otherwise, calculate the PARR.MP\_AVERAGE by dividing the “Actual TOC Removal Percentage” by the “Required TOC Removal Percentage.”

The **Required TOC Removal Percentage** is determined using the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Required TOC Removal in Percent** | | | |
| ***Source TOC MP\_Average*** | ***Source Alkalinity MP\_Average (mg/l)1*** | | |
| ***0 to 60*** | ***>60 to 120*** | ***>120*** |
| 2.0 to 4.0 | 35.0 | 25.0 | 15.0 |
| > 4.0 to 8.0 | 45.0 | 35.0 | 25.0 |
| > 8.0 | 50.0 | 40.0 | 30.0 |

1If the number of results for the Source Alkalinity MP Average is zero, zero is used to determine the “Required TOC Removal in Percent” from the above table.

The **Actual TOC Removal Percentage** is calculated as follows:

(1 - (Treated TOC MP\_Average / Source TOC MP\_Average)) \* 100

The PARR = Actual TOC Removal / Required TOC Removal

For example, say a PWS has these MPAs for for July 2015:

* Source Alk = 85 mg/L,
* Source TOC = 7.5 mg/L, and
* Treated TOC = 4.4 mg/L

From the chart, the required removal is 35%

The actual removal is 44% as calculated below:

(1 - ( 4.2 / 7.5)) \* 100

= .44 x 100 = 44 %

and the PARR is 1.25 as calculated below.

44/35 = 1.25 = PARR

The outcome of the above calculation the **Calculated PARR**.

##### Valuing the PARR MP\_Average in MP\_AVG\_COMPL\_VALUE

After performing the above calculation, value the MP\_AVERAGE for the PARR as follows:

* If the Calculated PARR is > or = 1.00, set the PARR to the Calculated PARR
* If the Calculated PARR is < 1.00, then:
  + If the Treated TOC MP\_Average is < 2.00, set the PARR to 1.00
  + If the Source TOC MP\_Average is < 2.00, set the PARR to 1.00
  + Else set the PARR to the Calculated PARR, even if it is a negative number.

##### Valuing the PARR Compliance\_Value in MP\_AVG\_COMPL\_VALUE

This value is the running annual average of PARR MP\_Averages except that the denominator is not reduced ever. It is always 360 days.

It is equal to SUM (MP\_Average x fixed number of days in the MP) for the annual period divided by 360 to get the running annual average.

So, continuing the example above, say the following are the MP\_Averages for the last one year period (note that this PWS went from quarterly monitoring to monthly monitoring in January of 2015).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Monitoring**  **Period** | **MP\_Average**  **for PARR** | **MPA**  **x Fixed**  **Days** | **Notes** | **RAA PARR**  **Equation** | **RAA**  **for PARR** |
| July 2015 | 1.25 | 37.5 |  | = (37.5+43.5+0+30+34.5+46.5+36.9+118.8+73.2) / 360 | 1.17 |
| June | 1.45 | 43.5 |  |  |  |
| May | 0.00 | 0 |  |  |  |
| Apr | 1.00 | 30 |  |  |  |
| Mar | 1.15 | 34.5 |  |  |  |
| Feb | 1.55 | 46.5 |  |  |  |
| Jan | 1.23 | 36.9 |  |  |  |
| 4th qtr '14 | 1.32 | 118.8  (1.32 x 90) |  |  |  |
| 3rd qtr '14 | 1.22 | 73.2  (1.22 x 60) | x 60 because only 60 days of the quarter fall  into the one year period. |  |  |

### R\_SR2B\_2 MONITOR\_QTRLY - Create Candidate Increased Quarterly for RAA Contaminant

"For the purpose of calculating the running annual average, the initial exceedance is considered to be the first quarterly sample" (footnote 7 on page I-17, *Implementation Guidance for the Arsenic Rule*). This function creates a candidate increased quarterly monitoring schedule that begins on the first day of the calendar quarter in which the initial exceedance was collected. This is the only situation where a routine monitoring schedule is allowed to overlap another routine monitoring schedule. By allowing these to overlap, a single result satisfies two routine monitoring schedules: the annual or less frequent schedule that was in effect at the time the sample was collected and the increased quarterly schedule.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%TRIGGERED INCREASED%' |  |
| MR\_CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed. |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter **in which the Sample Date of the result being processed falls.** | So, for example, if the sample being processed was collected on May 12, 2015, set the MONITORING\_SCHD\_BEGIN\_DATE to April 1, 2015. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### RAD RLM Part 2

The first two actions are equivalent to the actions under IOC, VOC, and SOC that create/update and calculate.recalculte Result\_To\_MS\_Link (including the compliance result) and MP\_AVG\_COMPL\_VALUE records (records are to be valued with 'RAA').

**However, be sure to use the analyte from the monitoring\_requirement when creating the Result\_to\_MS\_Link record rather than the analyte from the sample\_result.** The earlier specification said to do it this way but it is now essential that it is done this way.

#### Associate result to MSxMP and calculate and store Compliance Result

This is the same action as we've used in previous rules. Its earliest name was CREATE A RESULT\_TO\_MSLINK RECORD (2.2.4.1). It includes both the creation of a Result\_To\_MS\_Link as well as the calculation and valuing of COMPLIANCE\_RESULT\_TEXT and COMPLIANCE\_RESULT\_UOM, which are the two columns in which the "Compliance Result" are stored.

As has been the case under previous rules, the result may already be associated (when the result was previously processed and then modified by a user, triggering a re-evaluation of the result). In this case, update the existing record (which is how it has been done for previous rules).

The logic from 2.2.4.1 is repeated here.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL - this is the final case); then convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL and set it to the converted value (note, do not update the Sample\_Result.RESULT)  If the Sample\_Result is a **confirmation sample, also** do the following:  update the COMPLIANCE\_RESULT\_TEXT of the routine to which the confirmation sample is associated as follows:  average the COMPLIANCE\_RESULT\_TEXT for the confirmation with the COMPLIANCE\_RESULT\_TEXT for the routine. Round to the least signficant digits for the two (for example, if the COMPLIANCE\_RESULT\_TEXT for the confirmation is 1.223 and the COMPLIANCE\_RESULT\_TEXT for the routine is 1.32, the least signficant digits is 2 and the average, when rounded would be 1.27 (1.223+1.32 = 2.543/2 = 1.2715, rounded = 1.27). | Create the necessary conversion table for conversions. Use this table as your conversion table.    (NOTE: this conversion table was updated for RADR) |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant. | The logic to select the current MCL is included in the RLM's data element logic worksheet. |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Calculate and Store Monitoring Period Average and Calculate and Store Compliance Value

The following is based on the original specification with enhancements, which are in bold. These enhancements need to be integrated into this function under all rules. The original spec is found at 2.2.4.2.

Do not create or update MPAVG\_COMPLVALUE if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T'.

One enhancement is this: **If Result\_to\_MS\_Link.NOT\_FOR\_MP\_AVG\_COMPL\_VALUE = "Y", for the sample\_result being processed, then** do not create/update MP\_AVG\_COMPL\_VALUE record at all.

| **MPAvg\_ComplValue Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID from the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Schedule.MP\_MONITORING\_PRD\_ID from the Monitoring\_Schedule record being processed. |  |
| MP\_AVERAGE | Set to the average of the Result\_To\_MSLink.COMPLIANCE\_RESULT\_TEXT (created above) with the same monitoring\_schedule\_id, monitoring\_period\_id, and CONTAMINANT\_CD after rounding it to the least significant digits of any compliance\_result\_text used in the average.  **Exclude those Result\_to\_MS\_Link records with NOT\_FOR\_MP\_AVG\_COMPL\_VALUE = 'Y'** |  |
| MP\_AVERAGE\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant. |  |
| CONTAMINANT\_CD | Set to MONITORING\_REQUIREMENT MR MR\_CONTAMINANT\_CODE  for the MR being processed. |  |
| COMPLIANCE\_VALUE | For nitrite and nitrate:  Set to the same value as MP\_AVERAGE after rounding it to the same signficant digits as the MCL.  For all others:  If the MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS >90, set to MP\_AVERAGE after rounding it to the same significant digits as the MCL.  Else (MONITORING\_REQUIREMENT. INTERVAL\_FIXED\_DAYS ≤ 90, then:  calculate the running annual average and round it to the same significant digits as the analyte's MCL. | For other rules, this will sometimes involve another calculation.  See **Appendix B** for specifications for calculating a running annual average. |
| COMPLIANCE\_VALUE\_UOM | Set to the same value as MP\_AVERAGE\_UOM |  |
| COMPLIANCE\_VALUE\_NUMB\_RESULTS | Set to the number of MP\_AVERAGE records used to calculate the COMPLIANCE\_VALUE. |  |
| COMPLIANCE\_VALUE\_TOTAL\_DAYS | For analytes with MCL Compliance Method = MPA:  Set to Monitoring\_Period. MP\_FIXED\_DAYS for the MP being processed.  For analytes with MCL Compliance Method = RAA:  (1) For MR. INTERVAL\_FIXED\_DAYS <=90, set to Set to the sum of the monitoring\_period.MP\_FIXED\_DAYS for the monitoring periods that make up the running annual average.  (2) Else set to Monitoring\_Period. MP\_FIXED\_DAYS for the MP being processed. |  |
| MP\_AVERAGE\_NUMB\_RESULTS | Set to the number of results used to calculate the MP\_AVERAGE which is equal to the number of Result\_To\_MSLink records associated to the Monitoring\_Schedule being processed excluding those **Result\_to\_MS\_Link records where (NOT\_FOR\_MP\_AVG\_COMPL\_VALUE = 'Y' or USE\_FOR\_MR\_COMPLIANCE\_IND = 'N')** | For example: a MS for 4010 has three result\_to\_MS\_Link records associated: 1 for 4010, one for 4020, and one for 4030. The use\_for\_mr\_compliance\_ind is set to 'N' for the last two and is null for the 1st one. In this example, the BRE sets the mp\_average\_numb\_results to 1. |
| COMPLIANCE\_VALUE\_TYPE | Set to Regulatory\_Level.REG\_LEVEL\_MCL\_METHOD for the current MCL for the analyte. |  |

#### Calculate and Store MP Average and Compliance Value for Composite Sample

This action is unique to the Radionuclide rule (RAD). It is called when processing composited samples and their result. Under the RAD, a composite consists of 4 quarterly samples collected over a one year period at the same facility. The result for the composite is recorded as both the monitoring period average (MP\_AVERAGE and MP\_AVERAGE\_UOM) and the compliance value (COMPLIANCE\_VALUE and COMPLIANCE\_VALUE\_UOM). The latter is rounded to the same significant digits as the MCL. This is true whether the BRE is creating or updating existing records for these 4 monitoring periods.

Each of the samples in the composite has a copy of the same result but the results will be different records in our rule-designed database (i.e., a unique sample\_result\_id). I'm not sure how it is was done in Sprint 14. At some point, We’ll need to find out and possibly recode this action (e.g., If there is only one result that represents each of the 4 quarters, then we need to introduce a one to many relationship between result and MSxMP).

When a RAD composite result is processed for a quarterly schedule, the BRE will create/update 4 MP\_AVG\_COMPL\_VALUE records: 1 for the quarter represented in the composite sample being processed and the next 3 quarters following the quarter represented in the composite being processed (the same situation as for a non-composite - i.e., next three "future" quarters - that is, future to the latest sample date in the composite).

Value the 4 records for the 4 monitoring periods covered by the composited samples as follows.

| **MPAvg\_ComplValue Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID from the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PRD\_ID | Set to the Monitoring\_Period\_ID to each of the 4 MP represented in the composited samples. |  |
| MP\_AVERAGE | Value with the Result\_to\_MS\_Link. COMPLIANCE\_RESULT\_TEXT values that corresponds (i.e., has the same MP\_ID). |  |
| MP\_AVERAGE\_UOM | Value with the Result\_to\_MS\_Link. COMPLIANCE\_RESULT\_UOM that corresponds (i.e., has the same MP\_ID) | The UOM will be the same for all 4 records. |
| CONTAMINANT\_CD | Set to Monitoring\_Requirement. MR\_CONTAMINANT\_CODE for the connected monitoring\_requirement |  |
| COMPLIANCE\_VALUE | Value with the Result\_to\_MS\_Link. COMPLIANCE\_RESULT\_TEXT that corresponds (i.e., has the same MP\_ID) and rounded to the same significant digits as the MCL. |  |
| COMPLIANCE\_VALUE\_UOM | Value with the Result\_to\_MS\_Link. COMPLIANCE\_RESULT\_UOM that corresponds (i.e., has the same MP\_ID) |  |
| **CV\_DAYS\_WITH\_RESULTS** | **Set to 360 for each of the 4 records.** |  |
| **COMPLIANCE\_VALUE\_TOTAL\_DAYS** | **Set to 360 for each of the 4 records.** |  |
| MP\_AVERAGE\_NUM\_RESULTS | Set to the number of results used to calculate the MP\_AVERAGE which is equal to the number of Result\_To\_MSLink records associated to the Monitoring\_Schedule being processed excluding those **Result\_to\_MS\_Link records where (NOT\_FOR\_MP\_AVG\_COMPL\_VALUE = 'Y' or USE\_FOR\_MR\_COMPLIANCE\_IND = 'N')** |  |
| COMPLIANCE\_VALUE\_TYPE | Set to Regulatory\_Level.REG\_LEVEL\_MCL\_METHOD for the current MCL for the analyte. |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Note that we have an issue to consider. It is possible that either before or after (or both) the one year period represented by the composited samples, individual quarterly results could be entered. Calculating and creating MP\_AVG\_COMPL\_VALUE for these individual quarterly results must **not change** the MP\_AVG\_COMPL\_VALUE for the composited samples. Somehow, the BRE needs to easily know when a MP\_AVG\_COMPL\_VALUE is part of a composited sample so that it will know not to update it when a non-composite result from either a quarterly period before or after the one year period is being processed.

Value the three quarters that following the one year period the same way they are created and updated in IOC, VOC, and SOC.

#### Calculate and store Compliance Result for Uranium from Gross Alpha

Use the "95% Result (pCi/L)" value (derived from the gross alpha result) to calculate the Compliance Result for uranium.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | This is one of a few places where it is critical to use the contaminant code from the Monitoring Requirement. |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, 2.24 ug/L.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL - this is the final case); then convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL using the attached UOM\_CONVERSION\_Table.xlsx and set it to the converted value (note, do not update the Sample\_Result.RESULT)  If the Sample\_Result is a **confirmation sample, also** do the following:  update the COMPLIANCE\_RESULT\_TEXT of the routine to which the confirmation sample is associated as follows:  average the COMPLIANCE\_RESULT\_TEXT for the confirmation with the COMPLIANCE\_RESULT\_TEXT for the routine. Round to the least signficant digits for the two (for example, if the COMPLIANCE\_RESULT\_TEXT for the confirmation is 1.223 and the COMPLIANCE\_RESULT\_TEXT for the routine is 1.32, the least signficant digits is 2 and the average, when rounded would be 1.27 (1.223+1.32 = 2.543/2 = 1.2715, rounded = 1.27). | Use the "95% Result (pCi/L)" value (derived from the gross alpha result) to calculate the Compliance Result for uranium. |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘Y’ |  |

#### Associate GA result to MSxMP for RA-2010

Explanation of need for this specification: A combined radium result (analyte code 4010) consists of the sum of a radium-226 result and a radium-228 result. Additionally, a gross alpha result (4002/4109/4000) can be substituted for a radium-226 result when calculating a combined radium result.

Specification:

1. If the result is for 4000, then:
   1. If MS for 4010 is associated to 4020 (i.e., radium-226), then end (i.e., do not associate the 4000 result).
   2. Otherwise, go to (C)
2. If the result is for 4002 or 4109, then:
   1. If MS for 4010 is associated to 4020 (i.e., radium-226) or 4000 (adjusted gross alpha)[[1]](#footnote-1), then end (i.e., do not associate the 4002/4109 result).
   2. Otherwise, go to (C).
3. Associate/update the 4000/4002/4109 result to MS (4010) x MP (create/update Result\_to\_MS\_Link record). Create/update the Result\_to\_MS\_Link as follows:

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the **RESULT\_CONTAMINANT\_CD for the sample\_result** being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | Set same as the result (if less than detect, set to zero). |  |
| COMPLIANCE\_RESULT\_UOM | Set to RESULT\_UOM if it is not null,  Else set to METHOD\_DETECT\_LMT\_UOM\_CD.  If both are null, set to ‘PCI/L’ |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘**N**’ |  |
| NOT\_FOR\_MP\_AVG\_COMPL\_VALUE | Set to 'Y' | Setting this to 'Y' means do not calculate a MP Average nor Compliance\_Value using this compliance result. |
| TASK\_ANALYTE. NUM\_RESULT\_COLLECTED | Do not update |  |

(C) If a result for radium-228 (4030) is not associated, then end.

Otherwise, go to (D).

1. If a result for radium-228 (4030) is already associated to the same MS (4010) x MP (i.e., a result\_to\_MS\_link record with same MS\_ID and MP\_ID with RESULT\_CONTAMINANT\_CD = '4030'), then
   1. If the GA result was Associated, then update the "Number Received" for the Task\_Analyte by 1 (i.e., if current zero, set to 1, if current is 1 set to 2, etc.). If the GA result was Updated, do **not** update the "Number Received"
   2. Set the USE\_FOR\_MR\_COMPLIANCE\_IND = 'Y'
   3. Set the NOT\_FOR\_MP\_AVG\_COMPL\_VALUE to 'N'
   4. Set the Compliance Result (formerly result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT) for the task\_analyte\_result for both the gross alpha result and the radium-228 result as follows:

* If the RESULT = 0 for both, then set to 0.
* Else, set to the sum of the RESULT for the 4000 or 4002 or 4109 and 4030 result. (For example, if 4002 = 3.2 and 4030 = 1.2. set the compliance result for both to 4.4. Note that only one of these three should be associated.)

And set the COMPLIANCE\_RESULT\_UOM to the UOM of the MCL for combined radium (i.e., pCi/L) for both.

This is nearly the same action as 2.2.28.1 but has some added actions that are unique to this action and unique for the RADR rule.

#### Associate an Adjusted Gross Alpa (AGA) Result to an AGA MS

1. If there is a uranium result (4006) already associated to the same MSxMP, disassociate it.
2. If there is a gross alpha result (either 4002 or 4109) already associated to the same MSxMP, disassociate it.
3. If there is no other result associated to the 4000 MS, then associate the result to the 4000 MSxMP (i.e., create a task\_analyte\_result record) (or update an existing association between the result and the 4000 MS if one already exists) and value the association (i.e., task\_analyte\_result) record as follows:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL - this is the final case); then issue an alert to the user saying "An adjusted gross alpha result was reported with the wrong units."  If the Sample\_Result is a **confirmation sample, also** do the following:  update the COMPLIANCE\_RESULT\_TEXT of the routine to which the confirmation sample is associated as follows:  average the COMPLIANCE\_RESULT\_TEXT for the confirmation with the COMPLIANCE\_RESULT\_TEXT for the routine. Round to the least signficant digits for the two (for example, if the COMPLIANCE\_RESULT\_TEXT for the confirmation is 1.223 and the COMPLIANCE\_RESULT\_TEXT for the routine is 1.32, the least signficant digits is 2 and the average, when rounded would be 1.27 (1.223+1.32 = 2.543/2 = 1.2715, rounded = 1.27). |  |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'N' |  |

#### Associate result to MSxMP, revise Substitute Result\_to\_MS\_Link, and revise Activity-Based Result\_to\_MS\_Link

Associate result to MSxMP, revise Substitute Result\_to\_MS\_Link, and revise activity-based Result\_to\_MS\_Link

This is the same action as 2.2.28.5 but includes an additional action.

**After performing action 2.2.28.5;**

1) If there is another Result\_to\_MS\_Link associated to the same MSxMP, where the sample\_result.RESULT\_CONTAMINANT\_CD = is equal to the monitoring\_requirement.MR\_CONTAMINANT\_CODE, and the sample\_result.RESULT\_UOM = 'pCi/L’, then update its Result\_to\_MS\_Link as follows:

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| REMOVE\_DT | Set to CURRENT\_DATE |  |

2) If there is another Result\_to\_MS\_Link associated to the same MSxMP, where the sample\_result.RESULT\_CONTAMINANT\_CD is not equal (<>) to the monitoring\_requirement.MR\_CONTAMINANT\_CODE, then update its Result\_to\_MS\_Link as follows:

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| REMOVE\_DT | Set to CURRENT\_DATE |  |

#### Associate RA-226 result to MSxMP for RA-2010

1. Create/update a Result\_to\_MS\_Link as follows

(Note this special case, where the contaminant code for the result is different than the contaminant code for the monitoring schedule. Though similar, this is not called a substitute result. Instead, this is a "partial" result (SRP coined term). It is partial because two results are needed to make-up a combined radium result.)

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the **RESULT\_CONTAMINANT\_CD for the sample\_result** being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | Set same as the result (if less than detect, set to zero). | Set same as the result (if less than detect, set to zero). |
| COMPLIANCE\_RESULT\_UOM | Set to RESULT\_UOM if it is not null,  Else set to METHOD\_DETECT\_LMT\_UOM\_CD.  If both are null, set to ‘PCI/L’ | Set to RESULT\_UOM if it is not null,  Else set to METHOD\_DETECT\_LMT\_UOM\_CD.  If both are null, set to ‘PCI/L’ |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘**N**’ |  |
| NOT\_FOR\_MP\_AVG\_COMPL\_VALUE | Set to 'Y' | Setting this to 'Y' means do not calculate a MP Average nor Compliance\_Value using this result only. |
| TASK\_ANALYTE. NUM\_RESULT\_COLLECTED | Do not update |  |

1. If a result for gross alpha (code 4000/4002/4109) is associated:
   1. "delete" the association by setting its REMOVE\_DT to the CURRENT\_DATE.
   2. Reduce "Number Received" for the Task\_Analyte by 1.
   3. Recalculate the Compliance Results, MP Average, and RAA (unless this action block is already called and therefore included, which I think it is)
2. If a result for radium-228 (4030) is not associated, then end. Otherwise, go to (D).
3. If a result for radium-228 is already associated to the same MSxMP (i.e., a result\_to\_MS\_link record with same MS\_ID and MP\_ID with RESULT\_CONTAMINANT\_CD = '4030'), then:
   1. If the Radium-226 result was Associated, then update the "Number Received" for the Task\_Analyte by 1 (i.e., if current zero, set to 1, if current is 1 set to 2, etc.).

If the Radium-226 result was updated, do **not** update the "Number Received"

* 1. Set the USE\_FOR\_MR\_COMPLIANCE\_IND = 'Y'
  2. Set the NOT\_FOR\_MP\_AVG\_COMPL\_VALUE to 'N'
  3. Set the Compliance Result (formerly result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT) for the task\_analyte\_result for the radium-226 result as follows:
* If the COMPLIANCE\_RESULT\_TEXT = 0 for both, then set to 0.
* Else, set to the sum of the COMPLIANCE\_RESULT\_TEXT.

And set the COMPLIANCE\_RESULT\_UOM to the UOM of the MCL for combined radium (i.e., pCi/L)

#### Associate RA-228 result to MSxMP for RA-2010

(A) Create/update a Result\_to\_MS\_Link as follows

Note this special case, where the contaminant code for the result is different than the contaminant code for the monitoring schedule. Though similar, this is not called a substitute result. Instead, this is a "partial" result (SRP coined term). It is partial because two results are needed to make-up a combined radium result.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the **RESULT\_CONTAMINANT\_CD for the sample\_result** being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | Set same as the result (if less than detect, set to zero). | Set same as the result (if less than detect, set to zero). |
| COMPLIANCE\_RESULT\_UOM | Set to RESULT\_UOM if it is not null,  Else set to METHOD\_DETECT\_LMT\_UOM\_CD.  If both are null, set to ‘PCI/L’ | Set to RESULT\_UOM if it is not null,  Else set to METHOD\_DETECT\_LMT\_UOM\_CD.  If both are null, set to ‘PCI/L’ |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘**N**’ |  |
| NOT\_FOR\_MP\_AVG\_COMPL\_VALUE | Set to 'Y' | Setting this to 'Y' means do not calculate a MP Average nor Compliance\_Value using this result only. |
| TASK\_ANALYTE. NUM\_RESULT\_COLLECTED | Do not update |  |

1. If a result for radium-226 (4020) or gross alpha (4000/4002/4109) is not associated, then end.

Otherwise, go to (C).

1. If a result for radium-226 (4020) or gross alpha (4000/4002/4109) is already associated to the same MSxMP, then
   1. Update the "Number Received" for the Task\_Analyte by 1 (i.e., if current zero, set to 1, if current is 1 set to 2, etc.).

If the radium-228 result was updated, do **not** update the "Number Received"

* 1. Set the USE\_FOR\_MR\_COMPLIANCE\_IND = 'Y'
  2. Set the NOT\_FOR\_MP\_AVG\_COMPL\_VALUE to 'N'
  3. Set the Compliance Result (formerly result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT) for the task\_analyte\_result for the radium-228 result and the radium-226 or gross alpha as follows:
* If the COMPLIANCE\_RESULT\_TEXT = 0 for both, then set to 0.
* Else, set to the sum of the RESULTs for 4030 and 4020 or 4000 or 4002 or 4109 (note that only one of these 4 should be associated) and
* set the COMPLIANCE\_RESULT\_UOM to the UOM of the MCL for combined radium (i.e., pCi/L) for both.

#### Calculate and Store Adjusted GB Compliance Result

If a Result\_to\_MS\_Link already exists between the same MS and MP being processed with its RESULT\_CONTAMINANT\_CD = '4044' (Potassium-40), then create/update a sample\_result record for analyte code '4103' and associate it to the same sample as the GB result (i.e. result for 4100).

| **Sample Result Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| SAMPLE\_RESULT\_ID | Primary key | Generated by Prime |
| RESULT\_ID | Set to same value as SAMPLE\_RESULT\_ID |  |
| SAMPLE\_ID | Set to Sample\_ID of the SAMPLE\_RESULT being processed (i.e., the gross beta record). |  |
| SMP\_WATER\_SYSTEM\_ID | Set to SMP\_WATER\_SYSTEM\_ID of the SAMPLE\_RESULT being processed. |  |
| SMP\_STATE\_ASSIGNED\_FAC\_ID | Set to SMP\_STATE\_ASSIGNED\_FAC\_ID of the SAMPLE\_RESULT being processed. |  |
| SAMPLING\_POINT\_ID | Set to SAMPLING\_POINT\_ID of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_LAB\_ASSIGNED\_ID | Do not value |  |
| SAMPLE\_COMPLIANCE\_IND | Set to SAMPLE\_COMPLIANCE\_IND of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_TYPE\_CD | Set to SAMPLE\_TYPE\_CD of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_DATE | Set to SAMPLE\_DATE of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_COMPOSITE\_IND | Set to SAMPLE\_COMPOSITE\_IND of the SAMPLE\_RESULT being processed. |  |
| COMPOSITE\_SAMPLE\_ASSIGNED\_ID | Set to COMPOSITE\_SAMPLE\_ASSIGNED\_ID of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_COMPOSITE\_DT | Set to SAMPLE\_COMPOSITE\_DT of the SAMPLE\_RESULT being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to '4103' |  |
| RESULT\_DATA\_QUALITY\_CD | Set to 'A' |  |
| RESULT | If the result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT = 0 for both , do not value.  Else, set to (COMPLIANCE\_RESULT\_TEXT for 4100) minus (( COMPLIANCE\_RESULT\_TEXT for 4044) x 0.82). |  |
| RESULT\_UOM | If the result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT = 0 for both , do not value.  Else, set to "pCi/L" |  |
| RESULT\_LESS\_THAN\_IND | If the result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT = 0 for both, set to 'Y'.  Else, set to 'N' |  |
| RESULT\_RULE\_CD | Set to 'RADR' |  |
| RESULT\_METHOD\_CD | CALC PRIME |  |
| PA\_RECEIVED\_DT | Set to PA\_RECEIVED\_DT of the SAMPLE\_RESULT being processed. |  |

#### Associate 4044 result to MSxMP and calculate and store Compliance Result

Create/update a Result\_to\_MS\_Link for a Potassium-40 result as follows

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the **RESULT\_CONTAMINANT\_CD for the sample\_result** being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | Do not value |  |
| COMPLIANCE\_RESULT\_UOM | Do not value | Do not value |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘**N**’ |  |
| NOT\_FOR\_MP\_AVG\_COMPL\_VALUE | Set to 'Y' | Setting this to 'Y' means do not calculate a MP Average nor Compliance\_Value using this result only. |

#### Calculate and Store Adjusted GB Compliance Result - 4044 (Potassium-40)

This action is nearly identical to 2.2.28.10 but, instead of processing a 4100 result, the BRE is processing a 4044 result.

If a Result\_to\_MS\_Link already exists between the same MS and MP being processed with its RESULT\_CONTAMINANT\_CD = '4100', then create/update a sample\_result record for analyte code '4103' and associate it to the same sample as the 4044 result.

| **Sample Result Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| SAMPLE\_RESULT\_ID | Primary key | Generated by Prime |
| RESULT\_ID | Set to same value as SAMPLE\_RESULT\_ID |  |
| SAMPLE\_ID | Set to Sample\_ID of the SAMPLE\_RESULT being processed (i.e., the gross alpha record). |  |
| SMP\_WATER\_SYSTEM\_ID | Set to SMP\_WATER\_SYSTEM\_ID of the SAMPLE\_RESULT being processed. |  |
| SMP\_STATE\_ASSIGNED\_FAC\_ID | Set to SMP\_STATE\_ASSIGNED\_FAC\_ID of the SAMPLE\_RESULT being processed. |  |
| SAMPLING\_POINT\_ID | Set to SAMPLING\_POINT\_ID of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_LAB\_ASSIGNED\_ID | Do not value |  |
| SAMPLE\_COMPLIANCE\_IND | Set to SAMPLE\_COMPLIANCE\_IND of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_TYPE\_CD | Set to SAMPLE\_TYPE\_CD of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_DATE | Set to SAMPLE\_DATE of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_COMPOSITE\_IND | Set to SAMPLE\_COMPOSITE\_IND of the SAMPLE\_RESULT being processed. |  |
| COMPOSITE\_SAMPLE\_ASSIGNED\_ID | Set to COMPOSITE\_SAMPLE\_ASSIGNED\_ID of the SAMPLE\_RESULT being processed. |  |
| SAMPLE\_COMPOSITE\_DT | Set to SAMPLE\_COMPOSITE\_DT of the SAMPLE\_RESULT being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to '4103' |  |
| RESULT\_DATA\_QUALITY\_CD | Set to 'A' |  |
| RESULT | If the result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT = 0 for both, do not value.  Else, set to (COMPLIANCE\_RESULT\_TEXT for 4100) minus ((COMPLIANCE\_RESULT\_TEXT for 4044) x 0.82). |  |
| RESULT\_UOM | If the result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT = 0 for both, do not value.  Else, set to "pCi/L" |  |
| RESULT\_LESS\_THAN\_IND | If the result\_to\_ms\_link.COMPLIANCE\_RESULT\_TEXT = 0 for both, set to 'Y'.  Else, set to 'N' |  |
| RESULT\_RULE\_CD | Set to 'RADR' |  |
| RESULT\_METHOD\_CD | CALC PRIME |  |
| PA\_RECEIVED\_DT | Set to PA\_RECEIVED\_DT of the SAMPLE\_RESULT being processed. |  |

(2) Create/update Result\_to\_MS\_Link for the newly created 4103 result

Note that, in the RLM Part 2, I list this action "Go to Table SR:RA to process the newly created result" to follow Step (1) above. If it makes more sense to do that instead of including the following as part of the " Calculate and Store Adjusted GB Compliance Result", then do it that way instead.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. | Note that, if the interval\_unit of the monitoring\_requirement associated to the monitoring\_schedule that is satisfied by the sample is = '1T', then there will not be a Monitoring\_Period\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result just created. |  |
| RESULT\_CONTAMINANT\_CD | Set '4103' |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else:   * if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL); set to the Sample\_Result.RESULT of the Sample\_Result being processed. * Else convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL and set it to the converted value (note, do not update the Sample\_Result.RESULT)   If the Sample\_Result is a **confirmation sample, also** do the following:  update the COMPLIANCE\_RESULT\_TEXT of the routine to which the confirmation sample is associated as follows:  average the COMPLIANCE\_RESULT\_TEXT for the confirmation with the COMPLIANCE\_RESULT\_TEXT for the routine. Round to the least signficant digits for the two (for example, if the COMPLIANCE\_RESULT\_TEXT for the confirmation is 1.223 and the COMPLIANCE\_RESULT\_TEXT for the routine is 1.32, the least signficant digits is 2 and the average, when rounded would be 1.27 (1.223+1.32 = 2.543/2 = 1.2715, rounded = 1.27). | Create the necessary conversion table for conversions. Use this table as your conversion table. |
| COMPLIANCE\_RESULT\_UOM | Set to 'pCi/L' |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘**N**’ |  |
| NOT\_FOR\_MP\_AVG\_COMPL\_VALUE | Set to 'N' |  |

#### Create a candidate RADR "GT MCL" MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%GT MCL%' |  |
| MR\_CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed. |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

#### Create candidate MCL violation based on RAA

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Set to Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Set to Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to '02' |  |
| VIO\_SEVERITY | Do not value. |  |
| VIO\_CONTAMINANT\_CD | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE | For the RADR, it is particularly important to use the MR contaminant code, not the result contaminant code. |
| VIO\_RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Set to Monitoring\_Period.MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE |  |
| VIO\_COMPL\_VALUE\_UOM | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

#### Calculate, sum, and store annual dose equivalent

We will not incorporate this for Release 1. We'll see if it is ever needed. If so, it probably needs to be moved to RLM Part 3.

This actions consists of several steps. The facts needed are as follows:

* All the results that were returned for condition "Constituent Results for Sample"

This action creates a MP\_AVG\_COMPL\_VALUE record (or updates, if the record already exists) for the 4100 monitoring schedule being processed.

Following are the full details of how to populate this MP\_AVG\_COMPL\_VALUE record (the differences with the standard valuing are in bold).

| **MP\_AVG\_COMPL\_VALUE Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID from the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PRD\_ID | Set to  Monitoring\_Schedule.MP\_MONITORING\_PRD\_ID from the Monitoring\_Schedule record being processed. |  |
| MP\_AVERAGE | Set to the Annual Dose Equivalent calculated as specified below. |  |
| MP\_AVERAGE\_UOM | Set to 'MREM/YR' |  |
| CONTAMINANT\_CD | Set to '4101' |  |
| COMPLIANCE\_VALUE | Set to the Annual Dose Equivalent calculated as specified below. |  |
| COMPLIANCE\_VALUE\_UOM | Set to 'MREM/YR' |  |
| COMPLIANCE\_VALUE\_NUMB\_RESULTS | No not value |  |
| COMPLIANCE\_VALUE\_TOTAL\_DAYS | Set to Monitoring\_Period. MP\_FIXED\_DAYS for the MP being processed. |  |
| MP\_AVERAGE\_NUMB\_RESULTS | Set to the number of results used to calculate the Annual Dose Equivalent |  |
| COMPLIANCE\_VALUE\_TYPE | Set to 'ADE' |  |
| WATER\_SYSTEM\_ID | Set to Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| FACILITY\_ID | Set to Facility.FACILITY\_ID where Facility.STATE\_ASSIGNED\_FAC\_ID = Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID and Facility.Water\_System\_ID = Sample\_Result.SMP\_WATER\_SYSTEM\_ID | This logic is needed because we have not yet normalized Sample\_Result. We should probably create a view for Sample\_Result that provides the Facility\_ID for the record and then use that view. The view would match the SQL provided in the second column. |
| ANALYTE\_REF\_ID | Set to Analyte\_Ref.Analyte\_Ref\_ID where Analyte\_Ref.Analyte\_CD = MONITORING\_REQUIREMENT MR MR\_CONTAMINANT\_CODE  for the MR being processed. |  |
| MONITORING\_PERIOD\_ID | Set to MONITORING\_PERIOD\_ID for the MP to which the result was associated. |  |

As example, here are two records possible records (abbreviations for columns used in order to fit it on the page):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MS\_ID | MP\_ID | CONT | MP\_Avg | MP\_Avg\_UOM | CV | CV\_UOM | CV\_Total\_Days | CV\_Type |
| 369985 | 530 | 4100 | 75 | pCi/L | 62 | pCi/L | 360 | RAA |
| 369985 | 530 | 4101 | 6 | MREM/YR | 6 | MREM/YR | 90 | ADE |

The following explains how to calculate the **Annual Dose Equivalent (ADE).**

The column DERIVED\_CONCENTRATION in ANALYTE\_NUCLIDE\_DOSE (a child table to Analyte\_Ref) indicates what 4 mrem of exposure would be for each emitter (also called nuclide or radionuclide) expressed as pCi/L. For each emitter that is detected by the laboratory, divide the pCi/L found in the sample by the value in column DERIVED\_CONCENTRATION. This provides a fraction of how much the particular beta or photon emitter provides towards the maximum of 4 mrem/year for all of the beta photon emitters.

Here are the steps:

**Step 1**: Calculate the fraction of the 4 mrem/year exposure for each emitter using the formula below (Column X/Y=A in the example)

pCi/L found in sample (from laboratory results)

= fraction of the maximum 4 mrem/year exposure limit

pCi/L equivalent of 4 mrem of exposure (from conversion table)

**Step 2**: Add the fractions together (last row for Column X/Y=A in the example).

**Step 3**: Multiple the sum of the fractions from Step 2 times 4 to get the Calculated Annual Dose Equivalent (Colum A\*4 in the example).

**Step 4**: Round the Calculated Annual Dose Equivalent to the same significant digits as the MCL (Column "Compliance Value" in the example).

For example, a water system near a nuclear power facility collects a sample which the laboratory speciates by EPA method 902.0 (gamma spectrometry analysis). The laboratory also analyses for strontium-90 using EPA method 905.0. The analysis indicates the following: Cesium-134 (Cs-134): 5,023 pCi/L Cesium-137 (Cs-137): 30 pCi/L Strontium-90 (Sr-90): 4 pCi/L Iodine-131 (I-131): 2 pCi/L.

Here are the calculations for this example:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Emitter | (X)  Lab Analysis  (pCi/L) | (Y)  DERIVED\_  CONCENTRATION | (X/Y=A)  Calculated  Fraction1 | (A\*4)  Calculated  Annual Dose Equivalent | Compliance  Value2 |
| Cs-134 | 5023 | 20000 | 0.25115 |  |  |
| I-131 | 2 | 3 | 0.7 |  |  |
| Cs-137 | 30 | 200 | 0.150 |  |  |
| Sr-90 | 4 | 8 | 0.5 |  |  |
| Sum of the fractions: | | | 1.60115 | 6.4046 | 6 |

1 Round to number of figures in DERIVED\_CONCENTRATION.

2 Round to the same number of significant digits as the MCL.

#### Create candidate 4100 Major Monitoring Violation.

This table shows how to value candidate violations that are created by the BRE in action "Create Candidate 4100 Major Monitoring Violation". This action is also called in other rules. The function is used to create candidate, major, monitoring, violations.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed] |  |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT for the monitoring period being processed |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT for the monitoring period being processed |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT for the monitoring period being processed |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT for the monitoring period being processed |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE\_NUM\_RESULTS |  |

#### Create candidate 01 BPPR MCL violation

This action crates a candidate MCL violation for beta particle and photon radioactivity (BPPR) based on a single set of results (rather than on a running annual average) and so the violation type/code is 01.[[2]](#endnote-1)

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Set to Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Set to Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to '01' |  |
| VIO\_SEVERITY | Do not value. |  |
| VIO\_CONTAMINANT\_CD | Set to MP\_AVG\_COMPL\_VALUE.CONTAMINANT\_CD from the record being compared to the MCL | As designed, this should be the Compliance Value for ADE for analyte 4101 |
| VIO\_RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Set to Monitoring\_Period.MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE from the record being compared to the MCL |  |
| VIO\_COMPL\_VALUE\_UOM | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM from the record being compared to the MCL |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

#### Create candidate 02 BPPR MCL violation

This action crates a candidate MCL violation for beta particle and photon radioactivity (BPPR) based on a running annual average and so the violation type/code is 02. This action is exactly the same as 2.2.28.17 except is uses Violation Type 02 rather than 01.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Set to Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Set to Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to '02' |  |
| VIO\_SEVERITY | Do not value. |  |
| VIO\_CONTAMINANT\_CD | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Set to Monitoring\_Period.MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE being used to compare against the MCL | As designed, this should be the Compliance Value for ADE for analyte 4101 |
| VIO\_COMPL\_VALUE\_UOM | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

#### Create candidate monthly monitoring schedule for GB, Sr-90, T, & I-131

Systems that utilize waters **contaminated** by effluent of nuclear facilities must monitor monthly for beta emitters, iodine-131, tritium, and strontium-90 at the sampling point which exceeded the MCL beginning the month after the exceedance occurs.

This action creates 4 monitoring schedules, one for: 4100, 4264, 4102, and 4174 per the following specification.

|  | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
|  | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
|  | MS\_STATUS\_CD | Set to "C - Candidate" |  |
|  | MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID being processed |  |
|  | MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID being processed |  |
|  | MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows (down to RULE\_CD) |  |
|  | MONITORING\_REQUIREMENT\_TYPE | Like '%GT MCL%' |  |
|  | MR\_CONTAMINANT\_CODE | = '4100' for first  = '4264' for second  = '4102' for third  = '4174' for fourth |  |
|  | RULE\_CD | = 'RADR' |  |
|  | MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar month that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then the first day of the calendar month that immediately follows the CREATE\_DT for the Result . |  |
|  | MONITORING\_SCHD\_END\_DATE | Not valued |  |
|  | MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
|  | MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

#### Create candidate monthly monitoring schedule for GB, Sr-90, & T

Systems that are **vulnerable** to beta particle and phone radioactivity must monitor monthly for beta emitters, tritium, and strontium-90 at the sampling point which exceeded the MCL beginning the month after the exceedance occurs.

This action creates 3 monitoring schedules, one for: 4100, 4102, and 4174 per the following specification.

|  | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
|  | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
|  | MS\_STATUS\_CD | Set to "C - Candidate" |  |
|  | MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID being processed |  |
|  | MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID being processed |  |
|  | MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows (down to RULE\_CD) |  |
|  | MONITORING\_REQUIREMENT\_TYPE | Like '%GT MCL%' |  |
|  | MR\_CONTAMINANT\_CODE | = '4100' for first  = '4102' for second  = '4174' for third |  |
|  | RULE\_CD | = 'RADR' |  |
|  | MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar month that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then the first day of the calendar month that immediately follows the CREATE\_DT for the Result . |  |
|  | MONITORING\_SCHD\_END\_DATE | Not valued |  |
|  | MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
|  | MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

#### Associate Uranium result to MSxMP and revise Mass-Based Result\_to\_MS\_Link

1. If there is no other result associated to the 4000 MS, then associate the uranium result to the 4000 MSxMP (i.e., create a task\_analyte\_result record) (or update an existing association between the result and the 4000 MS if one already exists) and value the association (i.e., task\_analyte\_result) record as follows:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | Do not value |  |
| COMPLIANCE\_RESULT\_UOM | Do not value |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'N' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'Y' |  |

Do not value the TASK\_ANALYTE.NUM\_RESULT\_COLLECTED.

1. If there is a uranium result already associated that is in pCi/L and the result being processed was collected on the same day as the uranium result that already associated, then do not associate the result to the MSxMP and end the process.
2. If there is a uranium result already associated that is in ug/L and the result being processed was collected on the same day as the uranium result already associated and is in pCi/L, then associate the record and remove the association to the uranium result that is in ug/L
   1. If there are no other results associated, then value the association (i.e., task\_analyte\_result) record as follows:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | Do not value |  |
| COMPLIANCE\_RESULT\_UOM | Do not value |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'N' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'Y' |  |

* 1. If there is also a 4002/4109 already associated, then value the association (i.e., task\_analyte\_result) record as follows:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the uranium result is greater than or equal to the 4002/4109 result (including if both are less than detect), then set to zero.  Otherwise, set to the 4002/4109 result minus the uranium result |  |
| COMPLIANCE\_RESULT\_UOM | Set to the UOM from the gross alpha MCL | i.e., pCi/L |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'N' |  |

And value the TASK\_ANALYTE.NUM\_RESULT\_COLLECTED with 1. (Note that this design does not handle the situation where there is more than one total gross alpha result and more than one uranium result. This was deemed too complicated to handle.)

1. If there is also a 4002/4109 already associated, then value the association (i.e., task\_analyte\_result) record as follows:
   1. If the uranium result is in pCi/L:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the uranium result is greater than or equal to the 4002/4109 result (including if both are less than detect), then set to zero.  Otherwise, set to the 4002/4109 result minus the uranium result |  |
| COMPLIANCE\_RESULT\_UOM | Set to the UOM from the gross alpha MCL | i.e., pCi/L |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'N' |  |

And value the TASK\_ANALYTE.NUM\_RESULT\_COLLECTED with 1.

1. If the uranium result is in ug/L:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | In memory, convert the uranium result to pCi/L using this formula: result in ug/L x 0.67 pCi/μg  If the uranium result is greater than or equal to the 4002/4109 result (including if both are less than detect), then set to zero.  Otherwise, set to the 4002/4109 result minus the uranium result |  |
| COMPLIANCE\_RESULT\_UOM | Set to the UOM from the gross alpha MCL | i.e., pCi/L |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'N' |  |

And value the TASK\_ANALYTE.NUM\_RESULT\_COLLECTED with 1.

#### Associate a Gross Alpha Result to an Adjusted Gross Alpha MSxMP

1. If there is no other result associated to the 4000 MS, then associate the gross alpha result to the 4000 MSxMP (i.e., create a task\_analyte\_result record) (or update an existing association between the result and the 4000 MS if one already exists) and value the association (i.e., task\_analyte\_result) record as follows:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | Do not value |  |
| COMPLIANCE\_RESULT\_UOM | Do not value |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'N' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'Y' |  |

Do not value the TASK\_ANALYTE.NUM\_RESULT\_COLLECTED.

1. If there is a uranium result (4006) already associated, then value the association (i.e., task\_analyte\_result) record as follows:

| **Result\_To\_MSLink (i.e., task\_analyte\_result) Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule selected in condition "4000  Schedule" |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. | I.e., 4000 |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | * + 1. If the uranium result has 'ug/L' as it unit of measure, then convert it to pCi/L using this formula: uranium result x 0.67. Else use the uranium result as is.     2. If the uranium result is greater than or equal to the 4002/4109 result (including if both are less than detect), then set to zero.     3. Otherwise, set to the 4002/4109 result minus the uranium result |  |
| COMPLIANCE\_RESULT\_UOM | Set to the UOM from the gross alpha MCL | i.e., pCi/L |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |
| NOT\_FOR\_COMPL\_VALUE | Set to 'N' |  |

And value the TASK\_ANALYTE.NUM\_RESULT\_COLLECTED with 1. (Note that this design does not handle the situation where there is more than one total gross alpha result and more than one uranium result. This was deemed too complicated to handle.)

And value the TASK\_ANALYTE.NUM\_RESULT\_COLLECTED with 1.

### GWR RLM Part 2

#### Associate 3100 Microbial result to makeup schedule

This is not the first time this action is called. However, there is apparently no previous specification for it. So any previously developed actions to associate a sample result to a Makeup monitoring schedule should be based on this specification.

When a sample satisfies a makeup schedule, the association is much like an association between a confirmation sample and a confirmation monitoring schedule.

When this action is called, the sample type of the sample result being processed may be any of the possible types (e.g., RT, TG, AS, etc) and the BRE has found a monitoring schedule that matches the location for the sample result with a MR sample type of 'MU'.

This action creates/updates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the MS that satisfied condition "3014 Makeup Schedule". |  |
| MONITORING\_PERIOD\_ID | Null | Because the monitoring schedule is a makeup schedule, it will not have monitoring periods associated. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "3014 Makeup Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "3014 Makeup Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null. |  |

#### Associate 3100 Microbial Result to MS x Previous MP

This action creates/updates a second Result\_to\_MS\_Link record. This second link record is made between the total coliform result (analyte code 3100) and the matching fecal indicator monitoring schedule (the monitoring schedule that returned TRUE to condition "3014 Matching Schedule"). The monitoring period is the one **prior to** the monitoring period in which the sample was collected.

The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the monitoring schedule that returned TRUE to condition "3014 Matching Schedule". |  |
| MONITORING\_PERIOD\_ID | First identify the monitoring period that is associated to the 3014 Matching Schedule and in which the sample was collected. Then subtract one day from its MP\_Begin\_Dt. Using this calculated date, find the monitoring period that is associated to the 3014 Matching Schedule and that has a MP\_End\_Dt equal to the calculated date. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "3014 Matching Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "3014 Matching Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'N' |  |

#### Associate 3100 Microbial result to MSxMP

This is nearly the same action as we've used in previous rule except the way the compliance result is valued.

As has been the case under previous rules, the result may already be associated (when the result was previously processed and then modified by a user, triggering a re-evaluation of the result). In this case, update the existing record (which is how it has been done for previous rules).

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule that satisfied condition '3014 Matching Schedule'. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that satisfied condition "Sampled in MP". |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule that satisfied condition '3014 Matching Schedule'. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule that satisfied condition '3014 Matching Schedule'. |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD of the sample\_result being processed. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Associate Microbial result to makeup schedule

When a sample satisfies a makeup schedule, the association is much like an association between a confirmation sample and a confirmation monitoring schedule.

When this action is called, the sample type of the sample result being processed may be any of the possible types (e.g., RT, TG, AS, etc) and the BRE has found a monitoring schedule that matches the location and analyte for the sample result with a MR sample type of 'MU'.

This action creates/updates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the MS that satisfied condition "Makeup Schedule". |  |
| MONITORING\_PERIOD\_ID | Null | Because the monitoring schedule is a makeup schedule, it will not have monitoring periods associated. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "Makeup Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "Makeup Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null. |  |

#### Associate Microbial Result to MS x Previous MP

This action creates/updates a second Result\_to\_MS\_Link record. This second link record is made between the microbial result being processed and the matching fecal indicator monitoring schedule (the monitoring schedule that returned TRUE to condition "Matching Schedule"). The monitoring period is the one **prior to** the monitoring period in which the sample was collected.

The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the monitoring schedule that returned TRUE to condition "Matching Schedule". |  |
| MONITORING\_PERIOD\_ID | First identify the monitoring period that is associated to the "Matching Schedule" and in which the sample was collected. Then subtract one day from its MP\_Begin\_Dt. Using this calculated date, find the monitoring period that is associated to the "Matching Schedule" and that has a MP\_End\_Dt equal to the calculated date. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "Matching Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "Matching Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'N' |  |

#### Associate Microbial result to MSxMP

This is nearly the same action as we've used in previous rule except the way the compliance result is valued.

As has been the case under previous rules, the result may already be associated (when the result was previously processed and then modified by a user, triggering a re-evaluation of the result). In this case, update the existing record (which is how it has been done for previous rules).

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule that satisfied condition 'Matching Schedule'. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that satisfied condition "Sampled in MP". |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule that satisfied condition 'Matching Schedule'. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule that satisfied condition 'Matching Schedule'. |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD of the sample\_result being processed. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Associate 3100 Microbial result to RT MSxMP

This is nearly the same action as we've used in previous rule except the way the compliance result is valued.

As has been the case under previous rules, the result may already be associated (when the result was previously processed and then modified by a user, triggering a re-evaluation of the result). In this case, update the existing record (which is how it has been done for previous rules).

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule that satisfied condition '3014 RT Schedule'. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that satisfied condition "Sampled in MP". |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule that satisfied condition '3014 RT Schedule'. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule that satisfied condition '3014 RT Schedule'. |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD of the sample\_result being processed. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Associate 3100 Microbial Result to TG/AS MS

When a sample result satisfies a triggered (TG) or an additional source water (AS) schedule, the association is much like an association between a confirmation sample and a confirmation monitoring schedule.

When this action is called, the sample type of the sample result being processed matches the sample type for the monitoring schedule and matches the location of the sample result.

This action creates/updates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the MS that satisfied condition "3014 Matching Schedule". |  |
| MONITORING\_PERIOD\_ID | Null | Because the monitoring schedule is a triggered or additional source water schedule, it will not have monitoring periods associated. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "3014 Matching Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "3014 Matching Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Associate Microbial result to RT MSxMP

This is nearly the same action as we've used in previous rule except the way the compliance result is valued.

As has been the case under previous rules, the result may already be associated (when the result was previously processed and then modified by a user, triggering a re-evaluation of the result). In this case, update the existing record (which is how it has been done for previous rules).

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule that satisfied condition 'RT Schedule'. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that satisfied condition "Sampled in MP". |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule that satisfied condition 'RT Schedule'. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule that satisfied condition 'RT Schedule'. |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD of the sample\_result being processed. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Associate Microbial Result to TG/AS MS

When a sample result satisfies a triggered (TG) or an additional source water (AS) schedule, the association is much like an association between a confirmation sample and a confirmation monitoring schedule.

When this action is called, the sample type of the sample result being processed matches the sample type for the monitoring schedule and matches the location of the sample result.

This action creates/updates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the MS that satisfied condition "Matching Schedule". |  |
| MONITORING\_PERIOD\_ID | Null | Because the monitoring schedule is a triggered or additional source water schedule, it will not have monitoring periods associated. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "Matching Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "Matching Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Create candidate AS MS

This action creates a monitoring schedule for the WS and facility at which a triggered source water sample was fecal indicator positive.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to MONITORING\_REQUIREMENT\_ID where MONITORING\_REQUIREMENT matches the values given in rows 6-8. |  |
| MS\_SAMPLE\_TYPE\_CD | AS | Sample\_Type\_Code will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): CO - Confirmation RT - Routine RP - Repeat TG - Triggered SP - Special  AS - Additional Source Water |
| MS\_CONTAMINANT\_CODE | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the Monitoring Schedule that satisfied the condition "Matching Schedule" |  |
| MS\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD from the Monitoring Schedule that satisfied the condition "Matching Schedule" |  |
| MONITORING\_SCHD\_BEGIN\_DATE | SAMPLE\_DATE of the Sample\_Result being processed. |  |
| MONITORING\_SCHD\_END\_DATE | Use the following to value in this order of priority:  Priority 1: The result's analysis completion date (ANALYSIS\_COMPL\_DT) + [AS END configuration value]  Priority 2: If 1 is not available, then the result's analysis start date (ANALYSIS\_START\_DT) + [AS END configuration value]  Priority 3: If neither 1 or 2 is available, the sample's collected date (COLLECTED\_DT + 2) + [AS END configuration value] |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Not valued |  |
| MS\_ORIGINAL\_RESULT\_ID | RESULT\_ID of the Sample\_Result being processed. |  |

#### Create Candidate Activity to notify consecutive systems

If a PWS that sells ground water to other PWS has a triggered source water that is fecal indicator positive, it must notify all the PWS to which it sells so that they can notify their consumers. This action creates an Activity record for the wholesale water system as follows:

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '73' and (ACTIVITY\_TYPE\_NM like '%consecutive%' or ACTIVITY\_TYPE\_NM like '%purchas%') and primacy\_agency\_cd in ('HQ', '[the primacy agency being processed]').  If there is more than one activity\_type\_ref that matches the selection criteria, create an activity for each one. | NTFY CNSCTV FI+ |
| STATUS\_ID | Set to key\_value\_id  from key\_value\_ref  where REF\_CATEGORY LIKE 'ACTIVITY\_STATUS'  AND KEY\_DATA = 'C' | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.SAMPLE\_DATE + 3 |  |

#### Create candidate Activity for GWR to take corrective action

This action creates an Activity record for the water system as follows:

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '48'  If there is more than one activity\_type\_ref with this violation type code, create an activity for each one. |  |
| STATUS\_ID | Set to key\_value\_id  from key\_value\_ref  where REF\_CATEGORY LIKE 'ACTIVITY\_STATUS'  AND KEY\_DATA = 'C' | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.SAMPLE\_DATE + 120 |  |

#### Create candidate activity for GWR to consult with state

This action creates an Activity record for the water system as follows:

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '20'.  If there is more than one activity\_type\_ref with this violation type code, create an activity for each one. |  |
| STATUS\_ID | Set to key\_value\_id  from key\_value\_ref  where REF\_CATEGORY LIKE 'ACTIVITY\_STATUS'  AND KEY\_DATA = 'C' | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.SAMPLE\_DATE + 30 |  |

#### Associate OD Summary to Monitoring Schedule

This action is also called in the SWTR RLM Part 2 but apparently there is no written specification.

An association between and OD Summary and a Monitoring Schedule is accomplished by valuing the foreign key MONITORING\_SCHEDULE\_ID in OD\_SUMMARY. Value this foreign key with MONITORING\_SCHEDULE\_ID of the MONITORING\_SCHEDULE that satisfied the condition "Matching MS".

#### Create candidate Public Notification Requirement

A Public Notification Requirement is recorded in Prime as an Activity. Create this Activity record as follows.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '76' and rule code = 'PN'.  If there is more than one activity\_type\_ref with this violation type code, create an activity for each one. |  |
| STATUS\_ID | Set to key\_value\_id  from key\_value\_ref  where REF\_CATEGORY LIKE 'ACTIVITY\_STATUS'  AND KEY\_DATA = 'C' | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.SAMPLE\_DATE + 3 |  |

### LCR RLM Part 2

#### Associate result to makeup schedule

When a sample satisfies a makeup schedule, the association is much like an association between a confirmation sample and a confirmation monitoring schedule.

When this action is called, the sample type of the sample result being processed may be any of the possible types (e.g., RT, TG, AS, etc) and the BRE has found a monitoring schedule that matches the location for the sample result with a MR sample type of 'MU'.

This action creates/updates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the MS that satisfied condition MS Type = 'MU'. |  |
| MONITORING\_PERIOD\_ID | Null | Because the monitoring schedule is a makeup schedule, it will not have monitoring periods associated. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition MS Type = 'MU'. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition MS Type = 'MU'. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current AL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current AL - this is the final case); then convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL and set it to the converted value (note, do not update the Sample\_Result.RESULT) | The logic to select the lead/copper AL is included in the data element logic for LCR.  Use conversion table developed earlier (see 2.2.4.1). |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current AL for the contaminant. | The logic to select the lead/copper AL is included in the data element logic for LCR. |

#### Associate Result to MS x Previous MP

This action creates/updates a second Result\_to\_MS\_Link record when a Makeup schedule has been satisfied. This second link record is made between the result and the routine MS for the analyte and the monitoring period that is **prior to** the monitoring period in which the sample was collected.

Note that this design assumes there will always be a routine MS in effect. If there is not a routine MS, then do not create a second Result\_to\_MS\_Link record for this result.

The following provides the specifications.

| Result\_To\_MSLink Elements | Source Data Element/Logic | Details |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the monitoring schedule with a sample type that matches the sample type of the sample result for the same analyte and at the same facility. |  |
| MONITORING\_PERIOD\_ID | Using the monitoring schedule selected in the first row, identify the monitoring period that is associated to it and in which the sample was collected. Then subtract one day from its MP\_Begin\_Dt. Using this calculated date, find the monitoring period that is associated to it and that has a MP\_End\_Dt equal to the calculated date. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the monitoring schedule selected in the first row. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the monitoring schedule selected in the first row. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current AL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current AL - this is the final case); then convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL and set it to the converted value (note, do not update the Sample\_Result.RESULT) | The logic to select the lead/copper AL is included in the data element logic for LCR.  Use conversion table developed earlier (see 2.2.4.1). |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current AL for the contaminant. | The logic to select the lead/copper AL is included in the data element logic for LCR. |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'N' |  |

#### Associate result to MSxMP

This is the same function called in both R\_SR1B \_6 and R\_SR1B \_7. However, in these two “rules” above, the BRE decision table only has one “performAction” function named CALC\_COMPL\_VALUE. As described above, under 2.2.4.1 Create a Result\_To\_MSLink record, the action of this current function is described: namely it creates a Result\_To\_MSLink record that references the Sample\_Result being processed and the Monitoring\_Schedule being processed.

This following is nearly identical to the specification in 2.2.4.1 Create a Result\_To\_MSLink record except that, under LCR, there are not MCLs but ACL (for lead and copper) and MIN or MAX for WQP.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that the result satisfied. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current ACL (for 1022 or 1030) or MIN or MAX for WQP; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current ACL (for 1022 or 1030) or MIN or MAX for WQP; then convert the Sample\_Result.RESULT to the same UOM as the Regulatory\_Level used and set it to the converted value (note, do not update the Sample\_Result.RESULT)  If the Sample\_Result is a **confirmation sample, also** do the following:  update the COMPLIANCE\_RESULT\_TEXT of the routine to which the confirmation sample is associated as follows:  average the COMPLIANCE\_RESULT\_TEXT for the confirmation with the COMPLIANCE\_RESULT\_TEXT for the routine. Round to the least signficant digits for the two (for example, if the COMPLIANCE\_RESULT\_TEXT for the confirmation is 1.223 and the COMPLIANCE\_RESULT\_TEXT for the routine is 1.32, the least signficant digits is 2 and the average, when rounded would be 1.27 (1.223+1.32 = 2.543/2 = 1.2715, rounded = 1.27). | Use conversion table that was created earlier. |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current ACL (for 1022 or 1030) or MIN or MAX for WQP. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘Y’ |  |

#### Associate CO Result to CO MS

The BRE has determined that there is a matching confirmation schedule and has found a triggering routine sample result (triggerResult in ‘RT’). This function associates the confirmation sample result to the confirmation (CO) monitoring schedule using the Result\_to\_MSLink table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule record being processed, i.e., the confirmation monitoring schedule. |  |
| MONITORING\_PERIOD\_ID | Null | If the sample is a confirmation sample (Type CO), then there will not be a MP\_Monitoring\_Prd\_ID and this field will be null. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed, i.e., the confirmation sample\_result. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule record being processed. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule record being processed. |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Otherwise, set to the Sample\_Result.RESULT of the Sample\_Result being processed.  In the second case, if the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL, then first convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL. | Use the conversion table for conversions (previously specified). |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant (for NO2, that will be nitrite – 1041). | The logic to select the nitrite MCL is included in the data element logic for NO2. |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to ‘Y’ |  |

#### Associate CO Result to Triggering Result

This action updates the Sample\_Result record being populated by valuing the ORIGINAL\_RESULT\_ID with the Result\_ID of the routine sample result selected in the condition “triggerResult in ‘RT’.”

#### Update Result\_To\_MS\_Link record for Trigger Result

When a confirmation result is entered and its triggering result is known, this action is called. It updates the existing Result\_to\_MS\_Link record for the triggering result. Only the columns that need to be updated are given.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| COMPLIANCE\_RESULT\_TEXT | Update the COMPLIANCE\_RESULT\_TEXT of the routine to which the confirmation sample is associated as follows:  average the COMPLIANCE\_RESULT\_TEXT for the confirmation with the COMPLIANCE\_RESULT\_TEXT for the routine. Round to the least significant digits for the two (for example, if the COMPLIANCE\_RESULT\_TEXT for the confirmation is 1.223 and the COMPLIANCE\_RESULT\_TEXT for the routine is 1.32, the least significant digits is 2 and the average, when rounded would be 1.27 (1.223+1.32 = 2.543/2 = 1.2715, rounded = 1.27). | Use this table as your conversion table. |

#### Associate Summary to Makeup Schedule

This action creates/updates a record in the SMP\_SUMM\_MNTRG\_SCH table. The following provides the specifications.

| SMP\_SUMM\_MNTRG\_SCH **Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| SAMPLE\_SUMM\_ID | Set to SAMPLE\_SUMM\_ID of the Sample Summary record being processed/evaluated. |  |
| ANALYTE\_ID | Set to 26 if Monitoring\_Requirement.MR\_CONTAMINANT\_CODE = '1030' for the MS that satisfied condition MS Type = 'MU'.  Set to 21 if Monitoring\_Requirement.MR\_CONTAMINANT\_CODE = '1022' for the MS that satisfied condition MS Type = 'MU'. |  |
| MONITORING\_SCHEDULE\_ID | Set to the MONITORING\_SCHEDULE\_ID of the MS that satisfied condition MS Type = 'MU'. |  |
| MONITORING\_PERIOD\_ID | Do not value. |  |

#### Associate Summary to MSxMP

This action creates/updates a record in the SMP\_SUMM\_MNTRG\_SCH table. The following provides the specifications.

| SMP\_SUMM\_MNTRG\_SCH **Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| SAMPLE\_SUMM\_ID | Set to SAMPLE\_SUMM\_ID of the Sample Summary record being processed/evaluated. |  |
| ANALYTE\_ID | Set to 26 if Monitoring\_Requirement.MR\_CONTAMINANT\_CODE = '1030' for the MS that satisfied condition MS Type = 'MU'.  Set to 21 if Monitoring\_Requirement.MR\_CONTAMINANT\_CODE = '1022' for the MS that satisfied condition MS Type = 'MU'. |  |
| MONITORING\_SCHEDULE\_ID | Set to the MONITORING\_SCHEDULE\_ID of the MS that satisfied condition MS Type = 'RT'. |  |
| MONITORING\_PERIOD\_ID | Set to the MONITORING\_PERIOD\_ID of the monitoring period identified in condition ' Summary in MP' |  |

### Associate Routine Result to Makeup Schedule

When a routine sample satisfies a makeup schedule, the association is much like an association between a confirmation sample and a confirmation monitoring schedule.

When this action is called, the sample type of the sample result being processed is routine ('RT') and the BRE has found a monitoring schedule that matches the location and analyte for the sample result with a MR sample type of 'MU'.

This action creates/updates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the MS that satisfied condition "Makeup Schedule". |  |
| MONITORING\_PERIOD\_ID | Null | Because the monitoring schedule is a makeup schedule, it will not have monitoring periods associated. |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "Makeup Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "Makeup Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL - this is the final case); then convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL and set it to the converted value (note, do not update the Sample\_Result.RESULT) |  |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant. |  |

### Associate Result to MS x Previous MP

This action creates/updates a second Result\_to\_MS\_Link record. This second link record is made between the routine result being processed and the routine monitoring schedule (the monitoring schedule that returned TRUE to condition "Routine Schedule"). The monitoring period is the one **prior to** the monitoring period in which the sample was collected. NOTE that, if there is not a monitoring period with MP\_End\_Dt equal to the calculated date (see logic below for MONITORING\_PERIOD\_ID), then do not create this second Result\_to\_MS\_Link. No further processing is necessary.

The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the monitoring schedule that returned TRUE to condition "Routine Schedule". |  |
| MONITORING\_PERIOD\_ID | First identify the monitoring period that is associated to the "Routine Schedule" and in which the sample was collected. Then subtract one day from its MP\_Begin\_Dt. Using this calculated date, find the monitoring period that is associated to the "Routine Schedule" and that has a MP\_End\_Dt equal to the calculated date. |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "Routine Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "Routine Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | If the Sample\_Result.RESULT\_LESS\_THAN\_IND = ‘Y’ for the Sample\_Result being processed, set to zero.  Else, if the Sample\_Result.RESULT\_UOM is equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL; then set to the Sample\_Result.RESULT of the Sample\_Result being processed.  Else (i.e., the Sample\_Result.RESULT\_UOM is not equal to the Regulatory\_Level.REG\_LEVEL\_UOM for the contaminant’s current MCL - this is the final case); then convert the Sample\_Result.RESULT to the same UOM as the contaminant’s current MCL and set it to the converted value (note, do not update the Sample\_Result.RESULT) |  |
| COMPLIANCE\_RESULT\_UOM | Set to Regulatory\_Level. REG\_LEVEL\_UOM for the current MCL for the contaminant. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'N' |  |

### RTCR RLM Part 2 - Sample Result and Sample Summary Evaluations

Sample analytical results submitted to primacy agencies and entered into Prime come in two forms: individual samples and results and routine negative summaries for a monitoring period. If total coliform is detected in a routine, it must be entered as an individual sample result. Additionally, all repeats must be entered as individual sample results. Negative routine results can either be entered as individual sample results or in a single summary for the monitoring period.

Two separate RLMs were developed to handle these: RTCR\_RLM\_Part\_2\_SR\_Eval and RTCR\_RLM\_Part\_2\_SS\_Eval. The actions/functions for the two RLMs are in this section.

#### Create a candidate 3 RP monitoring schedule

This action creates a repeat monitoring schedule for the WS and facility at which a total coliform-positive sample (whether routine or repeat) occurs. Under RTCR, all repeat schedules call for three samples to be collected.

|  | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| 1 | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| 2 | MS\_STATUS\_CD | Set to "C - Candidate" |  |
| 3 | MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| 4 | MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| 5 | MONITORING\_REQUIREMENT\_ID | Set to MONITORING\_REQUIREMENT\_ID where MONITORING\_REQUIREMENT matches the values given in rows 6-9. |  |
| 6 | MS\_SAMPLE\_TYPE\_CD | RP |  |
| 7 | MS\_CONTAMINANT\_CODE | = 3100 |  |
| 8 | MS\_RULE\_CD | = ‘RTCR’ |  |
| 9 | NUMB\_SAMPLES\_REQUIRED | 3 |  |
| 10 | MONITORING\_SCHD\_BEGIN\_DATE | SAMPLE\_DATE of the Sample\_Result being processed. |  |
| 11 | MONITORING\_SCHD\_END\_DATE | Use the following to value in this order of priority:  Priority 1: The result's analysis completion date (ANALYSIS\_COMPL\_DT) + [RP END configuration value]  Priority 2: If 1 is not available, then the result's analysis start date (ANALYSIS\_START\_DT) + [RP END configuration value]  Priority 3: If neither 1 or 2 is available, the sample's collected date (COLLECTED\_DT + 2) + [RP END configuration value] |  |
| 12 | MS\_INITIAL\_MP\_BEGIN\_DATE | Not valued |  |
| 13 | MS\_ORIGINAL\_RESULT\_ID | RESULT\_ID of the Sample\_Result being processed. |  |

#### Create a candidate 3 additional RT monitoring schedule

This action creates a monitoring schedule for the WS and facility at which a total coliform-positive routine sample occurs. Under RTCR, all "additional routine" schedules call for three samples to be collected.

|  | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| 1 | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| 2 | MS\_STATUS\_CD | Set to "C - Candidate" |  |
| 3 | MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| 4 | MS\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| 5 | MONITORING\_REQUIREMENT\_ID | Set to MONITORING\_REQUIREMENT\_ID where MONITORING\_REQUIREMENT matches the values given in rows 6-10. |  |
| 6 | MS\_SAMPLE\_TYPE\_CD | RT |  |
| 7 | MS\_CONTAMINANT\_CODE | = 3100 |  |
| 8 | MS\_RULE\_CD | = ‘RTCR’ |  |
| 9 | MONITORING\_REQUIREMENT\_TYPE | Like '%ADDITIONAL ROUTINE MONITORING%' |  |
| 10 | NUMB\_SAMPLES\_REQUIRED | 3 |  |
| 11 | MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that follows the SAMPLE\_DATE of the Sample\_Result being processed. |  |
| 12 | MONITORING\_SCHD\_END\_DATE | Do not value |  |
| 13 | MS\_INITIAL\_MP\_BEGIN\_DATE | Set to the MONITORING\_SCHD\_BEGIN\_DATE. |  |
| 14 | MS\_ORIGINAL\_RESULT\_ID | RESULT\_ID of the Sample\_Result being processed. |  |

#### Associate the result to the routine MS and MP

This is the same as 2.2.29.6 - Associate Microbial Result to MSxMP.

As has been the case under previous rules, the result may already be associated (when the result was previously processed and then modified by a user, triggering a re-evaluation of the result). In this case, update the existing record.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to  Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the Monitoring\_Schedule that satisfied condition 'Matching Schedule'. |  |
| MONITORING\_PERIOD\_ID | Set to  Monitoring\_Period.MONITORING\_PERIOD\_ID of the Monitoring\_PERIOD that satisfied condition "Sampled in MP". |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Schedule.MS\_CONTAMINANT\_CODE of the Monitoring\_Schedule that satisfied condition 'Matching Schedule'. |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Schedule.MS\_RULE\_CD of the Monitoring\_Schedule that satisfied condition 'Matching Schedule'. |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result.RESULT\_MICROBE\_PRESENCE\_IND\_CD of the sample\_result being processed. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Create a candidate E. coli MCL violation (Code 1A)

This table shows how to value candidate E. Coli MCL violations.

This function can be called when processing a routine total coliform (3100), routine E. coli (3014), repeat total coliform, or repeat E. coli result. In all cases, this function needs to use the Sample Date of the original 3100 sample result. The following diagram shows the relationships.



| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to '1A' |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '8000' |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to the begin date of the calendar month in which the routine sample was collected. |  |
| VIO\_FED\_PRD\_END\_DT | Set to the end date of the calendar month in which the routine sample was collected. |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to the VIO\_FED\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to the VIO\_FED\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

In addition to the above, this function creates associations between the candidate violation created above and the sample result(s) that led to the determination of the violation using VIO\_SAMPLE\_RESULT.

Associate the violation to:

* The sample result being processed when the candidate violation was determined
* The original 3100 sample result
* Any other positive results selected in any of the conditions through which the facts were processed.

#### Create a candidate Level 2 Assessment activity Due to EC MCL Violation

This action creates an Activity record for the water system and facility for the sample result as follows. This is similar to 2.2.29.12.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '2B' and primacy\_agency\_cd in ('HQ', '[the primacy agency being processed]').  If there is more than one activity\_type\_ref with this violation type code, create an activity record for each. | Note: Make similar changes to 2.2.29.12, .13, and .14 above. |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | Set to Sample\_Result.PA\_Received\_Dt + 30 |  |
| REASON\_CD\_ID | Set to key\_value\_id where ref\_category = 'ACTIVITY\_REASON' and key\_data = 'L2TA' |  |

#### Create a candidate 'Notify state of E. coli MCL violation' activity

This action creates an Activity record for the water system and facility for the sample result as follows. This is similar to 2.2.33.5.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '4E' and primacy\_agency\_cd in ('HQ', '[the primacy agency being processed]').  If there is more than one activity\_type\_ref with this violation type code, create an activity for each one. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.SAMPLE\_DATE + 1 |  |

#### Associate RP result to RP MS

When a repeat result satisfies a repeat monitoring schedule, the association is like the association between a triggered (TG) result and a TG schedule (see 2.2.29.10).

When this action is called, the sample type of the sample result being processed matches the sample type for the monitoring schedule and matches the facility.

This action creates/updates a record in the Result\_to\_MS\_Link table. The following provides the specifications.

| **Result\_To\_MSLink Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Set to Monitoring\_Schedule.MONITORING\_SCHEDULE\_ID of the MS that satisfied condition "1T Matching Schedule". |  |
| MONITORING\_PERIOD\_ID | Null |  |
| RESULT\_ID | Set to Sample\_Result.Result\_ID of the Sample\_Result record being processed. |  |
| RESULT\_CONTAMINANT\_CD | Set to the Monitoring\_Requirement.MR\_CONTAMINANT\_CODE of the MS that satisfied condition "1T Matching Schedule". |  |
| RESULT\_RULE\_CD | Set to the Monitoring\_Requirement.RULE\_CD of the MS that satisfied condition "1T Matching Schedule". |  |
| COMPLIANCE\_RESULT\_TEXT | Set to sample\_result. RESULT\_MICROBE\_PRESENCE\_IND\_CD. |  |
| COMPLIANCE\_RESULT\_UOM | Set to null. |  |
| USE\_FOR\_MR\_COMPLIANCE\_IND | Set to 'Y' |  |

#### Associate MU result to MU MS

This is exactly the same as 2.2.33.7.

#### Create a candidate 'Notify state of E. coli positive' activity

This action creates an Activity record for the water system and facility for the sample result as follows. This is similar to 2.2.33.5.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '4D' and primacy\_agency\_cd in ('HQ', '[the primacy agency being processed]').  If there is more than one activity\_type\_ref with this violation type code, create one activity record for each activity\_type\_ref record. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| ANALYTE\_REF\_ID | Set to analyte\_ref\_id where analyte\_ref.ANALYTE\_CD = '3014' |  |
| DUE\_DT | If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.SAMPLE\_DATE + 1 |  |
| COMPLETED\_DT | Null |  |

#### Create candidate 'notify wholesale system of TC positive' activity

This action creates an Activity record as follows. This is very similar to 2.2.33.5.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to SAMPLE\_RESULT.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '73' and primacy\_agency\_cd in ('HQ', '[the primacy agency being processed]') and AND ACTIVITY\_TYPE\_REF.ACTIVITY\_TYPE\_NM LIKE '%wholes%'.  If there is more than one activity\_type\_ref with this violation type code, create one activity record for each activity\_type\_ref record. | NTFY WHOLESALE TC+ |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.PA\_Received\_Dt + 1 |  |

#### Create candidate GWR triggered monitoring schedule(s)

For each of the facilities selected in "GW Source" condition (in RTCR\_RLM\_Part\_2\_SR\_Eval, Table SR3:GWR\_REQ) and not selected in "4-Log Virus Treatment" condition (in the same RLM and Table), create a candidate triggered monitoring schedule in accordance with the following specifications.

|  | **Mntrg\_Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| 1 | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| 2 | MS\_STATUS\_CD | Set to "C - Candidate" |  |
| 3 | MS\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| 4 | FACILITY\_ID | Set to FACILITY\_ID |  |
| 5 | MNTRG\_REQUIREMENT\_REF\_ID | Set to MNTRG\_REQUIREMENT\_REF\_ID  where MONITORING\_REQUIREMENT\_VIEW matches the values given in rows 6-9. |  |
| 6 | MS\_SAMPLE\_TYPE\_CD | TG |  |
| 7 | MS\_CONTAMINANT\_CODE | = 3014 |  |
| 8 | MS\_RULE\_CD | = ‘GWR’ |  |
|  |  |  |  |
| 10 | NUMB\_SAMPLES\_REQUIRED | 1 |  |
| 11 | MONITORING\_SCHD\_BEGIN\_DATE | SAMPLE\_DATE of the Sample\_Result being processed. |  |
| 12 | MONITORING\_SCHD\_END\_DATE | Use the following to value in this order of priority:  Priority 1: The result's analysis completion date (ANALYSIS\_COMPL\_DT) + [TG END configuration value]  Priority 2: If 1 is not available, then the result's analysis start date (ANALYSIS\_START\_DT) + [TG END configuration value]  Priority 3: If neither 1 or 2 is available, the sample's collected date (COLLECTED\_DT + 2) + [TG END configuration value] |  |
| 13 | MS\_INITIAL\_MP\_BEGIN\_DATE | Do not value |  |
| 14 | MS\_ORIGINAL\_RESULT\_ID | RESULT\_ID of the Sample\_Result being processed. |  |

If a Monitoring Requirement cannot be found, create it before creating the Monitoring Schedule.

#### Associate Sample Summary to MSxMP

This action creates/updates a record in the SMP\_SUMM\_MNTRG\_SCH table. The following provides the specifications.

| SMP\_SUMM\_MNTRG\_SCH **Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| SAMPLE\_SUMM\_ID | Set to SAMPLE\_SUMM\_ID of the Sample Summary record being processed/evaluated. |  |
| ANALYTE\_ID | Set to 98 | 3100 |
| MONITORING\_SCHEDULE\_ID | Set to the MONITORING\_SCHEDULE\_ID of the MS that satisfied condition '3100 Routine Schedule' |  |
| MONITORING\_PERIOD\_ID | Set to the MONITORING\_PERIOD\_ID of the monitoring period identified in condition ' Summary in MP' |  |

#### Not Used

#### Update MSxMP Due Date SR

If processing a repeat (SAMPLE\_TYPE\_CD = 'RP'), then locate the parent routine (SAMPLE\_TYPE\_CD = 'RT') sample result and use it in the following. The result\_id for a parent Sample\_Result is recorded in sample\_result. ORIGINAL\_RESULT\_ID. Note that the parent RT may be more than one parent sample\_result away.

Calculate variable named: "Result\_Rptd\_Month\_Plus10\_SR" as follows:

Result\_Rptd\_Month\_Plus10\_SR = the end date of the calendar month in which the sample\_result.PA\_RECEIVED\_DT falls PLUS 10 days. (If the sample\_result. PA\_RECEIVED\_DT is null, use the sample\_result.CREATE\_DT.)

For example, if the PA\_Received\_Dt is 04/04/2016, then the Result\_Rptd\_Month\_Plus10\_SR = 05/10/2016.

Use "Result\_Rptd\_Month\_Plus10\_SR" in the following conditional action.

If the Result\_Rptd\_Month\_Plus10\_SR < MNTRG\_SCH\_MNTRG\_PRD. DUE\_DT for the MSxMP to which the result was just associated

AND the Result\_Rptd\_Month\_Plus10\_SR > Current Date,

Then set the MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT to the Result\_Rptd\_Month\_Plus10\_SR.

Else do nothing.

I'm not sure why I included this action. It appears that MNTRG\_SCH\_MNTRG\_PRD are not even created for repeat Monitoring Schedules.

#### Update MSxMP Due Date SS

This function, I believe, was intended to adjust the date when results should be reported to a primacy agency when the results were collected before the last month of the monitoring period. However, it does not do that and so it should be removed from the place it is called (RTCR Part 2 SS Eval

Calculate variable named: "Result\_Rptd\_Month\_Plus10\_SS" as follows:

Result\_Rptd\_Month\_Plus10\_SS = the end date of the calendar month in which the SAMPLE\_SUMM. COLLECTED\_TO\_DT falls PLUS 10 days. (If the SAMPLE\_SUMM.COLLECTED\_TO\_DT is null, use the SAMPLE\_SUMM.CREATE\_DT.)

For example, if the COLLECTED\_TO\_DT is 04/14/2016, then the Result\_Rptd\_Month\_Plus10\_SS = 05/10/2016.

Use "Result\_Rptd\_Month\_Plus10\_SS" in the following conditional action.

If the Result\_Rptd\_Month\_Plus10\_SS < MNTRG\_SCH\_MNTRG\_PRD. DUE\_DT for the MSxMP to which the result was just associated

AND the Result\_Rptd\_Month\_Plus10\_SS > Current Date,

Then set the MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT to the Result\_Rptd\_Month\_Plus10\_SS.

Else do nothing.

#### Create Record in BRE\_LAUNCH

When a result is changed after monitoring compliance has been run (i.e., after RTCR RLM Part 3), if that change causes the result to no longer satisfy the Monitoring Schedule by Monitoring Period, then Prime should rerun monitoring compliance for that one MS x MP. To do this, we’ll create a record in the BRE\_Launch tables and rerun Part 3 the next day. This is the specification to do that.

Create a record per the following specifications.

| **BRE\_LAUNCH Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| PRIMACY\_AGENCY\_CD | Set to the first two characters from Water\_System\_ID |  |
| RULE\_REF\_ID | Set to the ID of the rule being run. | For example, for RTCR, set to 19. |
| MONITORING\_SCHEDULE\_ID | Set to the Monitoring\_Schedule\_ID being processed | I’ve created a Task to add this foreign key to the BRE\_LAUNCH table. |
| MONITORING\_REQUIREMENT\_ID | Do not value | I’ve created a Task to make this Nullable. |
| MONITORING\_PERIOD\_ID | Set to the Monitoring\_Period\_ID being processed | Note that, in some cases, there may not be a Monitoring\_Period\_ID (e.g., when processing a repeat schedule). |
| DUE\_DT | Set this to MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT for the MSxMP being processed |  |
| LAUNCH\_DT | Set to tomorrow’s date. | Current date plus 1 |
| FUNCTION\_NAME | Set to ‘MS\_EVAL\_ORCHESTRATING\_ENGINE’ |  |
| LEGAL\_ENTITY\_ID | Do not value |  |

## Monitoring Schedule or Activity Evaluation

Many of these functions are called in more than one of the RLM Part 3 decision tables.

In add cases, before creating a candidate, check to see if there is already an existing matching candidate or validated violation. Matching means one with the same Rule Code, Contaminant Code, Begin Date, Violation Type Code, Water System Id, and facility ID.

### R\_MS1\_2 CR\_MJR\_RTN\_MON\_VIO createMajorRoutineMonitoringViolation

This table shows how to value candidate violations that are created by the BRE in action "CR\_MJR\_RTN\_MON\_VIO ". This action is also called in other rules. The function is used to create candidate, major, monitoring, violations.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE | New table Violation\_Type |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE\_NUM\_RESULTS |  |

### R\_MS1\_3 CR\_MNR\_RTN\_MON\_VIO createMinorRoutineMonitoringViolation

This table shows how to value candidate violations that are created by the BRE in action "CR\_MNR\_RTN\_MON\_VIO." This action is also called in other rules. The function is used to create candidate, minor, monitoring, violations.

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MN |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE | New table Violation\_Type |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE\_NUM\_RESULTS |  |

### R\_MS1\_5 CR\_MJR\_RTN\_RPT\_VIO createMajorRoutineReportingViolation

This table shows how to value candidate violations that are created by the BRE in action "CR\_MJR\_RTN\_RPT\_VIO." This action is also called in other rules. The function is used to create candidate, major, reporting, violations.

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MJ |  |
|  |  |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE\_NUM\_RESULTS |  |
| VIO\_RPT\_ONLY\_IND | Set to 'Y' |  |

### R\_MS1\_6 CR\_MNR\_RTN\_RPT\_VIO createMinorRoutineReportingViolation

This table shows how to value candidate violations that are created by the BRE in action "CR\_MNR\_RTN\_RPT\_VIO." This action is also called in other rules. The function is used to create candidate, minor, reporting, violations.

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MN |  |
|  |  |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus MP\_AVG\_COMPL\_VALUE.MP\_AVERAGE\_NUM\_RESULTS |  |
| VIO\_RPT\_ONLY\_IND | Set to 'Y' |  |

### R\_MS2\_2 CR\_MJR\_CONFIRM\_MON\_VIO = createMajorConfirmMonitoringViolation

This table shows how to value candidate violations that are created by the BRE in action " CR\_MJR\_CONFIRM\_MON\_VIO ." This should have been named CR\_MJR\_1T\_MON\_VIO because it applies to monitoring violations for all monitoring schedules that call for a single round of monitoring (i.e., confirmation, triggered, additional source water, and makeup monitoring schedules).

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_RPT\_ONLY\_IND | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a 1T monitoring violation and a routine monitoring violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a 1Tmonitoring violation and a routine monitoring violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a 1Tmonitoring violation and a routine monitoring violation. |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a 1Tmonitoring violation and a routine monitoring violation. |
| VIO\_TIER\_LEVEL | Set to Violation\_Type\_Ref.TIER\_LEVEL\_NUMBER where Violation\_Type\_Ref.Code = Violation.VIOLATION\_TYPE\_CODE | New table Violation\_Type |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) | This is one difference between routine and confirmation violations. |

### R\_MS2\_3 CR\_MNR\_CONFIRM\_MON\_VIO createMinorConfirmMonitoringViolation

This table shows how to value candidate violations that are created by the BRE in action " CR\_MNR\_CONFIRM\_MON\_VIO ." This should have been named CR\_MNR\_1T\_MON\_VIO because it applies to monitoring violations for all monitoring schedules that call for a single round of monitoring (i.e., confirmation, triggered, additional source water, and makeup monitoring schedules).

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MN |  |
| VIO\_RPT\_ONLY\_IND | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a 1Tmonitoring violation and a routine monitoring violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a 1Tmonitoring violation and a routine monitoring violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a 1Tmonitoring violation and a routine monitoring violation. |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a 1Tmonitoring violation and a routine monitoring violation. |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE | New table Violation\_Type |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) |  |

### R\_MS2\_3 CR\_MJR\_CONFIRM\_RPT\_VIO createMajorConfirmReportingViolation

This table shows how to value candidate violations that are created by the BRE in action " CR\_MJR\_CONFIRM\_RPT\_VIO "

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MJ |  |
|  |  |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirementhedule.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_ | New table Violation\_Type |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) |  |

### R\_MS2\_4 CR\_MNR\_CONFIRM\_RPT\_VIO createMinorConfirmReportingViolation

This table shows how to value candidate violations that are created by the BRE in action " CR\_MNR\_CONFIRM\_RPT\_VIO "

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to MN |  |
| VIO\_RPT\_ONLY\_IND | Set to ‘Y’ |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Note the difference for a confirmation violation and a routine violation. |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE | New table Violation\_Type |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) |  |

### R\_MS2\_7 MRK\_MSMP\_IN\_MR\_CMPL = markMsAsInMrCompliance

This function **updates** the MNTRG\_SCH\_MNTRG\_PRD or Monitoring\_Schedule record being processed by valuing a new field in the table named MSMP\_MR\_COMPL\_IND with a ‘Y’. It updates the former for routine schedules ('RT') and updates the latter for confirmation ('CO'), repeat ('RP'), triggered ('TG'), and additional source water ('AS') monitoring schedules.

#### Value MR\_COMPL\_RUN\_DT

This function **updates** the MNTRG\_SCH\_MNTRG\_PRD or MONITORING\_SCHEDULE record being processed by valuing column MR\_COMPL\_RUN\_DT with the current date. It updates MNTRG\_SCH\_MNTRG\_PRD for MS that reference a MONITORING\_REQUIREMENT with INTERVAL\_UNIT <> '1T and updates MONITORING\_SCHEDULE for MS that reference a MONITORING\_REQUIREMENT with INTERVAL\_UNIT = '1T'.

This column tells the BRE and users the date on which monitoring and reporting compliance was last run ("last" because, in some circumstances, like a result added or changed after initial MR compliance, MR compliance will be run again).

This column is used in RLM Part 2 to answer the condition "MR Compliance Done."

### R\_MS3\_1 CR\_CAND\_RED\_AFTR\_MS createCandidateReducedAfterInitialMonSchedule

This table shows how to value candidate reduced after initial monitoring schedules that are created by the BRE in action "createCandidateReducedAfterInitialMonSchedule." Fields in Monitoring Schedule that are not included below are not valued.

Note that this action uses a Monitoring\_Requirement record as one of its sources. Appendix A outlines what the Monitoring\_Requirement table will look like at that time.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MS\_SAMPLE\_TYPE\_CD | Set to Monitoring\_Requirement. SAMPLE\_TYPE\_CD where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MS\_NUMB\_SAMPLES\_REQUIRED | Set to Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MS\_INTERVAL\_UNIT | Set to Monitoring\_Requirement. INTERVAL\_UNIT where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MS\_INTERVAL\_UNIT\_COUNT | Set to Monitoring\_Requirement. INTERVAL\_UNIT\_COUNT where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MS\_INTERVAL\_FIXED\_DAYS | Set to Monitoring\_Requirement. INTERVAL\_FIXED\_DAYS where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MS\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement. CONTAMINANT\_CODE where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MS\_RULE\_CD | Set to Monitoring\_Requirement. RULE\_CD where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter (if MS\_INTERVAL\_UNIT = ‘QT) or calendar year (if MS\_INTERVAL\_UNIT = ‘YR’ and MS\_INTERVAL\_UNIT\_COUNT = 1) or first day of the next 3-year, standardized monitoring period in all other cases. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |
| MR\_REPORT\_DUE\_DATE\_DAYS | Set to Monitoring\_Requirement. MR\_REPORT\_DUE\_DATE\_DAYS where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to Monitoring\_Requirement. MR\_REPORT\_DUE\_DATE\_DAYS where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) | Once the database model has been implemented, this values will be pulled in with the Monitoring Requirement specified above. That is to say, the Monitoring Requirement record will already have this information in it. |
| MR\_CHECK\_DATE\_DAYS | Set to Monitoring\_Requirement.CHECK\_DATE\_DAYS where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |
| MR\_MAKEUP\_REQUIRED\_IND | Set to Monitoring\_Requirement.MAKEUP\_REQUIRED\_IND where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |
| MR\_VIOLATION\_TYPE\_CD | Set to Monitoring\_Requirement.VIOLATION\_TYPE\_CD where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) |

### R\_MS3\_3 CR\_CAND\_RC\_MCL createCandidateRcMcl

This process creates a candidate “reliably and consistently less than the MCL” record in the PA\_Determination table. Use the following specifications to create the record.

| **PA\_Determination Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| STATUS\_CD | Set to "C - Candidate" | New field in PA\_Determination:  C = Candidate  A = Accepted/Active |
| WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| PA\_DETERMINATION\_CONT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| PA\_DETERMINATION\_TYPE\_CD | Set to ‘RCB’ |  |
| PA\_DETERMINATION\_BEGIN\_DT | Set to Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT plus 1 day. |  |
| PA\_DETERMINATION\_END\_DT | Null |  |
| PA\_DETERMINATION\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |

### R\_MS3\_3 CR\_CAND\_ANNUAL\_MS createCandidateAnnualMonSchedule

This table shows how to value candidate routine annual monitoring schedules that are created by the BRE in action "createCandidateAnnualMonSchedule". Fields in Monitoring Schedule that are not included below are not valued.

Note that this should have been named CR\_CAND\_RCBMCL\_MS because, though most are annual frequencies, one is triennial (for IOC GW).

| **ID** | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| 1 | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| 2 | MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| 3 | MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule.MS\_WATER\_SYSTEM\_ID |  |
| 4 | MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| 5 | MONITORING\_REQUIREMENT\_ID | Set to MONITORING\_REQUIREMENT\_ID where MONITORING\_REQUIREMENT matches the values given in rows 6 - 8. |  |
| 6 | MONITORING\_REQUIREMENT\_TYPE | For NO3:   * If the water system's primary source type is 'SW', then like '%REDUCED SURFACE%' * Else like '%RCBMCL GROUND%'   For NO2, IOC, VOC, & SOC:   * If the water system's primary source type is 'SW', then:   UPPER(MONITORING\_REQUIREMENT\_TYPE) like '%RELIABLY%' AND  MONITORING\_REQUIREMENT\_TYPE like '%SW%'   * Else:   UPPER(MONITORING\_REQUIREMENT\_TYPE) like '%RELIABLY%' AND  MONITORING\_REQUIREMENT\_TYPE like '%GW%' |  |
| 7 | MR\_CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed. | The Monitoring\_Schedule record to use to supply the Contaminant Code is the one selected in condition "Nitrite Routine" in RuleTable SR1B: Nitrite RT Sample Decision Table. Though its tempting to simply use the Sample\_Result.RESULT\_CONTAMINANT\_CD, under some drinking water rules, this will not work and I want this all to be coded the same way. |
| 8 | RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| 9 | MONITORING\_SCHD\_BEGIN\_DATE | For Rule\_CD = NO2, NO3, VOC, or SOC:  If MP Begin Month for the highest Compliance Result associated to the current Monitoring Schedule is greater than the MP End Month for the Compliance Result being processed, then set to one day after the MP End Date of the Compliance Result being processed (i.e., result being processed); else set to 1/1 of the year following the MP End Date Year.  For Rule\_CD = IOC, FLUO, or ASB:  If condition 'SW' is False, then:  The first day of the 3-year period that follows the Sample\_Result.PA\_RECEIVED\_DATE where monitoring\_period. = ' Compliance Period'.  If PA\_RECEIVED\_DATE is not valued, then the current date to select the appropriate 3-year period instead.  Else (if no 3-year period) set to 1/1 of the year following the MP End Date.  If condition 'SW' is True, then:  set to 1/1 of the year following the MP End Date. |  |
| 10 | MONITORING\_SCHD\_END\_DATE | Not valued |  |
| 11 | MS\_INITIAL\_MP\_BEGIN\_DATE | For Rule\_CD = NO2, NO3, VOC, or SOC:  If MP Begin Month for the highest Compliance Result associated to the current Monitoring Schedule is greater than the MP End Month for the Compliance Result being processed, then set to 1/1 and the MP End Date Year; else set to 1/1 of the year following the MP End Date Year.  For Rule\_CD = IOC, FLUO, or ASB:  Set it to the same date as the MONITORING\_SCHD\_BEGIN\_DATE. |  |
| 12 | MS\_SEASON\_BEGIN\_MONTH | For Rule\_CD = NO2, NO3, VOC, or SOC:  Set to the Month of the MP Begin Date for the highest Compliance Result for the same contaminant for the same Facility or to the first month of the calendar quarter in which the highest, for compliance, routine result for the same contaminant for the same Facility occurred, whichever is greatest.[[3]](#footnote-2).  For Rule\_CD = IOC, FLUO, or ASB:  Set to null |  |
| 13 | MS\_SEASON\_BEGIN\_DAY | For Rule\_CD = NO2, NO3, VOC, or SOC:  Set to 1.  For Rule\_CD = IOC, FLUO, or ASB:  Set to null |  |
| 14 | MS\_SEASON\_END\_MONTH | For Rule\_CD = NO2, NO3, VOC, or SOC:  Set to the Month of the MP End Date for the highest Compliance Result for the same contaminant for the same Facility or to the last month of the calendar quarter in which the highest, for compliance, routine result for the same contaminant for the same Facility occurred, whichever is greatest.1.  For Rule\_CD = IOC, FLUO, or ASB:  Set to null |  |
| 15 | MS\_SEASON\_END\_DAY | For Rule\_CD = NO2, NO3, VOC, or SOC:  Set to the Day of the MP End Date for the highest Compliance Result associated to the current Monitoring Schedule.  For Rule\_CD = IOC, FLUO, or ASB:  Set to null |  |

### Create Candidate DBP Reduced Monitoring Schedules

DDBP RLM Part 3 includes this function. The following is the template for creating these candidate monitoring schedules for 2950 (total trihalomethanes) and 2456 (haloacetic acids). Each time the RLM says to create candidate monitoring schedules in this table, it means to create two monitoring schedules that are exactly alike and reference the two analytes. These two analytes are referred to collectively as "DBP".

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 3 rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%REDUCED%'  AND  (Like '%Subpart H%" if the "Fed Primary Source" In (SW, SWP, GU, GUP) or Like '%GW%' if the "Fed Primary Source" In (GW, GWP))  AND then use the "Population  Served" for the WS being processed to select the range that matches from Table 141.623 (a) below (for example, a Subpart H system serving 22,500 would select Like '%10000-49999%') |  |
| MR\_CONTAMINANT\_CODE | '2950' for the first MS, '2456' for the second MS |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | * If the INTERVAL\_FIXED\_DAYS for the monitoring requirement selected for the candidate MS = 90, set to the first day of the calendar quarter that immediately follows the Sample\_Result.SAMPLE\_DATE .   + If this date is not valued, then the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. * If the INTERVAL\_FIXED\_DAYS > 90, set to the first day of the calendar **year** that immediately follows the Sample\_Result.SAMPLE\_DATE .   + If this date is not valued, then the first day of the calendar year that immediately follows the CREATE\_DT for the Result |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

Table 141.623 (a)

|  |  |
| --- | --- |
| Primary Source | Population Range |
| Subpart H: |  |
|  | <500 |
|  | 500-3,300 |
|  | 3,301-9,999 |
|  | 10,000 - 49,999 |
|  | 50,000 - 249,999 |
|  | 250,000 - 99,9999 |
|  | 1,000,000 - 4,999,999 |
|  | ≥ 5,000,000 |
| Ground Water: |  |
|  | <500 |
|  | 500 - 9,999 |
|  | 10,000 - 99,999 |
|  | 100,000 - 499,999 |
|  | ≥ 500,000 |

#### Create Candidate Matching DBP MS with Changed Begin Date

Design Note: This function only creates a candidate MS for one of the DBP, not both. My plan is to introduce a validation when accepting MS changes of this type so that, when MS for a set of analytes (like TTHM & HAA5 or 1030 and 1022) are accepted, the software makes sure that the user has selected all the candidates in the set (for the particular location). Perhaps the way to set up sets is by Monitoring Requirement (so, for example, the MR calling for 1 TTHM/3 years and the one calling for

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to the same MONITORING\_REQUIREMENT\_ID as the MS being evaluated. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the calendar year that immediately follows the latest SAMPLE\_DATE from SAMPLE\_RESULTs associated to the MSxMP. | For example, if the latest SAMPLE\_DATE is 10/08/2016, set to 01/01/2017. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_BEGIN\_DAY | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_END\_MONTH | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_END\_DAY | Set to the same value as the MS being evaluated. |  |

#### Create Candidate Increased Bromate Monitoring Schedule

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule.MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | 'Base' |  |
| CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the Sample\_Result.PA\_RECEIVED\_DATE.  If this date is not valued, then set to the first day of the calendar month that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate Reduced DBP Precuror Monitoring Schedules

Each time the RLM says to create candidate routine precursor monitoring schedules in this table, it means to create three or more monitoring schedules.

The location and number of monitoring schedules depends on the number of monitoring schedules that the MS being processed is packaged with. For example, say the BRE is processing a MS for TOC (2920) and that MS is associated to TP1 and that MS is packaged with a TOC (2920) MS at Intake #1 and an alkalinity MS at Intake #1 and it is also packaged with a TOC (2920) MS at Intake #2 and an alkalinity MS at Intake #2. This function would create 5 MS: one for TOC at TP1, one for TOC at Intake #1, one for TOC at Intake #2, one for alkalinity at Intake #1, and one for alkalinity at Intake #2. It would then also package all five together. Each of the MS created would call for 1 sample per **quarter**.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Existing Precursor Monitoring Schedules Packaged** | | | **Candidate Precursor Monitoring Schedules to Create** | | |
| **Location** | **Cont\_Cd** | **MR\_Type** | **Frequency** | **Cont\_Cd** | **MR\_Type** | **Frequency** |
| TP1 | 2920 | %ROUTINE TREATED% | 1 RT/1QT | 2920 | %REDUCED TREATED% | 1 RT/1MN |
| Intake #1 | 2920 | %ROUTINE SOURCE% | 1 RT/1QT | 2920 | %REDUCED TREATED% | 1 RT/1MN |
| Intake #1 | 1927 | %ROUTINE SOURCE% | 1 RT/1QT | 1927 | %REDUCED TREATED% | 1 RT/1MN |
| Intake #2 | 2920 | %ROUTINE SOURCE% | 1 RT/1QT | 2920 | %REDUCED TREATED% | 1 RT/1MN |
| Intake #2 | 1927 | %ROUTINE SOURCE% | 1 RT/1QT | 1927 | %REDUCED TREATED% | 1 RT/1MN |

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%REDUCED%' and like '%[LOCATION]%' for the MS being processed where [LOCATION] is either 'TREATED' or 'SOURCE' from the MONITORING\_REQUIREMENT\_TYPE for the MS being processed. |  |
| CONTAMINANT\_CODE | Same as the respective MS in the package being processed (i.e., either 2920 or 1927) |  |
| NUMB\_SAMPLES\_REQUIRED | = 1 |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar quarter that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then set to the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate Reduced Chlorite Monitoring Schedule

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%REDUCED%' |  |
| CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the Sample\_Result. PA\_RECEIVED\_DATE.  If this date is not valued, then set to the first day of the calendar month that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create Candidate Reduced Bromate Monitoring Schedule

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%REDUCED%' |  |
| CONTAMINANT\_CODE | Same as MR\_CONTAMINANT\_CODE for the Monitoring\_Schedule being processed |  |
| RULE\_CD | Monitoring\_Requirement.RULE\_CD  Same as the Rule\_Cd for the for the Monitoring\_Schedule being processed. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar quarter that immediately follows the Sample\_Result.PA\_RECEIVED\_DATE.  If this date is not valued, then set to the first day of the calendar quarter that immediately follows the CREATE\_DT for the Result. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Sample\_Result.RESULT\_ID |  |

### Create candidate major Routine monitoring violation for OD Summaries

This action is called in this SWTR decision tables: Table MS-SWTR:1 ODST and others.

This table shows how to value candidate major monitoring violations that are created by the BRE in the above referenced table.

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to Monitoring\_Schedule.MR\_VIOLATION\_TYPE\_CD |  |
| VIO\_SEVERITY | Set to MJ |  |
| ~~VIO\_RPT\_ONLY\_IND~~ | ~~Set to ‘N’~~ |  |
| VIO\_CONTAMINANT\_CD | Set to Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | If there is no OD Summary attached to the Monitoring Schedule for the Monitoring Period being assessed, set to MONITORING\_REQUIREMENT. NUMB\_SAMPLES\_REQUIRED for the Monitoring Schedule being assessed.  If there is an OD Summary, Set to OD\_SUMMARY.SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | If there is no OD Summary attached to the Monitoring Schedule for the Monitoring Period being assessed, set to MONITORING\_REQUIREMENT. NUMB\_SAMPLES\_REQUIRED.  If there is an OD Summary, Set to OD\_SUMMARY.SAMPLES\_REQUIRED minus OD\_SUMMARY.SAMPLES\_COLLECTED. |  |

### Create candidate major Routine reporting violation for OD Summaries

This action is called in these SWTR decision tables: Table MS-SWTR:2a 95PT, Table MS-SWTR:2b MAXT, Table MS-SWTR:2c EPRD, and Table MS-SWTR:2d DSRD as well as some under DDBP and GWR.

This table shows how to value candidate major reporting violations that are created by the BRE in the above referenced tables.

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_RPT\_ONLY\_IND | Set to ‘Y’ |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

### Create candidate treatment technique violation for OD Summary

This action is called in these SWTR decision tables: Table MS-SWTR:2a 95PT, Table MS-SWTR:2b MAXT, Table MS-SWTR:2c EPRD, and Table MS-SWTR:2d DSRD and others under DDBP and GWR.

This table shows how to value candidate treatment technique violations that are created by the BRE in the above referenced tables.

If a matching candidate violation already exists, update it instead of creating a new one. "Matching" means one that has the same:

* wsId,
* StateAssignFacId,
* ruleCd,
* contaminantCd,
* beginDate,
* status, and
* vioTypeCd

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to OD\_SUMMARY\_TYPE\_REF.TT\_INCIDENT\_TYPE\_REF\_ID for the OD\_SUMMARY\_TYPE\_REF referenced by the SWTR Monitoring Schedule (via its referenced Monitoring\_Requirement) |  |
| VIO\_SEVERITY | Null |  |
| VIO\_CONTAMINANT\_CD | Set to ANALYTE\_CD from ANALYTE\_REF  Using the RULE\_CD from the FACTS  AND RULE\_REF  AND RULE\_ANALTYE  AND ANALYTE\_TYP\_REF.KEY\_DATA = 'RL' |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to TIER\_LEVEL\_NUMBER from the Violation\_Type\_Ref referenced by OD\_SUMMARY\_TYPE\_REF.TT\_INCIDENT\_TYPE\_REF\_ID |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

### Create candidate Incident for OD Summaries

This action is called in these SWTR decision table Table MS-SWTR:2e IFT - IFT Summary Check.

This table shows how to value candidate incident that are created by the BRE in the above referenced tables. These records are created in table VIOLATION

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to OD\_SUMMARY\_TYPE\_REF.TT\_INCIDENT\_TYPE\_REF\_ID for the OD\_SUMMARY\_TYPE\_REF referenced by the SWTR Monitoring Schedule (via its referenced Monitoring\_Requirement) |  |
| VIO\_SEVERITY | Null |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to TIER\_LEVEL\_NUMBER from the Violation\_Type\_Ref referenced by OD\_SUMMARY\_TYPE\_REF.TT\_INCIDENT\_TYPE\_REF\_ID |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

### Create candidate MRDL Chlorine Violation

This table shows how to value candidate chlorine MRDL violations. This function is only called under the DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to OD\_SUMMARY\_TYPE\_REF.TT\_INCIDENT\_TYPE\_REF\_ID for the OD\_SUMMARY\_TYPE\_REF referenced by the Monitoring Schedule (via its referenced Monitoring\_Requirement) being processed. |  |
| VIO\_SEVERITY | Null |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE |  |
| VIO\_COMPL\_VALUE\_UOM | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to TIER\_LEVEL\_NUMBER from the Violation\_Type\_Ref referenced by OD\_SUMMARY\_TYPE\_REF.TT\_INCIDENT\_TYPE\_REF\_ID |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

### Create Followup Monitoring Schedule

This table shows how to value followup monitoring schedules that are created by the BRE in action "Create followup monitoring schedule"  
Fields in Monitoring Schedule that are not included below are not valued.

| **ID** | **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| 1 | MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| 2 | MS\_STATUS\_CD | Set to "C - Candidate" |  |
| 3 | MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule.  MS\_WATER\_SYSTEM\_ID |  |
| 4 | MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| 5 | MONITORING\_REQUIREMENT\_ID | Set to MONITORING\_REQUIREMENT\_ID where MONITORING\_REQUIREMENT matches the values given in rows 6 - 10 |  |
| 6 | SAMPLE\_TYPE\_CD | MU – Makeup |  |
| 7 | NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED in the MSxMR being processed | This is a change that should be applied to all. If a Makeup Monitoring Requirement does not exist with a matching number of samples required, first create the Monitoring Requirement and then use it to create the candidate Monitoring Schedule.  See Table below for specifications on creating a new Makeup Monitoring Requirement. |
| 8 | INTERVAL\_UNIT | 1T |  |
| 9 | MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the connected MS |  |
| 10 | RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD from the connected MS |  |
| 11 | MONITORING\_SCHD\_BEGIN\_DATE | Set to one day after the MP\_END\_DT of the connected Monitoring\_Period |  |
| 12 | MONITORING\_SCHD\_END\_DATE | Set to 30 days after the MP\_END\_DT of the connected Monitoring\_Period |  |
| 13 | MS\_INITIAL\_MP\_BEGIN\_DATE | Do not value |  |
| 14 | MS\_ORIGINAL\_RESULT\_ID | Do not value |  |

If a Makeup Monitoring Requirement needs to be created before creating the candidate monitoring schedule, use the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD from the MSxMR being processed |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'MAKEUP SAMPLE' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed |  |
| SAMPLE\_TYPE\_CD | Set to 'MU' |  |
| INTERVAL\_UNIT | 1T |  |
| INTERVAL\_UNIT\_COUNT | Set to 1 |  |
| INTERVAL\_FIXED\_DAYS | Set to Null |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED in the MSxMR being processed |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 15 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to Null | After the Sprint, this may change. |

### RAD RLM Part 3 - MS Evaluation Action Specifications

#### Create candidate major routine monitoring violation

This action in RADR is the same as the original action specified at 2.3.1 above.

#### Create followup monitoring schedule

This action is the same as the action specified above at 2.3.22

#### Create Candidate Minor Routine Monitoring Violation

This action in RADR is the same as the original action specified at 2.3.2 above.

#### Create Candidate Minor Routine Reporting Violation

This action in RADR is the same as the original action specified at 2.3.4 above.

#### Create Candidate Major Routine Reporting Violation

This action in RADR is the same as the original action specified at 2.3.3 above.

#### Create candidate RTC with date = PA\_RECEIVED\_DATE

This is not first time this action is called but I couldn't find a specification for it.

This action is called immediately after creating a candidate reporting violation (e.g., action spec 2.2.23.4 or 2.2.23.5). It creates an RTC record for the candidate reporting violation just created.

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | C | For candidate |
| STATUS\_DATE | Sample\_Result.PA\_RECEIVED\_DATE | From the sample\_result associated to the MSxMP being evaluated |
| EA\_YEAR | Calendar year in which the Sample\_Result.PA\_RECEIVED\_DATE falls |  |
| ACTION\_TYPE\_ID | Set to 75 | In the future, this Action\_Type\_ID may either be 38 (EOX) or 75 (SOX) depending on whether the primacy agency is an EPA Region or not, respectively. |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the candidate reporting violation created in the previous action. |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action. |  |

#### Create Candidate Major Confirmation Monitoring Violation

This is the same action as specified in 2.3.5.

#### Create Candidate Minor Confirmation Monitoring Violation

This is the same action as specified in 2.3.6.

#### Create Candidate Minor Confirmation Reporting Violation

This is the same action as specified in 2.3.8.

#### Create Candidate Major Confirmation Reporting Violation

This is the same action as specified in 2.3.7.

#### Create Candidate Major Make-up Monitoring Violation

This table shows how to value candidate violations that are created by the BRE in the above action.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_RPT\_ONLY\_IND | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) | Same as for a confirmation monitoring violation. |

#### Create Candidate Minor Make-up Monitoring Violation

This table shows how to value candidate violations that are created by the BRE in the above action. There is only one difference between 2.3.23.11 and this one: it is vio\_severity.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to **MN** |  |
| VIO\_RPT\_ONLY\_IND | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) | Same as for a confirmation monitoring violation. |

#### Create Candidate Major Make-up Reporting Violation

This table shows how to value candidate violations that are created by the BRE in the above action.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_RPT\_ONLY\_IND | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) | Same as for a confirmation monitoring violation. |

#### Create Candidate Minor Make-up Reporting Violation

This table shows how to value candidate violations that are created by the BRE in the above action. There is only one difference between 2.3.23.13 and this one: it is vio\_severity.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to MN |  |
| VIO\_RPT\_ONLY\_IND | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE | Same as for a confirmation monitoring violation. |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) | Same as for a confirmation monitoring violation. |

#### Create 9 Year RADR Alpha MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed] and INTERVAL\_FIXED\_DAYS = 3240 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 9-year compliance cycle under the standardized monitoring framework that starts after the Sample\_Date of the latest sample associated to the MSxMP being processed. | The 9-year compliance cycle monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35559 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 6 Year RADR Alpha MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed] and INTERVAL\_FIXED\_DAYS = 2160 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 6-year monitoring period that has the same MP\_BEGIN\_DT as the3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample associated to the MSxMP being processed. | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 3 Year RADR Alpha MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed] and INTERVAL\_FIXED\_DAYS = 1080 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample associated to the MSxMP being processed. | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

### GWR RLM Part 3 - MS Evaluation Actions

#### Create candidate major routine monitoring violation

This action in GWR is the same as the original action specified at 2.3.1 above.

#### Create followup monitoring schedule

This action is the same as the action specified above at 2.3.22 but implement the revisions to this original specification across all rules.

#### Create candidate minor routine monitoring violation

This action is the same as the action specified above at 2.3.2.

#### Create candidate routine reporting violation

This action is nearly the same as the action specified above at 2.3.3 but with one minor difference - it does not value VIO\_SEVERITY.

This table shows how to value this candidate reporting violation.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

#### Create candidate RTC with date = PA\_RECEIVED\_DATE and Associate to Candidate Reporting Violation

This action is the same as the action specified above at 2.3.23.6.

#### Mark MSxMP as "In MR compliance"

This action is the same as the action specified above at 2.3.9.

#### Create candidate major TG/A source water monitoring violation

This action is the same as action 2.3.5 - R\_MS2\_2 CR\_MJR\_CONFIRM\_MON\_VIO createMajorConfirmMonitoringViolation.

#### Create candidate minor TG/A source water monitoring violation

This action is the same as action 2.3.6 - R\_MS2\_3 CR\_MNR\_CONFIRM\_MON\_VIO.

#### Create candidate TG/A source water reporting violation

This action is nearly the same as action 2.3.7 - R\_MS2\_3 CR\_MJR\_CONFIRM\_RPT\_VIO createMajorConfirmReportingViolation but with one minor difference - it does not value VIO\_SEVERITY.

This table shows how to value this candidate reporting violation.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirementhedule.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_BEGIN\_DATE |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Schedule. MONITORING\_**SCHD**\_END\_DATE |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_ |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus the number of results associated to the Monitoring\_Schedule (in Result\_to\_MS\_Link) |  |

#### Create Candidate Minor Routine Monitoring Violation for OD Summary

This action is shared with SWTR, DDBP, and GWR when a monitoring schedule that requires an OD Summary leads to a candidate minor routine monitoring violation.

This table shows how to value this candidate violation.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to Monitoring\_Requirement.MR\_VIOLATION\_TYPE\_CD |  |
| VIO\_SEVERITY | Set to MN |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Requirement.MR\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Set to OD\_SUMMARY.SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Set to OD\_SUMMARY.SAMPLES\_COLLECTED |  |

#### Create Candidate Major Routine Monitoring Violation for OD Summary

This table shows how to value this candidate violation.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]);  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_CONTAMINANT\_CD | Set to ANALYTE\_CD from ANALYTE\_REF  Using the RULE\_CD from the FACTS  AND RULE\_REF  AND RULE\_ANALTYE  AND ANALYTE\_TYP\_REF.KEY\_DATA = 'RL' | So, for GWR, it would select 0700.  For SWTR, it would select 0200. |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Set to OD\_SUMMARY.SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Set to OD\_SUMMARY.SAMPLES\_COLLECTED |  |

#### Create candidate major Routine reporting violation for GWR OD Summaries

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to MJ |  |
| VIO\_RPT\_ONLY\_IND | Set to ‘Y’ |  |
| VIO\_CONTAMINANT\_CD | Set to ANALYTE\_CD from ANALYTE\_REF  Using the RULE\_CD from the FACTS  AND RULE\_REF  AND RULE\_ANALTYE  AND ANALYTE\_TYP\_REF.KEY\_DATA = 'RL' | So, for GWR, it would select 0700.  For SWTR, it would select 0200. |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

### Create candidate Minor Routine monitoring violation for OD Summaries

This action is called in this SWTR decision tables: Table MS-SWTR:1 ODST and others.

This table shows how to value candidate minor monitoring violations that are created by the BRE in the above referenced table.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to Monitoring\_Schedule.MR\_VIOLATION\_TYPE\_CD |  |
| VIO\_SEVERITY | Set to MN |  |
| ~~VIO\_RPT\_ONLY\_IND~~ | ~~Set to ‘N’~~ |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | If there is no OD Summary attached to the Monitoring Schedule for the Monitoring Period being assessed, set to MONITORING\_REQUIREMENT. NUMB\_SAMPLES\_REQUIRED for the Monitoring Schedule being assessed.  If there is an OD Summary, Set to OD\_SUMMARY.SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | If there is no OD Summary attached to the Monitoring Schedule for the Monitoring Period being assessed, set to MONITORING\_REQUIREMENT. NUMB\_SAMPLES\_REQUIRED.  If there is an OD Summary, Set to OD\_SUMMARY.SAMPLES\_REQUIRED minus OD\_SUMMARY.SAMPLES\_COLLECTED. |  |

### Create candidate minor Routine reporting violation for OD Summaries

This action is called in these SWTR decision tables: Table MS-SWTR:2a 95PT, Table MS-SWTR:2b MAXT, Table MS-SWTR:2c EPRD, and Table MS-SWTR:2d DSRD as well as some under DDBP and GWR.

This table shows how to value candidate minor reporting violations that are created by the BRE in the above referenced tables.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Set to 'MN' |  |
| VIO\_RPT\_ONLY\_IND | Set to ‘Y’ |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period. MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period. MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

### LCR RLM Part 3 - MS Evaluation Action Specifications

#### Create Candidate Initial/Routine/Follow-up Tap Monitoring Violation

This table shows how to value candidate violations that are created by the BRE in action "Create candidate initial/routine/follow-up tap monitoring violation". This action is similar to the original create candidate monitoring violation at 2.3.1 but with these differences:

* are not marked as major or minor
* reference the Rule Code rather than contaminant code
* VIO\_FED\_PRD\_END\_DT is not valued
* Sample\_Summary\_LC is used rather than MP\_AVG\_COMPL\_VALUE

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '5000' | analyte\_ref\_id = 724 |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | If MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT is not null, then MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT + 1 day.  Else Monitoring\_Period.MP\_END\_DT + 1 day |  |
| VIO\_FED\_PRD\_END\_DT | Do not value |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT | States usually want to know the actual monitoring period during which the PWS was supposed to monitor. |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED:  If processing a copper MS:  Then, minus SAMPLE\_SUMM\_LC.NUM\_COPPER\_SAMPLE  If processing a lead MS:  Then minus SAMPLE\_SUMM\_LC.NUM\_LEAD\_SAMPLE |  |

#### Create or update 90th summary

This design is based on the following Prime tables and views.

Parent Table: SAMPLE\_SUMM

|  |  |
| --- | --- |
| **Column\_Name** | **Data Type** |
| SAMPLE\_SUMM\_ID | NUMBER(13,0) |
| WATER\_SYSTEM\_ID | VARCHAR2(9 CHAR) |
| FACILITY\_ID | NUMBER(13,0) |
| AGENCY\_RECEIVED\_DT | DATE |
| COLLECTED\_FROM\_DT | DATE |
| COLLECTED\_TO\_DT | DATE |
| LAB\_ID | NUMBER(9,0) |
| FOR\_COMPL | CHAR(1 CHAR) |
| SAMPLE\_CAT\_ID | NUMBER(13,0) |
| HOURS\_OPERATION | NUMBER(5,0) |
| CREATE\_USER\_ID | SDWISPRIME |

Child Table: SAMPLE\_SUMM\_LC

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Notes** |
| SAMPLE\_SUMM\_ID | NUMBER(13,0) |  |
| NUM\_LEAD\_SAMPLE | NUMBER(7,0) | The number of lead samples in the summary. |
| LEAD\_90TH\_PCTL | NUMBER(16,12) | The lead 90th percentile for the summary. LEAD\_90TH\_PCTL\_UOM\_ID records the unit of measure (by reference). |
| NUM\_LEAD\_RESULT | NUMBER(7,0) | This is the number of lead results above the action level. |
| NUM\_COPPER\_SAMPLE | NUMBER(7,0) |  |
| COPPER\_90TH\_PCTL | NUMBER(16,12) | The copper 90th percentile for the summary. COPPER\_90TH\_PCTL\_UOM\_ID records the unit of measure (by reference). |
| NUM\_COPPER\_RESULT | NUMBER(7,0) | This is the number of copper results above the action level. |
| LEAD\_90TH\_PCTL\_UOM\_ID | NUMBER(13,0) |  |
| COPPER\_90TH\_PCTL\_UOM\_ID | NUMBER(13,0) |  |

View: SAMPLE\_SUMMARY\_LC\_VIEW

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Notes** |
| SAMPLE\_SUMM\_ID | NUMBER(13,0) |  |
| WATER\_SYSTEM\_ID | VARCHAR2(9 CHAR) |  |
| FACILITY\_ID | NUMBER(13,0) |  |
| AGENCY\_RECEIVED\_DT | DATE |  |
| COLLECTED\_FROM\_DT | DATE |  |
| COLLECTED\_TO\_DT | DATE |  |
| LAB\_ID | NUMBER(9,0) |  |
| FOR\_COMPL | CHAR(1 CHAR) |  |
| NUM\_SAMPLE | NUMBER(7) |  |
| PCTL\_90TH | NUMBER(16,12) |  |
| GTAL | NUMBER(7) | Number of results that are Greater Than the Action Level (GTAL) |
| PCTL\_90TH\_UOM | VARCHAR2(200) |  |
| ANALYTE\_ID | NUMBER |  |

##### create and Associate 90th Summary

Value the columns as indicated in the following tables. Only one sample\_summ and sample\_summ\_lc should be created for the two paired tap monitoring schedules. Before creating the sample\_summ and sample\_summ\_lc, first check to see if a BRE-created sample\_summ already exists for the same water system and facility with the same COLLECTED\_FROM\_DT. If so, use the existing sample\_summ and sample\_summ\_lc records and go to 2.3.27.2.2.

|  |  |
| --- | --- |
| **SAMPLE\_SUMM** | |
| **Column** | **Source Data Element/Logic** |
| SAMPLE\_SUMM\_ID | Primary Key |
| WATER\_SYSTEM\_ID | Monitoring\_Schedule.MS\_WATER\_SYSTEM\_ID |
| FACILITY\_ID | Facility ID of the FACILITY record where Monitoring\_Schedule.MS\_WATER\_SYSTEM\_ID = facility.water\_system\_id and Monitoring\_Schedule.MS\_STATE\_ASSIGNED\_FAC\_ID = facility.state\_assigned\_fac\_id (eventually we should have facility\_id available on the sample result record). |
| AGENCY\_RECEIVED\_DT | Latest Sample\_Result.PA\_RECEIVED\_DT for the results associated to the MSxMP being evaluated. |
| COLLECTED\_FROM\_DT | Earliest Sample\_Result.SAMPLE\_DATE for the results associated to the MSxMP being evaluated. |
| COLLECTED\_TO\_DT | Latest Sample\_Result.SAMPLE\_DATE for the results associated to the MSxMP being evaluated. |
| LAB\_ID | Sample\_Result.SAMPLE\_LAB\_CD |
| FOR\_COMPL | 'Y' |
| SAMPLE\_CAT\_ID | 35319 |
| HOURS\_OPERATION | Null |
| CREATE\_USER\_ID | SDWIS\_PRIME |

|  |  |
| --- | --- |
| **SAMPLE\_SUMM\_LC** | |
| **Column** | **Source Data Element/Logic** |
| SAMPLE\_SUMM\_ID | Same as SAMPLE\_SUMM\_ID used for the parent SAMPLE\_SUMM record. |
| NUM\_LEAD\_SAMPLE | If the MS being evaluated is for lead, set to the count of lead results associated to the MSxMP being evaluated (via the task\_analyte\_result table).  If the MS being evaluate is for copper, set to null when first creating the summary record. |
| LEAD\_90TH\_PCTL | If the MS being evaluated is for lead, set to the calculated value as specified below.  If the MS being evaluate is for copper, set to null when first creating the summary record. |
| NUM\_LEAD\_RESULT | If the MS being evaluated is for lead, set to the calculated value as specified below.  If the MS being evaluate is for copper, set to null when first creating the summary record. |
| NUM\_COPPER\_SAMPLE | If the MS being evaluated is for copper, set to the count of copper result associated to the MSxMP being evaluated (via the task\_analyte\_result table)..  If the MS being evaluate is for lead, set to null when first creating the summary record. |
| COPPER\_90TH\_PCTL | If the MS being evaluated is for copper, set to the calculated value as specified below.  If the MS being evaluate is for lead, set to null when first creating the summary record. |
| NUM\_COPPER\_RESULT | If the MS being evaluated is for copper, set to the calculated value as specified below.  If the MS being evaluate is for lead, set to null when first creating the summary record. |
| LEAD\_90TH\_PCTL\_UOM\_ID | If the MS being evaluated is for lead, set to 35658.  If the MS being evaluate is for copper, set to null when first creating the summary record. |
| COPPER\_90TH\_PCTL\_UOM\_ID | If the MS being evaluated is for copper, set to 35658.  If the MS being evaluate is for lead, set to null when first creating the summary record. |

After creating a sample summary, associate it to the TASK\_ANALYTE being evaluated. Associate it using TASK\_ANALYTE\_RESULT.

##### update 90th Summary

Value the columns as indicated in the following tables.

|  |  |
| --- | --- |
| **SAMPLE\_SUMM** | |
| **Column** | **Source Data Element/Logic** |
| SAMPLE\_SUMM\_ID | No change |
| WATER\_SYSTEM\_ID | No change |
| FACILITY\_ID | No change |
| AGENCY\_RECEIVED\_DT | If the latest Sample\_Result.PA\_RECEIVED\_DT associated to the MSxMP being evaluated > the current value, then set to the latest Sample\_Result.PA\_RECEIVED\_DT; else no change. |
| COLLECTED\_FROM\_DT | If the earliest Sample\_Result.SAMPLE\_DATE associated to the MSxMP being evaluated < the current value, then set to the earliest Sample\_Result.SAMPLE\_DATE; else no change. |
| COLLECTED\_TO\_DT | If the latest Sample\_Result.SAMPLE\_DATE associated to the MSxMP being evaluated > the current value, then set to the latest Sample\_Result.SAMPLE\_DATE; else no change. |
| LAB\_ID | If Sample\_Result.SAMPLE\_LAB\_CD <> current value, set to null; else no change. |
| FOR\_COMPL | No change |
| SAMPLE\_CAT\_ID | No change |
| HOURS\_OPERATION | No change |
| CREATE\_USER\_ID | No change |

|  |  |
| --- | --- |
| **SAMPLE\_SUMM\_LC** | |
| **Column** | **Source Data Element/Logic** |
| SAMPLE\_SUMM\_ID | No change |
| NUM\_LEAD\_SAMPLE | If the MS being evaluated is for lead, set to the count of lead results associated to the MSxMP being evaluated (via the Result\_to\_MS\_Link table).  If the result being evaluate is for copper, no change. |
| NUM\_COPPER\_SAMPLE | If the MS being evaluated is for copper, set to the count of copper result associated to the MSxMP being evaluated (via the Result\_to\_MS\_Link table).  If the result being evaluate is for lead, no change. |
| LEAD\_90TH\_PCTL | If the MS being evaluated is for lead, set to the calculated value as specified below.  If the MS being evaluate is for copper, no change. |
| NUM\_LEAD\_RESULT | If the MS being evaluated is for lead, set to the calculated value as specified below.  If the MS being evaluate is for copper, no change. |
|  |  |
| COPPER\_90TH\_PCTL | If the MS being evaluated is for copper, set to the calculated value as specified below.  If the MS being evaluate is for lead, no change. |
| NUM\_COPPER\_RESULT | If the MS being evaluated is for copper, set to the calculated value as specified below.  If the MS being evaluate is for lead, no change. |
| LEAD\_90TH\_PCTL\_UOM\_ID | If the MS being evaluated is for lead, set to 35658.  If the MS being evaluate is for copper, no change. |
| COPPER\_90TH\_PCTL\_UOM\_ID | If the MS being evaluated is for copper, set to 35658.  If the MS being evaluate is for lead, no change. |

##### Calculations Details

**LEAD\_90TH\_PCTL Calculation**

This calculation only uses lead results that are associated to the same Monitoring Schedule and Monitoring Period via the Result\_to\_MS\_Link table.[[4]](#footnote-3)

In all cases, if the SAMPLE\_RESULT. RESULT\_LESS\_THAN\_IND = 'Y', use zero for the result in the following calculations.

Case 1: If NUM\_LEAD\_SAMPLE is < 5, convert all results to mg/l and set the **LEAD\_90TH\_PCTL** to the highest result.

Case 2: If NUM\_LEAD\_SAMPLE = 5, convert all results to mg/l and set the **LEAD\_90TH\_PCTL** to the average of the highest and second highest result after rounding to the smallest number of significant figures in the result set (excluding zeros - for lead, it is usually thousandths).

Case 3: If NUM\_LEAD\_SAMPLE divided by 10 is an integer (i.e., number of results is 10, 20, 30, etc.), use the following formula to value the **LEAD\_90TH\_PCTL:**

1. Convert all results to mg/l. (Note that often lead is reported in ug/l and usually all are reported in the same units but write the code to handle a mixture of ug/l and mg/l results.)
2. Multiply the number of results for the monitoring period by 0.9 (i.e., if 10 = 9, if 20 = 18, etc.).
3. The result in the number yielded by the calculation in Step 3 is the **LEAD\_90TH\_PCTL**.

Case 4: All other NUM\_LEAD\_SAMPLE.

If the KEY\_DATA = ‘**Rounding**’ for REF\_CATEGORY = ‘90TH\_CALCULATION\_METHOD’ and PRIMACY\_AGENCY\_CD = current primacy agency, then set the **LEAD\_90TH\_PCTL** to the value calculated as follows:

1. Convert all results to mg/l. (Note that often lead is reported in ug/l and usually all are reported in the same units but write the code to handle a mixture of ug/l and mg/l results.)
2. Place the results in ascending order from the result with the lowest concentration to the sample with the highest concentration. Assign a number to each result, ascending by single integers beginning with the number 1 for the lowest result (note there could be several with 0 and each should be sequentially numbered). The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.
3. Multiply the number of results for the monitoring period by 0.9 (e.g., if 12 = 10.8).
4. If the decimal from Step 3 is 0.4 or lower, round down to the nearest whole number and use that numbered result for the 90th percentile (for the case of 12 samples, you would not round down because the decimal is 0.8).
5. If the decimal from Step 3 is 0.5 or higher, round up to the nearest whole number and use that numbered result for the 90th percentile. Convert to mg/l if necessary. (For this example, you would round up to 11 and set the **LEAD\_90TH\_PCTL to the 11th highest result.)**

If the KEY\_DATA = ‘**Interpolation**’ for REF\_CATEGORY = ‘90TH\_CALCULATION\_METHOD’ and PRIMACY\_AGENCY\_CD = current primacy agency or this KEY\_VALUE\_REF does not exist, then set the **LEAD\_90TH\_PCTL** to the value calculated in Step 7 below:

1. Convert all results to mg/l. (Note that often lead is reported in ug/l and usually all are reported in the same units but write the code to handle a mixture of ug/l and mg/l results.)
2. Place the results in ascending order from the result with the lowest concentration to the sample with the highest concentration. Assign a number to each result, ascending by single integers beginning with the number 1 for the lowest result (note there could be several with 0 and each should be sequentially numbered). The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.
3. Multiply the number of results for the monitoring period by 0.9 (e.g., if 12 = 10.8).
4. Subtract the difference of the two samples between which your 90th percentile falls.

For example, if there are 12 results, Step 3 will give you 10.8. So you would subtract the 10th result, say it was 0.014 mg/L from the 11th result, say it was 0.018 mg/L. The difference = 0.004 mg/L.

1. Subtract the difference between the 90th percentile level ranking and the lower of the two sample rankings between which the 90th percentile level falls. In the example we're using it would be 10.8 minus 10 for a difference of 0.8.
2. Multiply the difference from Step 4 (in our example, 0.004 mg/L) by the difference from Step 5 (in our example, 0.8): 0.004 x 0.8 = 0.0032 mg/L
3. Round to the smallest number of significant figures in the result set (excluding zeros). Typically it will be thousands. In our example, round to 0.003.
4. Add the value from Step 7 (in our example, 0.003) to the lower of the two sample results (in our example, to the 10th sample result of 0.014 mg/L: 0.003 + 0.014 = 0.017 mg/L.

You can look at pages 35 and 36 of the following inserted PDF for the same steps and example given above.



**NUM\_LEAD\_RESULT (i.e., number of lead results above the lead action level) Calculation**

This calculation also only uses lead results that are associated to the same Monitoring Schedule and Monitoring Period via the Result\_to\_MS\_Link table.

Set to the number of results that are greater than the lead action level (0.015 mg/l - but use the value from this SQL):

SELECT REGULATORY\_LEVEL.REG\_LEVEL\_MEASURE\_NUM

FROM REGULATORY\_LEVEL

WHERE REGULATORY\_LEVEL.REG\_LEVEL\_RULE\_CD = 'LCR'

AND REGULATORY\_LEVEL.REG\_LEVEL\_CONTAMINANT\_CD = '1030'

AND REGULATORY\_LEVEL.REG\_LEVEL\_TYPE\_CD = 'ACL'

AND

((REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT IS NULL

AND REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= MSxMP.DUE\_DT)

OR

(REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= MSxMP.DUE\_DT

and REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT >= MSxMP.DUE\_DT ))

**COPPER\_90TH\_PCTL Calculation**

This calculation only uses copper results that are associated to the same Monitoring Schedule and Monitoring Period via the Result\_to\_MS\_Link table.[[5]](#footnote-4)

In all cases, if the SAMPLE\_RESULT. RESULT\_LESS\_THAN\_IND = 'Y', use zero for the result in the following calculations.

Case 1: If the number of copper results is < 5, convert all results to mg/l and set the **COPPER\_90TH\_PCTL** to the highest result.

Case 2: If the number of copper results = 5, convert all results to mg/l and set the **COPPER\_90TH\_PCTL** to the average of the highest and second highest result after rounding to the smallest number of significant figures in the result set (excluding zeros - for copper, it is usually hundreths).

Case 3: If the number of results divided by 10 is an integer (i.e., number of results is 10, 20, 30, etc.), use the following formula to value the **COPPER\_90TH\_PCTL:**

1. Convert all results to mg/l. (Note that often copper usually is reported in mg/l and usually all are reported in the same units but write the code to handle a mixture of ug/l and mg/l results.)
2. Place the results in ascending order from the result with the lowest concentration to the sample with the highest concentration. Assign a number to each result, ascending by single integers beginning with the number 1 for the lowest result (note there could be several with 0 and each should be sequentially numbered). The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.
3. Multiply the number of results for the monitoring period by 0.9 (i.e., if 10 = 9, if 20 = 18, etc.).
4. The result in the number yielded by the calculation in Step 3 is the **COPPER\_90TH\_PCTL**.

Case 4: All other number or results.

If the KEY\_DATA = ‘**Rounding**’ for REF\_CATEOGORY = ‘90TH\_CALCULATION\_METHOD’ and PRIMACY\_AGENCY\_CD = current primacy agency, then set the **COPPER\_90TH\_PCTL** to the value calculated as follows:

1. Convert all results to mg/l.
2. Place the results in ascending order from the result with the lowest concentration to the sample with the highest concentration. Assign a number to each result, ascending by single integers beginning with the number 1 for the lowest result (note there could be several with 0 and each should be sequentially numbered). The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.
3. Multiply the number of results for the monitoring period by 0.9 (e.g., if 12 = 10.8).
4. If the decimal from Step 3 is 0.4 or lower, round down to the nearest whole number and use that numbered result for the 90th percentile (for the case of 12 samples, you would not round down because the decimal is 0.8).
5. If the decimal from Step 3 is 0.5 or higher, round up to the nearest whole number and use that numbered result for the 90th percentile. Convert to mg/l if necessary. (For this example, you would round up to 11 and set the **COPPER\_90TH\_PCTL to the 11th highest result.)**

If the KEY\_DATA = ‘**Interpolation**’ for REF\_CATEGORY = ‘90TH\_CALCULATION\_METHOD’ and PRIMACY\_AGENCY\_CD = current primacy agency or if this Key\_Value\_Ref does not exist, then set the **COPPER\_90TH\_PCTL** to the value calculated in Step 7 below:

1. Convert all results to mg/l. (Note that often copper is reported in ug/l and usually all are reported in the same units but write the code to handle a mixture of ug/l and mg/l results.)
2. Place the results in ascending order from the result with the lowest concentration to the sample with the highest concentration. Assign a number to each result, ascending by single integers beginning with the number 1 for the lowest result (note there could be several with 0 and each should be sequentially numbered). The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.
3. Multiply the number of results for the monitoring period by 0.9 (e.g., if 12 = 10.8).
4. Subtract the difference of the two samples between which your 90th percentile falls.

For example, if there are 12 results, Step 3 will give you 10.8. So you would subtract the 10th result, say it was 0.014 mg/L from the 11th result, say it was 0.018 mg/L. The difference = 0.004 mg/L.

1. Subtract the difference between the 90th percentile level ranking and the lower of the two sample rankings between which the 90th percentile level falls. In the example we're using it would be 10.8 minus 10 for a difference of 0.8.
2. Multiply the difference from Step 4 (in our example, 0.004 mg/L) by the difference from Step 5 (in our example, 0.8): 0.004 x 0.8 = 0.0032 mg/L
3. Round to the smallest number of significant figures in the result set (excluding zeros). Typically it will be thousands. In our example, round to 0.003.
4. Add the value from Step 7 (in our example, 0.003) to the lower of the two sample results (in our example, to the 10th sample result of 0.014 mg/L: 0.003 + 0.014 = 0.017 mg/L.

Again, you can look at pages 35 and 36 of the above inserted PDF for the same steps and example given above.

**NUM\_COPPER\_RESULT (i.e., number of copper results above the copper action level) Calculation**

This calculation also only uses copper results that are associated to the same Monitoring Schedule and Monitoring Period via the Result\_to\_MS\_Link table.

Set to the number of results that are greater than the copper action level (1.3 mg/l - but use the value from this SQL:

SELECT REGULATORY\_LEVEL.REG\_LEVEL\_MEASURE\_NUM

FROM REGULATORY\_LEVEL

WHERE REGULATORY\_LEVEL.REG\_LEVEL\_RULE\_CD = 'LCR'

AND REGULATORY\_LEVEL.REG\_LEVEL\_CONTAMINANT\_CD = '1022'

AND REGULATORY\_LEVEL.REG\_LEVEL\_TYPE\_CD = 'ACL'

AND

((REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT IS NULL

AND REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= Current\_Date)

OR

(REGULATORY\_LEVEL.REG\_LEVEL\_BEGIN\_DT <= Current\_Date

and REGULATORY\_LEVEL.REG\_LEVEL\_END\_DT >= Current\_Date

#### Delete BRE-90th Summary

This specification is for the SAMPLE\_SUMM x SAMPLE\_SUMM\_LC associated to the monitoring schedule being processed where SAMPLE\_SUMM.CREATE\_USER\_ID = 'SDWISPRIME"

Because a single SAMPLE\_SUMM x SAMPLE\_SUMM\_LC can contain summary information for two MS (a lead and a copper MS), first determine if the values for the opposite analyte (if processing 1030, then 1022; if processing 1022, then 1030) are valued.

If the opposite analyte columns are valued, then instead of "deleting" the SAMPLE\_SUMM x SAMPLE\_SUMM\_LC, set values to zero or null as indicated below (note than no changes are made to SAMPLE\_SUMM).

If processing a lead MS (analyte code '1030'), use the specifications in the following table.

If NUM\_COPPER\_SAMPLE = 0, virtually delete the SAMPLE\_SUMM and the SAMPLE\_SUMM\_LC.

If NUM\_COPPER\_SAMPLE > 0

|  |  |
| --- | --- |
| **SAMPLE\_SUMM\_LC** | |
| **Column** | **Source Data Element/Logic** |
| NUM\_LEAD\_SAMPLE | Set to 0 |
| LEAD\_90TH\_PCTL | Set to null |
| NUM\_LEAD\_RESULT | Set to null |
| NUM\_COPPER\_SAMPLE | Do not change |
| COPPER\_90TH\_PCTL | Do not change |
| NUM\_COPPER\_RESULT | Do not change |
| LEAD\_90TH\_PCTL\_UOM\_ID | Set to null |
| COPPER\_90TH\_PCTL\_UOM\_ID | Do not change |

If processing a copper MS (analyte code '1022'), use the specifications in the following table.

If NUM\_LEAD\_SAMPLE = 0, virtually delete the SAMPLE\_SUMM and the SAMPLE\_SUMM\_LC.

If NUM\_LEAD\_SAMPLE > 0

|  |  |
| --- | --- |
| **SAMPLE\_SUMM\_LC** | |
| **Column** | **Source Data Element/Logic** |
| NUM\_LEAD\_SAMPLE | Do not change |
| LEAD\_90TH\_PCTL | Do not change |
| NUM\_LEAD\_RESULT | Do not change |
| NUM\_COPPER\_SAMPLE | Set to 0 |
| COPPER\_90TH\_PCTL | Set to null |
| NUM\_COPPER\_RESULT | Set to null |
| LEAD\_90TH\_PCTL\_UOM\_ID | Do not change |
| COPPER\_90TH\_PCTL\_UOM\_ID | Set to null |

#### Create Candidate Make-up Monitoring Schedule

This action is the same as the action specified above at 2.3.22. Note that "Make-up" and "Followup" are interchangeable.

#### Create candidate Initial/Routine/Follow-up Tap Reporting Violation

This table shows how to value candidate violations that are created by the BRE in this action. This action is similar to "CR\_MJR\_RTN\_RPT\_VIO" at 2.3.3 but has some differences.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '5000' | analyte\_ref\_id = 724 |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | If MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT is not null, then MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT + 1 day.  Else Monitoring\_Period.MP\_END\_DT + 1 day |  |
| VIO\_FED\_PRD\_END\_DT | Do not value |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED:  If processing a copper MS:  Then, minus SAMPLE\_SUMM\_LC.NUM\_COPPER\_SAMPLE  If processing a lead MS:  Then minus SAMPLE\_SUMM\_LC.NUM\_LEAD\_SAMPLE |  |
| VIO\_RPT\_ONLY\_IND | Set to 'Y' |  |

#### Create a candidate SOWT reporting violation

This table shows how to value candidate violations that are created by the BRE in this action.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '5000' | analyte\_ref\_id = 724 |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_END\_DT + 1 day |  |
| VIO\_FED\_PRD\_END\_DT | Do not value |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.M\_P\_END\_DT |  |
| VIO\_TIER\_LEVEL | Do not value |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus count of Result\_to\_MS\_Link records associated to the MS x MP being processed. | Note that LCR RLM Part 2 does not create MP\_AVG\_COMPL\_VALUE records for SOWT monitoring. |
| VIO\_RPT\_ONLY\_IND | Set to 'Y' |  |

#### Create a candidate SOWT monitoring violation

This table shows how to value candidate violations that are created by the BRE in action " Create candidate initial/routine/follow-up tap monitoring violation". This action is similar to the original create candidate monitoring violation at 2.3.1 but with these differences:

* are not marked as major or minor
* reference the Rule Code rather than contaminant code
* VIO\_FED\_PRD\_END\_DT is not valued

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '5000' | analyte\_ref\_id = 724 |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_END\_DT + 1 day |  |
| VIO\_FED\_PRD\_END\_DT | Do not value |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT | States usually want to know the actual monitoring period during which the PWS was supposed to monitor. |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED count of Result\_to\_MS\_Link records associated to the MS x MP being processed. | Note that LCR RLM Part 2 does not create MP\_AVG\_COMPL\_VALUE records for SOWT monitoring. |

#### Create a candidate major confirmation monitoring violation

Note that EPA's Violation Master Table does not include information on a SOWT confirmation monitoring violation.

For now then, the design will use the common action for creating candidate major confirmation monitoring violations found at 2.3.5.

#### Create a candidate major confirmation reporting violation

Note that EPA's Violation Master Table does not include information on a SOWT confirmation reporting violations.

For now then, the design will use the common action for creating candidate major confirmation reporting violations found at 2.3.7.

#### Create a candidate WQP monitoring violation

This table shows how to value candidate violations that are created by the BRE in action " Create candidate WQP monitoring violation". This action is similar to the original create candidate monitoring violation at 2.3.1 but with this difference:

* is not marked as major or minor
* reference the Rule Code rather than contaminant code
* count of Result\_to\_MS\_Link is used rather than MP\_AVG\_COMPL\_VALUE
* the begin and end dates for the violation are calendar six-month periods when the schedule calls for biweekly monitoring
* before creating a candidate violation, a duplicate check is run to avoid creating multiple violations for the same six-month period.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Do not value. |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '5000' | analyte\_ref\_id = 724 |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | If the Monitoring\_Period.MP\_FIXED\_DAYS > 14, then set to the Monitoring\_Period.MP\_BEGIN\_DT of the MSxMP being evaluated.  Else set to the first day of the calendar 6-month period in which the Monitoring\_Period.MP\_END\_DT falls. | Calendar 6-month period means 1/1-6/30 or 7/1-12/31. |
| VIO\_FED\_PRD\_END\_DT | If the Monitoring\_Period.MP\_FIXED\_DAYS > 14, then set to the Monitoring\_Period.MP\_END\_DT  Else set to the first day of the calendar 6-month period in which the Monitoring\_Period.MP\_END\_DT falls. |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value. |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value. |  |

After determining the values for the candidate violation per the above specifications, check to see if a matching candidate violation already exists. If one already exists, do not create another one. Otherwise go ahead and create the candidate violation.

A matching violation is one with the same: VIO\_WATER\_SYSTEM\_ID, VIOLATION\_TYPE\_CODE, VIO\_CONTAMINANT\_CD, and VIO\_FED\_PRD\_BEGIN\_DT.

#### Create a candidate WQP reporting violation

This table shows how to value candidate violations that are created by the BRE in action " Create candidate WQP reporting violation". This action is similar to the original create candidate routine reporting violation at 2.3.3 but with this difference:

* is not marked as major or minor
* reference the Rule Code rather than contaminant code
* count of Result\_to\_MS\_Link is used rather than MP\_AVG\_COMPL\_VALUE

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  WHERE VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD =  (Select VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM VIOLATION\_TYPE\_REF  LEFT JOIN MONITORING\_REQUIREMENT  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID  LEFT JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  WHERE MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID = [MS being processed]) ||'R';  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '5000' | analyte\_ref\_id = 724 |
| VIO\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Monitoring\_Period.MP\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Monitoring\_Period.MP\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Monitoring\_Requirement.NUMB\_SAMPLES\_REQUIRED minus count of Result\_to\_MS\_Link records associated to MS x MP being processed. |  |
| VIO\_RPT\_ONLY\_IND | Set to 'Y' |  |

#### Create candidate DEEM-B3 determination

This process creates a candidate DEEM record in the PA\_Determination table. Use the following specifications to create the record.

| **PA\_Determination Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| STATUS\_CD | Set to "C - Candidate" |  |
| WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| PA\_DETERMINATION\_CONT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| PA\_DETERMINATION\_TYPE\_CD | Set to ‘DEEM’ |  |
| PA\_DETERMINATION\_BEGIN\_DT | Set to Monitoring\_Period.MP\_END\_DT plus 1 day |  |
| PA\_DETERMINATION\_END\_DT | Null |  |
| PA\_DETERMINATION\_RULE\_CD | Monitoring\_Requirement.RULE\_CD |  |
| REASON\_CODE\_ID | Set to key\_value\_ref\_id where KEY\_DATA = 'B3' | Codes available are B1, B3,  WQP, GW, SH |

#### Create candidate tap reduced LC triennial MS

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 1080 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 below based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed]  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE for the analyte paired with the one being processed] | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 3-year compliance period that starts after the MP\_END\_DT of the monitoring period being processed. | For example, if the MP being processed is 1/1-6/30/2015, then set to 1/1/2016 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to 6 |  |
| MS\_SEASON\_BEGIN\_DAY | Set to 1 |  |
| MS\_SEASON\_END\_MONTH | Set to 9 |  |
| MS\_SEASON\_END\_DAY | Set to 30 |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD from the MSxMR being processed |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'LC TAP REDUCED MONITORING' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed (or its paired analyte) |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | YR |  |
| INTERVAL\_UNIT\_COUNT | Set to 3 |  |
| INTERVAL\_FIXED\_DAYS | 1080 |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column C in table under 2.3.27.14 below based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 23 | VT 52 |

#### 141.86(c) Lead and Copper in Tap Water - Number of Samples

|  |  |  |
| --- | --- | --- |
| **A**  **System size**  **(number of people served)** | **B**  **Number of sites**  **(standard monitoring)** | **C**  **Number of sites**  **(reduced monitoring)** |
| >100,000 | 100 | 50 |
| 10,001 to 100,000 | 60 | 30 |
| 3,301 to 10,000 | 40 | 20 |
| 501 to 3,300 | 20 | 10 |
| 101 to 500 | 10 | 5 |
| ≤100 | 5 | 5 |

#### Create candidate tap reduced L/C triennial MS

Note that this specification is nearly identical to 2.3.27.13 but with this one difference: this action creates only ONE MS (because the paired analyte is already on waiver monitoring).

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 1080 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed] |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 3-year compliance period that starts after the MP\_END\_DT of the monitoring period being processed. | For example, if the MP being processed is 1/1-6/30/2015, then set to 1/1/2016 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to 6 |  |
| MS\_SEASON\_BEGIN\_DAY | Set to 1 |  |
| MS\_SEASON\_END\_MONTH | Set to 9 |  |
| MS\_SEASON\_END\_DAY | Set to 30 |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD from the MSxMR being processed |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'LC TAP REDUCED MONITORING' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | YR |  |
| INTERVAL\_UNIT\_COUNT | Set to 3 |  |
| INTERVAL\_FIXED\_DAYS | 1080 |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column C in table under 2.3.27.14 based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 23 | VT 52 |

#### Create candidate tap reduced LC Annual MS

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 360 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed]  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE for the analyte paired with the one being processed] | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 1-year compliance period that starts after the MP\_END\_DT of the monitoring period being processed. | For example, if the MP being processed is 1/1-6/30/2015, then set to 1/1/2016 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to 6 |  |
| MS\_SEASON\_BEGIN\_DAY | Set to 1 |  |
| MS\_SEASON\_END\_MONTH | Set to 9 |  |
| MS\_SEASON\_END\_DAY | Set to 30 |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD from the MSxMR being processed |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'LC TAP REDUCED MONITORING' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed (or its paired analyte) |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | YR |  |
| INTERVAL\_UNIT\_COUNT | Set to 1 |  |
| INTERVAL\_FIXED\_DAYS | 360 |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column C in table under 2.3.27.14 based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 23 | VT 52 |
| ENFORCE\_PERIODICITY | Set to Monitoring\_Requirement. ENFORCE\_PERIODICITY from the MS being processed |  |

#### Create a Proposed L/C tap waiver.

This action creates a waiver record and a WS\_MNTRG\_WAIVER (to associate the waiver to the WS). When a user validates the candidate waiver, other non-BRE actions will modify and create the appropriate monitoring schedules.

| **MNTRG\_WAIVER Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MNTRG\_WAIVER\_ID | Primary key | Generated by Prime |
| MW\_STATUS\_ID | Set to KEY\_VALUE\_REF.KEY\_VALUE\_ID  FROM KEY\_VALUE\_REF  WHERE KEY\_VALUE\_REF.REF\_CATEGORY = 'MNTRG\_WAIVER\_STATUS'  AND KEY\_DATA = 'P' |  |
| BEGIN\_DT | Set to the Begin Date of the 9-year monitoring period that starts on the first day of the calendar year after the MP\_END\_DT of the monitoring period being processed. |  |
| END\_DT | Set to the End Date of the 9-year monitoring period that starts on the first day of the calendar year after the MP\_END\_DT of the monitoring period being processed. |  |
| WAIVER\_TYPE\_ID | Set to KEY\_VALUE\_REF.KEY\_VALUE\_ID  FROM KEY\_VALUE\_REF  WHERE KEY\_VALUE\_REF.REF\_CATEGORY = 'MNTRG\_WAIVER\_TYPE'  AND KEY\_DATA = 'I' |  |
| LEGAL\_ENTITY\_GOV\_ID | Set to LEGAL\_ENTITY.LEGAL\_ENTITY\_ID  WHERE PRIMACY\_AGENCY\_CD = of the MS being evaluated and PRIMARY\_RA\_FLG = 'Y' |  |
| MR\_WAIVED | Set to the MONITORING\_REQUIREMENT\_ID of the MR being evaluated. |  |
| MR\_REQUIRED | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 3240 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed] and ENFORCE\_PERIODICITY = [ENFORCE\_PERIODICITY being processed]. | If a monitoring requirement does not exist, then create it per 2.3.27.16 above, with this addition: Set MONITORING\_REQUIREMENT\_TYPE to ‘TAP REDUCED to Every 9 Years’ and Set CFR\_REFERENCE to ‘141.86(g)’. |
| COMMENTS | Set to 'Waiver proposed by Prime Business Rule Engine.' |  |

| **WS\_MNTRG\_WAIVER Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| WS\_MNTRG\_WAIVER\_ID | Primary key | Generated by Prime |
| MNTRG\_WAIVER\_ID | Set to MNTRG\_WAIVER\_ID generated when the above MNTRG\_WAIVER record was created. |  |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID of the MS being evaluated. |  |
| FACILITY\_ID | Set to Facility.STATE\_ASSIGNED\_FAC\_ID of the MS being evaluated. |  |

#### Create 60-Day PE Activity

Integration of BRE with the Prime data structure required additional elements to be values when creating a candidate scheduled activity. Wentong did the development work while I added the specs to this document.

This function creates a record in the SCHEDULE\_ACTIVITY and SCHEDULE\_ACTIVITY\_TASK tables. If a SCHEDULE\_ACTIVITY valued the same as described below was created in the same BRE session, then add to it another SCHEDULE\_ACTIVITY\_TASK rather than creating a new matching record.

| **Table** | **Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- | --- |
| SCHEDULE\_  ACTIVITY | SCHEDULE\_ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID from the MS being evaluated. |  |
| CATEGORY\_ID | Set to key\_value\_ref.key\_value\_id where ref\_category = 'SCHEDULE\_ACTIVITY\_CATEGORY' and key\_data = 'LCR' |  |
| ASSOCIATED\_RECORD\_ID | Set to key\_value\_ref.key\_value\_id where ref\_category = 'SCHEDULE\_ACTIVITY\_EVENT' and key\_data = 'LS' (LCR Summary) | Maps to "Associated Record / Event" |
| RECORD\_EVENT\_ID | Set to the SAMPLE\_SUMM\_ID of the Sample Summary that was being processed. | Maps to "ID" |
| SCHEDULE\_  ACTIVITY\_  TASK | SCHEDULE\_ACTIVITY\_ID | Set the SCHEDULE\_ACTIVITY\_ID generated for the above primary key. |  |
| TASK\_REF\_ID | Set to task\_ref\_id where the referenced violation\_type\_cd = '65'.  If there is more than one task\_ref with this violation type code, create one record for each task\_ref. |  |
| STATUS\_ID | Set to key\_value\_ref\_id where the referenced REF\_CATEGORY = '[check with Lanhu]' and VALUE\_DATA = ‘Candidate’. |  |
| STATUS\_DT | Set to Current Date |  |
| REQUIRED\_DUE\_DT | Set to 60 plus the following derived date: the month and day from the MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT and the year from the SAMPLE\_SUMM.COLLECTED\_TO\_DT |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to STATE\_ASSIGNED\_FAC\_ID of the MS being evaluated. |  |

#### Create Candidate Matching Tap MS with Changed Begin Date

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to the same MONITORING\_REQUIREMENT\_ID as the MS being evaluated.  For the second MS, set to the MONITORING\_REQUIREMENT\_ID of the MS paired with the MS being processed. | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the calendar year that immediately follows the COLLECTED\_TO\_DT from the SAMPLE\_SUMM associated to the MSxMP. | For example, if the COLLECTED\_TO\_DT from the SAMPLE\_SUMM is 08/08/2016, set to 01/01/2017. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_BEGIN\_DAY | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_END\_MONTH | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_END\_DAY | Set to the same value as the MS being evaluated. |  |

#### Create candidate matching WQP MS with Changed Begin Date

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to the same MONITORING\_REQUIREMENT\_ID as the MS being evaluated. |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the calendar year that immediately follows the latest SAMPLE\_DATE from SAMPLE\_RESULTs associated to the MSxMP. | For example, if the latest SAMPLE\_DATE is 10/08/2016, set to 01/01/2017. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_BEGIN\_DAY | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_END\_MONTH | Set to the same value as the MS being evaluated. |  |
| MS\_SEASON\_END\_DAY | Set to the same value as the MS being evaluated. |  |

#### Create a Comprehensive Consumer Notice of Lead Results

Integration of BRE with the Prime data structure required additional elements to be values when creating a candidate scheduled activity. See 2.3.27.18 for the details.

This function creates a record in the Activity table. This is similar to 2.2.33.5.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| See 2.3.27.18 |  |  |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID from the MS being evaluated. |  |
| task\_REF\_ID | Set to task\_ref\_id where the referenced violation\_type\_cd = '66'.  If there is more than one matching task\_ref with PRIMACY\_AGENCY\_CD equal to 'HQ' or equal to the Primacy Agency code being processed, then create one schedule\_Activity\_task record for each task\_ref. |  |
| STATUS\_ID | Set to key\_value\_ref\_id where the referenced REF\_CATEGORY = '[See 2.3.27.18]' and VALUE\_DATA = ‘Candidate’. |  |
| STATUS\_DT | Set to Current Date |  |
| REQUIRED\_DUE\_DT | Set to 3 months plus the following derived date: the month and day from the MNTRG\_SCH\_MNTRG\_PRD.DUE\_DT and the year from the SAMPLE\_SUMM.COLLECTED\_TO\_DT | Per UAT in April 2018, only require the 3 month certification as an HQ row. If a state wants more, they can add them.  3 months means this: if the derived date is 9/30/2017, then 3 months after is 12/31/2017. |
| ANALYTE\_REF\_ID | Set to analyte\_ref\_id where the referenced analyte\_cd = '1030'. |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to STATE\_ASSIGNED\_FAC\_ID of the MS being evaluated. |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |

#### Removed

#### Create candidate tap Increased MS

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 180 and NUMB\_SAMPLES\_REQUIRED = number from column B in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed] and MNTRG\_REQUIREMENT\_TYPE\_NM = 'Increased' and Violation TBI = '52'  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE for the analyte paired with the one being processed] | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the first 6-month monitoring period that starts after the MP\_END\_DT of the monitoring period being processed. | For example, if the MP being processed is 1/1/2013-12/31/2015, then set to 1/1/2016 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Not valued |  |
| MS\_SEASON\_BEGIN\_DAY | Not valued |  |
| MS\_SEASON\_END\_MONTH | Not valued |  |
| MS\_SEASON\_END\_DAY | Not valued |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to Monitoring\_Requirement.RULE\_CD from the MSxMR being processed |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'Increased' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed (or its paired analyte) |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | MO |  |
| INTERVAL\_UNIT\_COUNT | Set to 6 |  |
| INTERVAL\_FIXED\_DAYS | 180 |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column B in table under 2.3.27.14 below based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 23 | VT 52 |

### RTCR RLM Part 3 - MS Evaluation Action Specifications

#### Create candidate RTCR major routine monitoring violation

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to 'MJ' |  |
| VIO\_CONTAMINANT\_CD | Set to '8000' |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to the MP\_BEGIN\_DT of the monitoring\_period being evaluated. |  |
| VIO\_FED\_PRD\_END\_DT | Set to the MP\_END\_DT of the monitoring\_period being evaluated. |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to the VIO\_FED\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to the VIO\_FED\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Set to number samples required from the MS being evaluated |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Set to the number of samples required minus the number of results obtained. |  |

#### Create make-up monitoring schedule

This action is the same as the action specified above at 2.3.22. Note that "Make-up" and "Followup" are interchangeable.

#### Create candidate RTCR minor routine monitoring violation

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM MONITORING\_REQUIREMENT  INNER JOIN MONITORING\_SCHEDULE  ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON MONITORING\_REQUIREMENT.VIOLATION\_TYPE\_REF\_ID = VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE MONITORING\_SCHEDULE\_ID = [MS being processed]  If there is not a violation \_type\_ref record referenced by the monitoring\_requirement, create the candidate violation without a violation type. | Once we normalize Violation, select VIOLATION\_TYPE\_REF\_ID instead of VIOLATION\_TYPE\_CD |
| VIO\_SEVERITY | Set to 'MN' |  |
| VIO\_CONTAMINANT\_CD | Set to '8000' |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to the MP\_BEGIN\_DT of the monitoring\_period being evaluated. |  |
| VIO\_FED\_PRD\_END\_DT | Set to the MP\_END\_DT of the monitoring\_period being evaluated. |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to the VIO\_FED\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to the VIO\_FED\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

#### Create candidate RTCR result reporting violation

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Sample\_Result.SMP\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Sample\_Result.SMP\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to '4B' |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '8000' |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to Monitoring\_Period.MP\_END\_DT + Monitoring\_Requirement.REPORT\_DUE\_DATE\_DAYS + 1day | E.g. if the MP is April 2016 and the report\_due\_date\_days = 10, then = 05/11/2016. |
| VIO\_FED\_PRD\_END\_DT | Do not value |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to the VIO\_FED\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to the VIO\_FED\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

#### Create candidate RTC RTCR Reporting Violation

This action is called immediately after creating a candidate reporting violation (e.g., action spec 2.3.28.4). It creates an RTC record for the candidate reporting violation just created.

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | C | For candidate |
| STATUS\_DATE | The latest of: (1) Sample\_Result.PA\_RECEIVED\_DATEs and (2) SAMPLE\_SUMM.AGENCY\_RECEIVED\_DT | From records associated to the MSxMP being evaluated |
| EA\_YEAR | Calendar year in which the Sample\_Result.PA\_RECEIVED\_DATE falls |  |
| ACTION\_TYPE\_ID | Set to 75 | In the future, this Action\_Type\_ID may either be 38 (EOX) or 75 (SOX) depending on whether the primacy agency is an EPA Region or not, respectively. |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the candidate reporting violation created in the previous action. |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action. |  |

#### Mark MSxMP as "In MR compliance"

This function **updates** the MNTRG\_SCH\_MNTRG\_PRD or Monitoring\_Schedule record being processed by valuing column MSMP\_MR\_COMPL\_IND with a ‘Y’. It updates the former for routine schedules ('RT') and updates the latter make-up ('MU') monitoring schedules.

#### Create a candidate Level 1 Assessment activity from MS Due to Insufficient Repeats

This action creates an Activity record for the water system and facility for the MS x MP as follows.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to monitoring\_schedule.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '2A'.  If there is more than one activity\_type\_ref with this violation type code, use the one with the smallest activity\_type\_ref\_id. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | monitoring\_schedule.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If processing a Repeat MS, set to monitoring\_schedule.MONITORING\_SCHD\_END\_DT + 30  If processing a Routine MS, set to MP End Date + 30 |  |
| REASON\_CD\_ID | Set to key\_value\_id where ref\_category = 'ACTIVITY\_REASON' and key\_data = 'LT1C' |  |

#### Create a candidate Level 2 Assessment activity from MS Due to > 1 Level 1

This action creates an Activity record for the water system and facility for the MS x MP as follows.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to monitoring\_schedule.WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '2B'.  If there is more than one activity\_type\_ref with this violation type code, use the one with the smallest activity\_type\_ref\_id. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
|  |  |  |
|  |  |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | monitoring\_schedule.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If processing a Repeat MS, set to monitoring\_schedule.MONITORING\_SCHD\_END\_DT + 30  If processing a Routine MS, set to MP End Date + 30 |  |
| REASON\_CD\_ID | Set to key\_value\_id where ref\_category = 'ACTIVITY\_REASON' and key\_data = 'L2TB' |  |

#### Create a candidate RTCR reduced quarterly MS for CWS

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows. |  |
| INTERVAL\_FIXED\_DAYS | 90 |  |
| CFR\_REFERENCE | '141.855(d)(1)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar quarter that immediately follows:  Case 1: If one or more results are associated to the MSxMP being evaluated, then (a) the latest Sample\_Result.PA\_RECEIVED\_DATE or (b) if this date is not valued, then the CREATE\_DT for the Result.  Case 2: If no results are associated to the MSxMP being evaluated, then (a) the SAMPLE\_SUMM. AGENCY\_RECEIVED\_DT or (b) if this date is not valued, then the CREATE\_DT for the SAMPLE\_SUMM. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create a candidate RTCR Quarterly MS for NCWS

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows. |  |
| INTERVAL\_FIXED\_DAYS | 90 |  |
| CFR\_REFERENCE | '141.854(b)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar quarter that immediately follows:  Case 1: If one or more results are associated to the MSxMP being evaluated, then (a) the latest Sample\_Result.PA\_RECEIVED\_DATE or (b) if this date is not valued, then the CREATE\_DT for the Result.  Case 2: If no results are associated to the MSxMP being evaluated, then (a) the SAMPLE\_SUMM. AGENCY\_RECEIVED\_DT or (b) if this date is not valued, then the CREATE\_DT for the SAMPLE\_SUMM. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create a candidate RTCR Annual MS for NCWS

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows. |  |
| INTERVAL\_FIXED\_DAYS | 360 |  |
| CFR\_REFERENCE | '141.854(e)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar year that immediately follows:  Case 1: If one or more results are associated to the MSxMP being evaluated, then (a) the latest Sample\_Result.PA\_RECEIVED\_DATE or (b) if this date is not valued, then the CREATE\_DT for the Result.  Case 2: If no results are associated to the MSxMP being evaluated, then (a) the SAMPLE\_SUMM. AGENCY\_RECEIVED\_DT or (b) if this date is not valued, then the CREATE\_DT for the SAMPLE\_SUMM. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create a candidate RTCR Increased/Routine Monthly MS

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows. |  |
| CFR\_REFERENCE | Like '141.854(f)%' |  |
| INTERVAL\_FIXED\_DAYS | 30 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows:  Case 1: If one or more results are associated to the MSxMP being evaluated, then (a) the latest Sample\_Result.PA\_RECEIVED\_DATE or (b) if this date is not valued, then the CREATE\_DT for the Result.  Case 2: If no results are associated to the MSxMP being evaluated, then (a) the SAMPLE\_SUMM. AGENCY\_RECEIVED\_DT or (b) if this date is not valued, then the CREATE\_DT for the SAMPLE\_SUMM. | Note that, if this action is called while processing a repeat (RP) MS, then there will not be a MP. Make sure the code handles this possibility. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create a candidate RTCR Increased Quarterly MS

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Monitoring\_Schedule. MS\_WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule. MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows. |  |
| CFR\_REFERENCE | Like '141.854(f)%' |  |
| INTERVAL\_FIXED\_DAYS | 90 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar quarter that immediately follows:  Case 1: If one or more results are associated to the MSxMP being evaluated, then (a) the latest Sample\_Result.PA\_RECEIVED\_DATE or (b) if this date is not valued, then the CREATE\_DT for the Result.  Case 2: If no results are associated to the MSxMP being evaluated, then (a) the SAMPLE\_SUMM. AGENCY\_RECEIVED\_DT or (b) if this date is not valued, then the CREATE\_DT for the SAMPLE\_SUMM. | Note that, if this action is called while processing a repeat (RP) MS, then there will not be a MP. Make sure the code handles this possibility. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create a candidate 3D Monitoring violation (Code 3D)

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE.MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | MONITORING\_SCHEDULE.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to '3D' |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '8000' |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to the MP\_BEGIN\_DT of the monitoring\_period being evaluated. |  |
| VIO\_FED\_PRD\_END\_DT | Set to the MP\_END\_DT of the monitoring\_period being evaluated. |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to the VIO\_FED\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to the VIO\_FED\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

#### Create a candidate E. coli MCL violation (Code 1A) from RLM Part 3

This table shows how to value candidate E. Coli MCL violations when called from RLM Part 3. This action is only called when processing a Repeat Monitoring Schedule. In all cases, this function needs to use the Sample Date of the **routine 3100** sample result that is the Original Sample Result for either the Repeat Monitoring Schedule or the Repeat Samples.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE.MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | MONITORING\_SCHEDULE.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to '1A' |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Set to '8000' |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Set to the begin date of the calendar month in which the routine sample was collected. |  |
| VIO\_FED\_PRD\_END\_DT | Set to the end date of the calendar month in which the routine sample was collected. |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Set to the VIO\_FED\_PRD\_BEGIN\_DT |  |
| VIO\_STATE\_PRD\_END\_DT | Set to the VIO\_FED\_PRD\_END\_DT |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

In addition to the above, this function creates associations between the candidate violation created above and the sample result(s) that led to the determination of the violation using VIO\_SAMPLE\_RESULT.

Associate the violation to any positive results selected in any of the conditions through which the facts were processed.

#### Create a candidate 'Notify state of E. coli MCL violation' activity from RLM Part 3

This action creates an Activity record for the water system and facility for the Monitoring Schedule as follows. This is similar to 2.2.33.6.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE.MS\_WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '4E' and primacy\_agency\_cd in ('HQ', '[the primacy agency being processed]').  If there is more than one activity\_type\_ref with this violation type code, create an activity for each one. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | MONITORING\_SCHEDULE.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | Using the Sample\_Result referenced by the MS\_ORIGINAL\_RESULT\_ID.  If sample\_result.analysis\_compl\_dt is valued, set to analysis\_compl\_dt + 1 day  Else, if sample\_result.analysis\_start\_dt is valued, set to analysis\_start\_dt + 1 day  Else, Set to Sample\_Result.SAMPLE\_DATE + 1 |  |

#### Create a candidate Level 2 Assessment activity from MS Due to EC MCL Violation

This action creates an Activity record for the water system and facility for the monitoring schedule as follows.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE.MS\_WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '2B'.  If there is more than one activity\_type\_ref with this violation type code, use the one with the smallest activity\_type\_ref\_id. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | MONITORING\_SCHEDULE.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If processing a Repeat MS, set to monitoring\_schedule.MONITORING\_SCHD\_END\_DT + 30  If processing a Routine MS, set to MP End Date + 30 |  |
| REASON\_CD\_ID | Set to key\_value\_id where ref\_category = 'ACTIVITY\_REASON' and key\_data = 'L2TA' |  |

#### Create a candidate Level 1 Assessment activity from MS Due to Multiple TC+

This action creates an Activity record for the water system and facility for the monitoring schedule as follows.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE.MS\_WATER\_SYSTEM\_ID |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd = '2A'.  If there is more than one activity\_type\_ref with this violation type code, use the one with the smallest activity\_type\_ref\_id. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | MONITORING\_SCHEDULE.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |
| DUE\_DT | If processing a Repeat MS, set to monitoring\_schedule.MONITORING\_SCHD\_END\_DT + 30  If processing a Routine MS, set to MP End Date + 30 |  |
| REASON\_CD\_ID | Set to key\_value\_id where ref\_category = 'ACTIVITY\_REASON' and key\_data = 'LT1D' |  |

### CCR RLM Part 3 - Activity Eval

This is now referred to as Part 6 and applies to all scheduled activity task records, not just those for CCR.

#### Create candidate activity violation

This action is similar to creating a candidate violation based on the violation type ref associated to a MS via a MR. In this case, however, the violation type ref (actually, the violation code, rule, analyte ref) is associated to the activity type (i.e., task\_ref) for the activity being evaluated.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Activity.WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Select FACILITY.STATE\_ASSIGNED\_FAC\_ID  FROM ACTIVITY LEFT JOIN FACILITY  ON FACILITY.FACILITY\_ID = ACTIVITY.FACILITY\_ID  using the ACTIVITY record being evaluated. | Note that the activity may not reference a facility. |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Select using new foreign key VIOCD\_RULE\_ANALYTE\_REF\_ID in task\_ref. Work with Lanthu to revise as needed.  Set to VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_CD  FROM ACTIVITY  INNER JOIN ACTIVITY\_TYPE\_REF  ON ACTIVITY.ACTIVITY\_TYPE\_REF\_ID = ACTIVITY\_TYPE\_REF.ACTIVITY\_TYPE\_REF\_ID  LEFT JOIN VIOLATION\_TYPE\_REF  ON VIOLATION\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID = ACTIVITY\_TYPE\_REF.VIOLATION\_TYPE\_REF\_ID  WHERE ACTIVITY\_ID = [Activity being processed]  If there is not a violation \_type\_ref record referenced by the activity type, create the candidate violation without a violation type. |  |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Select using new foreign key VIOCD\_RULE\_ANALYTE\_REF\_ID in task\_ref. Work with Lanthu to revise as needed. |  |
| VIO\_RULE\_CD | Select using new foreign key VIOCD\_RULE\_ANALYTE\_REF\_ID in task\_ref. Work with Lanthu to revise as needed. |  |
| VIO\_FED\_PRD\_BEGIN\_DT | (Case 1) If the VIOLATION\_TYPE\_CODE used above is equal to ('71' or '72') and the Due Date month and day are 7/1, then set to the Activity.Due\_Dt.  (Case 2) If (i.e., VIOLATION\_TYPE\_CODE used above = '2D', set to the earlier of these two dates:   * Activity.Due\_Dt plus 1 day * Date derived from WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT (MM/DD) plus the Year from Activity\_Due\_Dt plus 1 day   Select the POP\_SERVICE\_PD\_BEGIN\_DT for the Water System being evaluated where (activity\_due\_dt > POP\_EFFEC\_BEGIN\_DT and POP\_EFFEC\_END\_DT is null) OR (activity\_due\_dt > POP\_EFFEC\_BEGIN\_DT and activity\_due\_dt < POP\_EFFEC\_END\_DT).  If there is more than one WS\_POPULATION\_SERVED record returned that meets the above SQL, then select the one with POP\_SERVICE\_PD\_BEGIN\_DT (MM/DD) plus the Year from Activity\_Due\_Dt closest to the activity\_due\_dt.  (Case 3) Else (all other cases), then set to the Activity.Due\_Dt plus 1 day. | Case 1 1st example: the BRE is processing an Activity and its TBI is 71 and its Due Date is 7/1/2017. Set the violation fed period begin date to 7/1/2017.  Case 1 2nd example: the BRE is processing an Activity and its TBI is 71 and its Due Date is 6/30/2017. Set the violation fed period begin date to 7/1/2017.  Case 2 example: the BRE is processing an Activity for ID5070044. It has one WS\_POPULATION\_SERVED in effect with a POP\_SERVICE\_PD\_BEGIN\_DT = 11/01 and the Activity\_Due\_Dt for the activity being processed is 10/15/2016.  The first of the two dates would be 10/16/2016 (Activity.Due\_Dt plus 1 day)  The second of the two dates would be 11/02/2016.  The first should be used because it is earlier. |
| VIO\_FED\_PRD\_END\_DT | Do not value |  |
| VIO\_COMPL\_VALUE\_TEXT | Do not value |  |
| VIO\_COMPL\_VALUE\_UOM | Do not value |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_STATE\_PRD\_BEGIN\_DT | Activity.Due\_Dt plus 1 day |  |
| VIO\_STATE\_PRD\_END\_DT | Do not value |  |
| VIO\_TIER\_LEVEL | Select using new foreign key VIOCD\_RULE\_ANALYTE\_REF\_ID in task\_ref. Work with Lanthu to revise as needed. |  |
| VIO\_EXCEEDENCES\_CNT | Do not value |  |
| VIO\_SAMPLES\_RQD\_CNT | Do not value |  |
| VIO\_SAMPLES\_MISSNG\_CNT | Do not value |  |

After creating the candidate violation above, copy the violation’s primary key into the scheduled activity task (i.e., DEFICIENCY\_TASK) being processed.

#### Create RTC for Candidate Violation

This action is called immediately after creating a candidate activity violation in action spec 2.3.29.1. It creates an RTC record for the candidate activity violation just created.

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | Activity.WATER\_SYSTEM\_ID |  |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | C | For candidate |
| STATUS\_DATE | ACTIVITY.COMPLETED\_DT |  |
| EA\_YEAR | Calendar year in which the ACTIVITY.COMPLETED\_DT falls |  |
| ACTION\_TYPE\_ID | Set to 75 | In the future, this Action\_Type\_ID may either be 38 (EOX) or 75 (SOX) depending on whether the primacy agency is an EPA Region or not, respectively. |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the candidate reporting violation created in the previous action. |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action. |  |

#### Create a candidate RTCR Increased Monthly MS due to TT

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Activity.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Set to FACILITY.STATE\_ASSIGNED\_FAC\_ID  FROM ACTIVITY LEFT JOIN FACILITY  ON FACILITY.FACILITY\_ID = ACTIVITY.FACILITY\_ID  using the ACTIVITY record being evaluated.  If the Activity does not reference a facility, then leave blank |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows. |  |
| CFR\_REFERENCE | Like '141.854(f)%' |  |
| INTERVAL\_FIXED\_DAYS | 30 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the Due\_Dt of the activity being evaluated. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create a candidate RTCR Increased Quarterly MS due to TT

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Activity.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Set to FACILITY.STATE\_ASSIGNED\_FAC\_ID  FROM ACTIVITY LEFT JOIN FACILITY  ON FACILITY.FACILITY\_ID = ACTIVITY.FACILITY\_ID  using the ACTIVITY record being evaluated.  If the Activity does not reference a facility, then leave blank |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following two rows. |  |
| CFR\_REFERENCE | Like '141.854(f)%' |  |
| INTERVAL\_FIXED\_DAYS | 90 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar quarter that immediately follows the Due\_Dt of the activity being evaluated. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

### Create/Update candidate LRAA MCL violation in BRE Part 3

For Rule DDBP and analytes 2950 or 2456, use 2.3.30. For all others, use 2.3.31.

This table shows how to value candidate LRAA MCL violation when determined in M&R Compliance (when a PWS fails to collect a sample at one or more locations, MCL compliance is checked in M&R Compliance). This function is only called under the DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule.MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | For LRAA MCL, set to VIOLATION\_TYPE\_REF. VIOLATION\_TYPE\_CD  Where VIOLATION\_TYPE\_NM Like '%LRAA%' | Currently this is VIOLATION\_TYPE\_REF\_ID = 87 and it should not change. |
| VIO\_SEVERITY | Count number of LRAA for the same task that are > MCL |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | For LRAA MCL violations: set to the TA\_MP\_AVG\_COMPL\_VALUE.COMPLIANCE\_VALUE.  If more than one COMPLIANCE\_VALUE exceeds, set to the highest COMPLIANCE\_VALUE. |  |
| VIO\_COMPL\_VALUE\_UOM | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_TIER\_LEVEL | Set to Violation\_Type.TIER\_LEVEL\_NUMBER where Violation\_Type.Code = Violation.VIOLATION\_TYPE\_CODE and Violation\_Type.SEVERITY\_CODE = Violation.VIO\_SEVERITY |  |
| VIOLATIONS. MCL\_VIOL | Value with REG\_LEVEL.REG.LEVEL\_MEASURE\_TEXT for the MCL being used. | For example, 0.080 for TTHM or 0.060 for HAA5 |
| VIOLATIONS. MCL\_VIOL\_UOM | Value with KEY\_VALUE\_REF.KEY\_DATA referenced by REG\_LEVEL. REG\_LEVEL\_UOM\_ID for the MCL being used | 'MG/L' |

### Create/Update candidate RAA MCL violation in BRE Part 3

This table shows how to value a candidate RAA MCL violation when determined in M&R Compliance (when a PWS fails to collect a sample, MCL compliance is checked in M&R Compliance). This function is called under several rules including IOC, VOC, SOC, RADs, and DDBP rule. Before creating a new record, first see if there is an existing record with the same WS, Facility, Violation Type Code, Contaminant Code, Rule CD, Vio\_Fed\_Prd\_Begin\_DT, and Vio\_Fed\_Prd\_End\_DT. If there is, update the existing record instead of creating a new record.

To select RAA records, you cannot use the task\_analyte\_result table (the Result\_to\_MS\_Link table in the BRE structure). Instead you need to use the task\_analyte\_id foreign key in TA\_MP\_AVG\_COMPL\_VALUE.

| **Violation Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| VIOLATION\_ID | Primary key | Generated by Prime |
| VIO\_WATER\_SYSTEM\_ID | Monitoring\_Schedule.MS\_WATER\_SYSTEM\_ID |  |
| VIO\_STATE\_ASSIGNED\_FAC\_ID | Monitoring\_Schedule.MS\_STATE\_ASSIGNED\_FAC\_ID |  |
| VIOLATION\_FED\_ID | Not valued by BRE | Generated by Prime when Candidate is Validated |
| VIOLATION\_STATUS\_CD | Set to "C - Candidate" |  |
| VIOLATION\_TYPE\_CODE | Set to VIOLATION\_TYPE\_REF. VIOLATION\_TYPE\_CD  Where VIOLATION\_TYPE\_NM = 'MCL, AVERAGE'  In the Prime violation type structure, select from VIOCD\_RULE\_ANALYTE\_VIEW where VIOLATION\_TYPE\_CD = '02' and RULE\_CD = '[Rule Code being processed, e.g., IOC]' and ANALYTE\_CD = '[Analyte Code being processed, e.g., 1005]' | In Prime data structure, use the VIOCD\_RULE\_ANALYTE\_VIEW |
| VIO\_SEVERITY | Do not value |  |
| VIO\_CONTAMINANT\_CD | Monitoring\_Schedule.MS\_CONTAMINANT\_CODE |  |
| VIO\_RULE\_CD | Monitoring\_Schedule.MS\_RULE\_CD |  |
| VIO\_FED\_PRD\_BEGIN\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_BEGIN\_DT |  |
| VIO\_FED\_PRD\_END\_DT | Monitoring\_Schedule.MS\_MONITORING\_PRD\_END\_DT |  |
| VIO\_COMPL\_VALUE\_TEXT | Set to the TA\_MP\_AVG\_COMPL\_VALUE.COMPLIANCE\_VALUE |  |
| VIO\_COMPL\_VALUE\_UOM | Set to MPAvg\_ComplValue.COMPLIANCE\_VALUE\_UOM |  |
| VIO\_DETERMINATION\_DATE | Set to current date |  |
| VIO\_FISCAL\_YEAR | Set to current calendar year |  |
| VIO\_TIER\_LEVEL | Set to VIOCD\_RULE\_ANALYTE\_VIEW  .TIER\_LEVEL\_NUM | In Prime data structure, use the following: VIOCD\_RULE\_ANALYTE\_VIEW .TIER\_LEVEL\_NUM |
| VIOLATIONS. MCL\_VIOL | Value with REG\_LEVEL.REG.LEVEL\_MEASURE\_TEXT for the MCL being used. | For example, 0.010 for arsenic |
| VIOLATIONS. MCL\_VIOL\_UOM | Value with KEY\_VALUE\_REF.KEY\_DATA referenced by REG\_LEVEL. REG\_LEVEL\_UOM\_ID for the MCL being used |  |

## RTC Determination

### NO2 RLM Part 4 (ng\_rtc\_no2\_rules.xls)

These action specifications apply to all the Phase 2/5 rules, i.e., Nitrite (NO2), Nitrate (NO3), IOC, VOC, and SOC.

#### R\_RTC1\_3 UPD\_SOX\_EOX\_ASSOC\_MATCH\_VIOL updateSoxEoxAss2MathchViolationWithPaRecDate

The following table shows how to update the existing enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| EA\_WATER\_SYSTEM\_ID | No change |  |
| ENFORCEMENT\_FED\_ID | No change |  |
| STATUS | No change |  |
| STATUS\_DATE | Update with the Sample\_Result.PA\_RECEIVED\_DATE | From the sample\_result being used |
| EA\_YEAR | Update to the calendar year in which the Sample\_Result.PA\_RECEIVED\_DATE falls |  |
| ACTION\_TYPE\_ID | No change |  |

#### R\_RTC1\_3 CR\_SOX\_EOX\_ASSOC\_MCL\_VIOL createSoxEoxAss2MclViolations

First, please change the name of this action/function to createSoxEoxAss2Violations because it is used to create RTC records for monitoring, MCL, and MPL violations, not just MCL violations.

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | C | For candidate |
| STATUS\_DATE | Sample\_Result.PA\_RECEIVED\_DATE | From the sample\_result being used |
| EA\_YEAR | Calendar year in which the Sample\_Result.PA\_RECEIVED\_DATE falls |  |
| ACTION\_TYPE\_ID | Set to 75 |  |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows. If there is more than one violation to be returned to compliance, associate the above enforcement action to each of the violations.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the violation identified in condition Previous … Violation(s) |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action |  |

### RAD RLM Part 4 - RTC Determination

The action criteria for the radionuclide rule are the same as they are for the Phase 2/5 rules.

### GWR RLM Part 4 - RTC Determination

The action criteria for the Ground Water Rule RLM Part 4, Table RTC:1 - Mon SR RTC Determination are the same as they are for the Phase 2/5 rules.

However the RTC for violations based on OD Summaries is slightly different and follow.

The following should not only be used for the GWR RLM Part 4, Tables RTC:2 - Mon ODS RTC Determination and RTC:3 - TT RTC Determination but also for the tables equivalent to these in DDBP as well as for all RTC work under SWTR-LT1.

#### Update SOX/EOX associated to matching violation(s) with ODS PA\_Received\_Date

The following table shows how to update the existing enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| EA\_WATER\_SYSTEM\_ID | No change |  |
| ENFORCEMENT\_FED\_ID | No change |  |
| STATUS | No change |  |
| STATUS\_DATE | Update with the OD\_SUMMARY.PA\_RECEIVED\_DT | From the OD\_Summary associated to the MS x MP being evaluated. |
| EA\_YEAR | Update to the calendar year in which the OD\_SUMMARY.PA\_RECEIVED\_DATE falls |  |
| ACTION\_TYPE\_ID | No change |  |

#### Create SOX/EOX and associate to matching violation(s) for ODS

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | Set to 'C' | For candidate |
| STATUS\_DATE | OD\_SUMMARY.PA\_RECEIVED\_DT | From the OD\_Summary associated to the MS x MP being evaluated. |
| EA\_YEAR | Calendar year in which the OD\_SUMMARY.PA\_RECEIVED\_DT falls |  |
| ACTION\_TYPE\_ID | Set to 75 |  |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows. If there is more than one violation to be returned to compliance, associate the above enforcement action to each of the violations.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the violation identified in condition Previous MCL Violation(s) |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action |  |

### LCR RLM Part 4 - RTC Determination

The action criteria for the Lead and Copper Rule RLM Part 4, Tables RTC1:SR\_RTC and RTC1:MPL\_RTC are the same as they are for the Phase 2/5 rules.

However the RTC for violations based on Sample Summaries is slightly different and follow. That is table RTC1:SS\_RTC.

#### Update SOX/EOX associated to matching violation(s) with SS AGENCY\_RECEIVED\_DT

The following table shows how to update the existing enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| EA\_WATER\_SYSTEM\_ID | No change |  |
| ENFORCEMENT\_FED\_ID | No change |  |
| STATUS | No change |  |
| STATUS\_DATE | Update with the SAMPLE\_SUMM.AGENCY\_RECEIVED\_DT | From the Sample\_Summary associated to the MS x MP being evaluated. |
| EA\_YEAR | Update to the calendar year in which the SAMPLE\_SUMM.AGENCY\_RECEIVED\_DT falls |  |
| ACTION\_TYPE\_ID | No change |  |

#### Create SOX/EOX and associate to matching violation(s) for SS

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | Set to 'C' | For candidate |
| STATUS\_DATE | SAMPLE\_SUMM.AGENCY\_RECEIVED\_DT | From the Sample Summary associated to the MS x MP being evaluated. |
| EA\_YEAR | Calendar year in which the SAMPLE\_SUMM.AGENCY\_RECEIVED\_DT falls |  |
| ACTION\_TYPE\_ID | Set to 75 |  |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows. If there is more than one violation to be returned to compliance, associate the above enforcement action to each of the violations.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the violation identified in condition Previous MCL Violation(s) |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action |  |

### RTCR RLM Part 4 - RTC Determination

#### Create SOX/EOX and associate to Previous 3B violation(s)

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | Set to 'C' | For candidate |
| STATUS\_DATE | Set to "Earliest PA Received Date" which was derived for condition "3B OX Date <= Earliest PA Received Date." |  |
| EA\_YEAR | Calendar year in which the "Earliest PA Received Date" falls. |  |
| ACTION\_TYPE\_ID | Set to 75 |  |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows. If there is more than one violation to be returned to compliance, associate the above enforcement action to each of the violations.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the violation identified in condition "Previous 3B Monitoring Violation(s)." |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action |  |

#### Update SOX/EOX associated to Previous 3B violation(s)

The following table shows how to update the existing enforcement action record identified in condition "OX Associated to 3B Violation."

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| EA\_WATER\_SYSTEM\_ID | No change |  |
| ENFORCEMENT\_FED\_ID | No change |  |
| STATUS | No change |  |
| STATUS\_DATE | Set to "Earliest PA Received Date" which was derived for condition "3B OX Date <= Earliest PA Received Date." |  |
| EA\_YEAR | Calendar year in which the "Earliest PA Received Date" falls. |  |
| ACTION\_TYPE\_ID | No change |  |

#### Create SOX/EOX and associate to Previous 3A violation(s)

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | Set to 'C' | For candidate |
| STATUS\_DATE | Set to (1) the latest sample\_result\_view.PA Received Date of the sample results associated to the MSxMP being processed or (2) the sample\_summ.AGENCY\_RECEIVED\_DT of the sample\_summary associated to the MSxMP being processed, whichever is latest. |  |
| EA\_YEAR | Calendar year in which the above "Earliest PA Received Date" falls. |  |
| ACTION\_TYPE\_ID | Set to 75 |  |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows. If there is more than one violation to be returned to compliance, associate the above enforcement action to each of the violations.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the violation identified in condition "Previous 3A Monitoring Violation(s)." |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action |  |

#### Update SOX/EOX associated to Previous 3A violation(s)

The following table shows how to update the existing enforcement action record identified in condition "OX Associated to 3B Violation."

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| EA\_WATER\_SYSTEM\_ID | No change |  |
| ENFORCEMENT\_FED\_ID | No change |  |
| STATUS | No change |  |
| STATUS\_DATE | Set to (1) the latest sample\_result\_view.PA Received Date of the sample results associated to the MSxMP being processed or (2) the sample\_summ.AGENCY\_RECEIVED\_DT of the sample\_summary associated to the MSxMP being processed, whichever is latest. |  |
| EA\_YEAR | Calendar year in which the above "Earliest PA Received Date" falls. |  |
| ACTION\_TYPE\_ID | No change |  |

#### Create SOX/EOX and associate to Previous E.Coli MCL violation(s)

This action creates records in two tables: ENFORCEMENT\_ACTION and VIOLATION\_ENFORCEMENT\_ACTION.

The following table shows how to value the candidate enforcement action record.

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| ENFORCEMENT\_ACTION\_ID | Primary key | Generated by Prime |
| EA\_WATER\_SYSTEM\_ID | MONITORING\_SCHEDULE. MS\_WATER\_SYSTEM\_ID | From the MS being processed |
| ENFORCEMENT\_FED\_ID | Do not value |  |
| STATUS | Set to 'C' | For candidate |
| STATUS\_DATE | Set to (1) the latest sample\_result\_view.PA Received Date of the sample results associated to the MSxMP being processed or (2) the sample\_summ.AGENCY\_RECEIVED\_DT of the sample\_summary associated to the MSxMP being processed, whichever is latest. |  |
| EA\_YEAR | Calendar year in which the above "Earliest PA Received Date" falls. |  |
| ACTION\_TYPE\_ID | Set to 75 |  |

After creating the above candidate enforcement action, value the VIOLATION\_ENFORCEMENT\_ACTION as follows. If there is more than one violation to be returned to compliance, associate the above enforcement action to each of the violations.

|  |  |  |
| --- | --- | --- |
| **Elements** | **Source Data Element/Logic** | **Details** |
| VIOLATION\_ENFRCMNT\_ACTION\_ID | Primary key | Generated by Prime |
| VIOLATION\_ID | From the violation identified in condition "Previous E.Coli Vios." |  |
| ENFORCEMENT\_ACTION\_ID | From the Enforcement\_Action created in this same action |  |

#### Update SOX/EOX associated to Previous 3A violation(s)

The following table shows how to update the existing enforcement action record identified in condition "OX Associated to 1A Violation."

|  |  |  |
| --- | --- | --- |
| **Enforcement\_Action Elements** | **Source Data Element/Logic** | **Details** |
| EA\_WATER\_SYSTEM\_ID | No change |  |
| ENFORCEMENT\_FED\_ID | No change |  |
| STATUS | No change |  |
| STATUS\_DATE | Set to (1) the latest sample\_result\_view.PA Received Date of the sample results associated to the MSxMP being processed or (2) the sample\_summ.AGENCY\_RECEIVED\_DT of the sample\_summary associated to the MSxMP being processed, whichever is latest. |  |
| EA\_YEAR | Calendar year in which the above "Earliest PA Received Date" falls. |  |
| ACTION\_TYPE\_ID | No change |  |

## Monitoring Schedule Determination

When this function is run, a rule code and a set of water systems will be passed to the function for processing. For some, sample results will also be passed to the function.

### Phase 2/5 MS Determination Functions

#### Create candidate initial monitoring schedule

This table shows how to value candidate initial monitoring schedules that are created by the BRE in function MS Determine. Fields in Monitoring Schedule that are not included below are not valued.

Note that this action uses a Monitoring\_Requirement record as one of its sources. Appendix A outlines what the Monitoring\_Requirement table will look like at that time.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where MONITORING\_REQUIREMENT\_TYPE:  For NO2: like 'INITIAL%'  For IOC, NO3, SOC, and VOC:   * if SW:True, then like 'INITIAL SURFACE%' * if SW:False, then like 'INITIAL GROUND%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the current calendar quarter (if MS\_INTERVAL\_UNIT = ‘QT) or calendar year (if MS\_INTERVAL\_UNIT = ‘YR’ and MS\_INTERVAL\_UNIT\_COUNT = 1) or first day of the current 3-year, standardized monitoring period in all other cases. | Current means the one in which the creation date falls. For example, if it is creating it on 4/20/2018 and the schedule calls for annual monitoring, then set it to 01/01/2018. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create candidate After-Initial monitoring schedule

This table shows how to value candidate reduced after initial monitoring schedules that are created by the BRE in function MS Determine. Fields in Monitoring Schedule that are not included below are not valued.

Note that this action uses a Monitoring\_Requirement record as one of its sources. Appendix A outlines what the Monitoring\_Requirement table will look like at that time.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'NO2' and CFR\_REFERENCE = 141.23(e)(2) and MONITORING\_REQUIREMENT\_TYPE = 'AFTER INITIAL LESS THAN TRIGGER' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter (if MS\_INTERVAL\_UNIT = ‘QT) or calendar year (if MS\_INTERVAL\_UNIT = ‘YR’ and MS\_INTERVAL\_UNIT\_COUNT = 1) or first day of the next 3-year, standardized monitoring period in all other cases. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |
| MR\_REPORT\_DUE\_DATE\_DAYS | Set to Monitoring\_Requirement. MR\_REPORT\_DUE\_DATE\_DAYS where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) for NO2 | Once the database model has been implemented, this values will be pulled in with the Monitoring Requirement specified above. That is to say, the Monitoring Requirement record will already have this information in it. |
| MONITORING\_REQUIREMENT\_TYPE |  |
| MR\_CHECK\_DATE\_DAYS | Set to Monitoring\_Requirement.CHECK\_DATE\_DAYS where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) for NO2 |
| MR\_MAKEUP\_REQUIRED\_IND | Set to Monitoring\_Requirement.MAKEUP\_REQUIRED\_IND where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) for NO2 |
| MR\_VIOLATION\_TYPE\_CD | Set to Monitoring\_Requirement.VIOLATION\_TYPE\_CD where Monitoring\_Requirement.CFR\_REFERENCE = 141.23(e)(2) for NO2 |

#### Create candidate annual monitoring schedule

This table shows how to value candidate routine annual monitoring schedules that are created by the BRE when the MS Determine functions calls for the action. Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'NO2' and CFR\_REFERENCE = 141.23(e)(3) and MONITORING\_REQUIREMENT\_TYPE = 'RCB' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar year that immediately follows the latest Sample\_Result.SAMPLE\_DATE. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create candidate Triggered Increased monitoring schedule

This table shows how to value candidate routine quarterly monitoring schedules that are created by the BRE when the MS Determine functions calls for the action. Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" | Status codes for Monitoring Schedules will be maintained in KEY\_VALUE\_REF and will have these options (with the code in Key\_Data and the full name in Value\_Data): C - Candidate V - Validated R - Rejected Candidate status control: a User cannot select "C-Candidate" for a record. Only the BRE can use this status. |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where  For NO2, IOC, VOC, and SOC:  MONITORING\_REQUIREMENT\_TYPE Like '%TRIGGERED INCREASED%'  For NO3:   * if SW:True, then like '%TRIGGERED INCREASED SURFACE%' * if SW:False, then like '%TRIGGERED INCREASED GROUND%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter that immediately follows the latest Sample\_Result.SAMPLE\_DATE. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |
|  |  |  |
|  |  |  |
|  |  |
|  |  |
|  |  |

#### Create Candidate Waiver Required Monitoring Schedule (e.g., Table SOC-MSD:2, First Rule)

This table shows how to value candidate waiver required monitoring schedules that are created by the BRE when the MS Determine functions calls for the action. Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to MNTRG\_WAIVER.MONITORING\_REQUIREMENT\_ID\_REQUIRED |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Waiver Begin Date |  |
| MONITORING\_SCHD\_END\_DATE | Set to the Waiver End Date |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create candidate Reduced Monitoring Schedule for Larger Systems (Table SOC-MSD:2, 4th Rule)

This table shows how to value candidate reduced monitoring schedules for larger systems that are created by the BRE when the MS Determine functions calls for the action. Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to MONITORING\_REQUIREMENT\_ID  where MONITORING\_REQUIREMENT\_TYPE like 'REDUCED%' and like '%LARGER%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the current 3 year compliance period under the standardized monitoring framework. | Need to add a column to Monitoring\_Period named SMF\_TYPE with two PV: 'Compliance Period' and 'Compliance Cycle' It is optional. The first is for SMF 3-year periods, the second for SMF 9-year periods. |
| MONITORING\_SCHD\_END\_DATE | Set to the Waiver End Date |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

### SWTR MS Determination Functions

Note that SWTR RLM Part 5 only looks at **active** treatment plant facilities and looks at them one by one . So, when these functions are called, one treatment plant facility will be the main fact.

#### Create turbidity MS calling for 1 measurement per day with IFE [141.74(c)(1)4th and 141.560]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)4th,141.560' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or '01/01/2005', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create Facility 95th percentile turbidity level of 0.3 NTU [141.551(a)(1)]

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = '95P' and CFR\_REFERENCE = '141.551(a)(1)' |  |
| START\_DT | Set to the current facility status date or '01/01/2005', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create Facility Max turbidity level of 1 NTU [141.551(a)(2)]

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = 'MAX' and CFR\_REFERENCE = '141.551(a)(2)' |  |
| START\_DT | Set to the current facility status date or '01/01/2005', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create turbidity MS calling for calling for continuous monitoring wO IFE [141.74(c)(1)2nd and 141.562]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)2nd ,141.562' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or '01/01/2005', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create turbidity MS calling for calling for 1 measurement every 4 hours with IFE [141.74(c)(1) 1st and 141.560]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)1st ,141.560' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or '01/01/2005', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create turbidity MS calling for 1 measurement every 4 hours with IFE [141.74(c)(1) 1st and 141.174(a)]

Note that SWTR RLM Part 5 only looks at treatment plant facilities and looks at them one by one . So, when these functions are called, one treatment plant facility will be the main fact.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)1st,141.174(a)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or **'01/01/2002'**, whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create Facility 95th percentile turbidity level of 0.3 NTU [141.173(a)(1)]

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = '95P' and CFR\_REFERENCE = '141.173(a)(1)' |  |
| START\_DT | Set to the current facility status date or '**01/01/2002'**, whichever is later. |  |
| END\_DT | Not valued |  |

#### Create Facility Max turbidity level of 1 NTU [141.173(a)(2)]

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = 'MAX' and CFR\_REFERENCE = '141.173(a)(2)' |  |
| START\_DT | Set to the current facility status date or **'01/01/2002'**, whichever is later. |  |
| END\_DT | Not valued |  |

#### Create turbidity MS calling for 1 measurement per day without IFE [141.74(c)(1)3rd] - Slow Sand and Other every day

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)3rd' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create Facility 95th percentile turbidity level of 1 NTU per [141.73(b)(1)] - Slow Sand

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = '95P' and CFR\_REFERENCE = '141.73(b)(1)' |  |
| START\_DT | Set to the current facility status date or '07/01/1993', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create Facility Max turbidity level of 5 NTU per 141.73(b)(2) - Slow Sand

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = 'MAX' and CFR\_REFERENCE = '141.73(b)(2)' |  |
| START\_DT | Set to the current facility status date or '07/01/1993', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create turbidity MS calling for 1 measurement every 4 hours without IFE [141.74(c)(1)1st] - Slow Sand and Other every 4 hours

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)st' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create turbidity MS calling for 1 measurement per day without IFE [141.74(c)(1)4th] - DE every day

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)4th' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create Facility 95th percentile turbidity level of 1 NTU per [141.73(b)(1)] - DE

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = '95P' and CFR\_REFERENCE = '141.73(c)(1)' |  |
| START\_DT | Set to the current facility status date or '07/01/1993', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create Facility Max turbidity level of 5 NTU per 141.73(b)(2) - DE

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0100' and REG\_LEVEL\_TYPE\_CD = 'MAX' and CFR\_REFERENCE = '141.73(c)(2)' |  |
| START\_DT | Set to the current facility status date or '07/01/1993', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create turbidity MS calling for 1 measurement every 4 hours without IFE [141.74(c)(1)1st] - DE every 4 hours

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0100' and CFR\_REFERENCE = '141.74(c)(1)1st' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create EP RDC MS calling for continuous monitoring [141.74(c)(2)]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWTR' and Monitoring\_Requirement.CONT = '0999' and CFR\_REFERENCE = '141.74(c)(2)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create Facility minimum RDC level of 0.2 mg/l per 141.72(b)(2)

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'SWTR' and REG\_LEVEL\_CONTAMINANT\_CD = '0999' and REG\_LEVEL\_TYPE\_CD = 'MIN' and CFR\_REFERENCE = '141.72(b)(2)' |  |
| START\_DT | Set to the current facility status date or '07/01/1993', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create EP RDC MS calling for 4 samples per day [141.74(c)(2)2nd-4th\_row]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWTR' and Monitoring\_Requirement.CONT = '0999' and CFR\_REFERENCE = '141.74(c)(2) Row 4' ' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create EP RDC MS calling for 3 samples per day [141.74(c)(2)2nd-3rd\_row]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0999' and CFR\_REFERENCE = '141.74(c)(2) Row 3' ' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create EP RDC MS calling for 2 samples per day [141.74(c)(2)2nd-2nd\_row]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0999' and CFR\_REFERENCE = ' 141.74(c)(2) Row 2' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create EP RDC MS calling for 1 sample per day [141.74(c)(2)2nd-1st\_row]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'SWT' and Monitoring\_Requirement.CONT = '0999' and CFR\_REFERENCE = ' 141.74(c)(2) Row 1' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

### DDBP MS Determination Functions

#### Create candidate routine 1008 MS (Chlorine Dioxide)

For each active treatment plant for this water system being processed that has treatment process 220, create a candidate monitoring schedule with the values in the following table. Use this SQL to identify each facility for which a candidate monitoring schedule should be created.

SELECT FACILITY.WATER\_SYSTEM\_ID, FACILITY. STATE\_ASSIGNED\_FAC\_ID FAC\_ACTIVITY\_STATUS\_DT

FROM FACILITY INNER JOIN key\_value\_ref FAC\_STATUS\_REF ON FACILITY.FAC\_ACTIVITY\_STATUS\_ID = FAC\_STATUS\_REF.KEY\_VALUE\_ID

INNER JOIN TREATMENT ON FACILITY.FACILITY\_ID = TREATMENT.TREATMENT\_PLANT\_FACILITY\_ID

INNER JOIN TREATMENT\_PROCESS\_REF ON TREATMENT\_PROCESS\_REF.TREATMENT\_PROCESS\_REF\_ID = TREATMENT.TREATMENT\_PROCESS\_REF\_ID

WHERE FACILITY.WATER\_SYSTEM\_ID = [water system being processed] AND FAC\_STATUS\_REF.KEY\_DATA = 'A'

AND TREATMENT\_PROCESS\_REF.TREATMENT\_PROCESS\_CD = '220'

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID for the water system being processed |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID from each active treatment plant that satisfies the above SQL |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE%' |  |
| CONTAMINANT\_CODE | 1008 |  |
| RULE\_CD | DDBP |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '01/01/2002', set to '01/01/2002'  Else set to the first day of the first calendar quarter that starts after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2014', then set to '01/01/2015'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create candidate routine 1009 MS (Chlorite)

For each active treatment plant for this water system being processed that has treatment process 220, create a candidate monitoring schedule with the values in the following table. Use the SQL above, under Create candidate routine 1008 MS (Chlorine Dioxide), to identify each facility for which a candidate monitoring schedule should be created.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID for the water system being processed |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID from each active treatment plant that satisfies the above SQL |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE EP%' |  |
| CONTAMINANT\_CODE | 1009 |  |
| RULE\_CD | DDBP |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '01/01/2002', set to '01/01/2002'  Else set to the first day of the first calendar quarter that starts after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2014', then set to '01/01/2015'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Candidate Routine Source Water TOC and Alkalinity Monitoring Schedules

Create two schedules for the facility being processed with the values in the following table.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID from the facility being processed. |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE SOURCE%' |  |
| CONTAMINANT\_CODE | One MS with 2920  a second with 1927 |  |
| RULE\_CD | DDBP |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '01/01/2002', set to '01/01/2002'  Else set to the first day of the first calendar quarter that starts after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2014', then set to '01/01/2015'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Candidate Routine Treated Water TOC Monitoring Schedule

Create one schedule for the facility being processed with the values in the following table.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID from the facility being processed. |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE TREATED%' |  |
| CONTAMINANT\_CODE | 2920 |  |
| RULE\_CD | DDBP |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '01/01/2002', set to '01/01/2002'  Else set to the first day of the first calendar quarter that starts after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2014', then set to '01/01/2015'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create candidate routine 1011 MS (Bromate)

For each active treatment plant for this water system being processed that has treatment process 541 or 543, create a candidate monitoring schedule with the values in the following table. Use this SQL to identify each facility for which a candidate monitoring schedule should be created.

SELECT FACILITY.WATER\_SYSTEM\_ID, FACILITY. STATE\_ASSIGNED\_FAC\_ID, FACILITY.FAC\_ACTIVITY\_STATUS\_DT

FROM FACILITY INNER JOIN key\_value\_ref FAC\_STATUS\_REF ON FACILITY.FAC\_ACTIVITY\_STATUS\_ID = FAC\_STATUS\_REF.KEY\_VALUE\_ID

INNER JOIN TREATMENT ON FACILITY.FACILITY\_ID = TREATMENT.TREATMENT\_PLANT\_FACILITY\_ID

INNER JOIN TREATMENT\_PROCESS\_REF ON TREATMENT\_PROCESS\_REF.TREATMENT\_PROCESS\_REF\_ID = TREATMENT.TREATMENT\_PROCESS\_REF\_ID

WHERE FACILITY.WATER\_SYSTEM\_ID = [water system being processed] AND FAC\_STATUS\_REF.KEY\_DATA = 'A'

AND TREATMENT\_PROCESS\_REF.TREATMENT\_PROCESS\_CD In ('541', '543')'

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID for the water system being processed |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID from each active treatment plant that satisfies the above SQL |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE%' |  |
| CONTAMINANT\_CODE | 1011 |  |
| RULE\_CD | DDBP |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '01/01/2002', set to '01/01/2002'  Else set to the first day of the first calendar quarter that starts after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2014', then set to '01/01/2015'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create candidate routine 1009 MS (Chlorite)

For each active distribution system facility for this water system being processed that has treatment process 220, create a candidate monitoring schedule with the values in the following table.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID for the water system being processed |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID from each active distribution system (DS) |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE DS%' |  |
| CONTAMINANT\_CODE | 1009 |  |
| RULE\_CD | DDBP |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the later of:  the facility.fac\_activity\_status\_dt  or  '01/01/2002' |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Candidate Subpart H/GW (DBP) Routine Monitoring Schedule

DDBP RLM Part 5, Table DDBP-MSD:DBP includes several create monitoring schedule functions (for example: "Create candidate Subpart H < 500 Routine Monitoring Schedules", "Create candidate Subpart H 50-250K Routine Monitoring Schedules", "Create candidate GW 10000-99999 Routine Monitoring Schedules."

Instead of writing the design for each unique situation, the following is the template for creating these candidate monitoring schedules for 2950 (total trihalomethanes) and 2456 (haloacetic acids). Each time the RLM says to create candidate monitoring schedules in this table, it means to create two monitoring schedules that are exactly alike except one references a monitoring requirement for 2950 and the other for 2456. These two analytes are referred to collectively as "DBP".

The DBP monitoring schedules should be created for each active distribution system. Use this SQL to identify each facility for which a candidate monitoring schedule should be created.

SELECT FACILITY.WATER\_SYSTEM\_ID, FACILITY. STATE\_ASSIGNED\_FAC\_ID, facility.fac\_activity\_status\_dt

FROM FACILITY

INNER JOIN FAC\_FED\_STATUS ON FACILITY.FACILITY\_ID = FAC\_FED\_STATUS.FACILITY\_ID

INNER JOIN KEY\_VALUE\_REF FAC\_TYPE\_REF ON FACILITY.FAC\_TYPE\_ID = FAC\_TYPE\_REF.KEY\_VALUE\_ID

WHERE FACILITY.WATER\_SYSTEM\_ID = [water system being processed] AND FAC\_FED\_STATUS.STATUS\_CD = 'A' AND FAC\_TYPE\_REF.KEY\_DATA = 'DS'

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID from the facility being processed. |  |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 3 rows (down to RULE\_CD) |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%ROUTINE%'  AND  (Like '%Subpart H%" if the "Fed Primary Source" In (SW, SWP, GU, GUP) or Like '%GW%' if the "Fed Primary Source" In (GW, GWP))  AND then use the "Population  Served" for the WS being processed to select the range that matches (for example, a Subpart H system serving 22,500 would select Like '%10000-49999%') |  |
| MR\_CONTAMINANT\_CODE | '2950' for the first MS, '2456' for the second MS |  |
| RULE\_CD | DDBP |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '01/01/2002', set to '01/01/2002'  Else set to the first day of the first calendar quarter that starts after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2014', then set to '01/01/2015'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

### RADR MS Determination Functions

#### Create Initial Quarterly MS for 4000

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4000' and MONITORING\_REQUIREMENT\_TYPE like 'INITIAL NEW%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter after the FAC\_ACTIVITY\_STATUS\_DT for the Facility being evaluated. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Initial Quarterly MS for 4010

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4010' and MONITORING\_REQUIREMENT\_TYPE like 'INITIAL NEW%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter after the FAC\_ACTIVITY\_STATUS\_DT for the Facility being evaluated. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Initial Quarterly MS for 4006

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4006' and MONITORING\_REQUIREMENT\_TYPE like 'INITIAL NEW%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | The first day of the calendar quarter after the FAC\_ACTIVITY\_STATUS\_DT for the Facility being evaluated. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 9 Year 4000 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4000' and INTERVAL\_FIXED\_DAYS = 3240 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 9-year compliance cycle under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 9-year compliance cycle monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35559 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 6 Year 4000 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4000' and INTERVAL\_FIXED\_DAYS = 2160 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 6-year monitoring period that has the same MP\_BEGIN\_DT as the3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 3 Year 4000 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4000' and INTERVAL\_FIXED\_DAYS = 1080 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Quarterly 4000 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4000' and MONITORING\_REQUIREMENT\_TYPE like '%AVG GT MCL%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the calendar quarter that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 9 Year 4010 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4010' and INTERVAL\_FIXED\_DAYS = 3240 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 9-year compliance cycle under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 9-year compliance cycle monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35559 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 6 Year 4010 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4010' and INTERVAL\_FIXED\_DAYS = 2160 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 6-year monitoring period that has the same MP\_BEGIN\_DT as the3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 3 Year 4010 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4010' and INTERVAL\_FIXED\_DAYS = 1080 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Quarterly 4010 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4010' and MONITORING\_REQUIREMENT\_TYPE like '%AVG GT MCL%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the calendar quarter that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 9 Year 4006 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4006' and INTERVAL\_FIXED\_DAYS = 3240 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 9-year compliance cycle under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 9-year compliance cycle monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35559 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 6 Year 4006 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4006' and INTERVAL\_FIXED\_DAYS = 2160 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 6-year monitoring period that has the same MP\_BEGIN\_DT as the3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create 3 Year 4006 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4006' and INTERVAL\_FIXED\_DAYS = 1080 |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 3-year compliance period under the standardized monitoring framework that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." | The 3-year compliance period monitoring periods are those where MONITORING\_PERIOD.SMF\_TYPE = 35558 |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create Quarterly 4006 MS

Fields in Monitoring Schedule that are not included below are not valued.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'RADR' and MR\_CONTAMINANT\_CODE = '4006' and MONITORING\_REQUIREMENT\_TYPE like '%AVG GT MCL%' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the calendar quarter that starts after the Sample\_Date of the latest sample selected in condition '# GA Samples at Facility." |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

### GWR MS Determination Functions

#### Create EP RDC MS calling for continuous monitoring [141.403(b)(3)(i)(A)]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'GWR' and Monitoring\_Requirement.CONT = '0999' and CFR\_REFERENCE = '141.403(b)(3)(i)(A)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or ''12/01/2009', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

#### Create Facility minimum RDC level of 0.2 mg/l per 141.403(b)(3)(i)(A)

| **FAC\_REG\_LEVEL Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| FAC\_REG\_LEVEL\_ID | Primary key | Generated by Prime |
| STATUS\_CD | Set to "C - Candidate" |  |
| FACILITY\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| REGULATORY\_LEVEL\_ID | Set to REGULATORY\_LEVEL.REGULATORY\_LEVEL\_ID where REG\_LEVEL\_RULE\_CD = 'GWR' and REG\_LEVEL\_CONTAMINANT\_CD = '0999' and REG\_LEVEL\_TYPE\_CD = 'MIN' and CFR\_REFERENCE = '141.403(b)(3)(i)(A)' |  |
| START\_DT | Set to the current facility status date or '12/01/2009', whichever is later. |  |
| END\_DT | Not valued |  |

#### Create EP RDC MS calling for 1 sample per day [141.403(b)(3)(i)(B)]

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where Monitoring\_Requirement.RULE\_CD = 'GWR' and Monitoring\_Requirement.CONT = '0999' and CFR\_REFERENCE = '141.403(b)(3)(i)(B)' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that immediately follows the facility status date or '12/01/2009', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |

### LCR MS Determination Functions

With the integration of the BRE with the Prime data structure, LCR Tap schedules should be one MS that references both lead and copper.

#### Create a candidate open 6-month LC tap MS for next period

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper and is similar to 2.3.27.13.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and CFR\_Reference like '141.86%' and INTERVAL\_FIXED\_DAYS = 180 and NUMB\_SAMPLES\_REQUIRED = number from column B in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = 1030For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = 1022 | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the next 6-month calendar period that starts after the current date. | Either 1/1 or 7/1. If 1/1, then with next year as the year. If 7/1, then the current year as the year. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Do not value |  |
| MS\_SEASON\_BEGIN\_DAY | Do not value |  |
| MS\_SEASON\_END\_MONTH | Do not value |  |
| MS\_SEASON\_END\_DAY | Do not value |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to 'LCR' |  |
| CFR\_REFERENCE | Set to '141.86' |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'LC TAP INITIAL MONITORING' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed (or its paired analyte) |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | Set to 'MN' |  |
| INTERVAL\_UNIT\_COUNT | Set to 6 |  |
| INTERVAL\_FIXED\_DAYS | Set to 180 |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column B in table under 2.3.27.14 based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 22 | VT 51 |

#### Create a candidate open 6-month LC tap MS for first period

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper and is similar to 2.5.6.1.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and CFR\_Reference like '141.86%' and INTERVAL\_FIXED\_DAYS = 180 and NUMB\_SAMPLES\_REQUIRED = number from column B in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = 1030  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = 1022 | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 6-month calendar period in which the SAMPLE\_SUMM.COLLECTED\_FROM\_DT for the one sample summary falls. | Either 1/1 or 7/1. If 1/1, then with next year as the year. If 7/1, then the current year as the year. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Do not value |  |
| MS\_SEASON\_BEGIN\_DAY | Do not value |  |
| MS\_SEASON\_END\_MONTH | Do not value |  |
| MS\_SEASON\_END\_DAY | Do not value |  |

If a monitoring requirement does not exist, then create it first using the specifications under 2.5.6.1.

#### Create a candidate open 6-month LC tap MS for Last period

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper and is similar to 2.5.6.1.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and CFR\_Reference like '141.86%' and INTERVAL\_FIXED\_DAYS = 180 and NUMB\_SAMPLES\_REQUIRED = number from column B in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = 1030  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = 1022 | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the 6-month calendar period in which the SAMPLE\_SUMM.COLLECTED\_FROM\_DT for the last sample summary falls. | Either 1/1 or 7/1. If 1/1, then with next year as the year. If 7/1, then the current year as the year. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Do not value |  |
| MS\_SEASON\_BEGIN\_DAY | Do not value |  |
| MS\_SEASON\_END\_MONTH | Do not value |  |
| MS\_SEASON\_END\_DAY | Do not value |  |

If a monitoring requirement does not exist, then create it first using the specifications under 2.5.6.1.

#### Create a candidate open annual LC tap MS for current period

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper and is similar to 2.5.6.1.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and CFR\_Reference like '141.86%' and INTERVAL\_FIXED\_DAYS = 360 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = 1030  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = 1022 | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the current calendar year. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to '6' |  |
| MS\_SEASON\_BEGIN\_DAY | Set to '1' |  |
| MS\_SEASON\_END\_MONTH | Set to '9' |  |
| MS\_SEASON\_END\_DAY | Set to '30' |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to 'LCR' |  |
| CFR\_REFERENCE | Set to '141.86' |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'LC ANNUAL TAP REDUCED MONITORING' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed (or its paired analyte) |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | Set to 'YR' |  |
| INTERVAL\_UNIT\_COUNT | Set to 1 |  |
| INTERVAL\_FIXED\_DAYS | Set to 360 |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column C in table under 2.3.27.14 based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 23 | VT 52 |

#### Create a candidate open annual LC tap MS for last period

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper and is similar to 2.5.6.4.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 360 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed]  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE for the analyte paired with the one being processed] | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the Begin Date of the calendar year in which the COLLECTED\_FROM\_DT for the last sample summary falls. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to '6' |  |
| MS\_SEASON\_BEGIN\_DAY | Set to '1' |  |
| MS\_SEASON\_END\_MONTH | Set to '9' |  |
| MS\_SEASON\_END\_DAY | Set to '30' |  |

If a monitoring requirement does not exist, then create it first using the specifications under 2.5.6.4.

#### Create a candidate open triennial LC tap MS for next period

Fields in Monitoring Schedule that are not included below are not valued. Note that this action creates two MS: one for lead and one for copper and is similar to 2.5.6.4.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID for the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID for the facility being evaluated. |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 1080 and CFR like "141.86' and Requirement Type like "Reduced"[[6]](#footnote-5)  and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed]  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE for the analyte paired with the one being processed] | 1030 and 1022 are the paired analytes. |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar year that follows the year in which the COLLECTED\_TO\_DT of the last sample summary falls. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to '6' |  |
| MS\_SEASON\_BEGIN\_DAY | Set to '1' |  |
| MS\_SEASON\_END\_MONTH | Set to '9' |  |
| MS\_SEASON\_END\_DAY | Set to '30' |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to 'LCR' |  |
| CFR\_REFERENCE | Set to '141.86' |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'LC ANNUAL TAP REDUCED MONITORING' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE from the MS being processed (or its paired analyte) |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | Set to 'YR' |  |
| INTERVAL\_UNIT\_COUNT | Set to 3 |  |
| INTERVAL\_FIXED\_DAYS | Set to 1080 |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column C in table under 2.3.27.14 based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 23 | VT 52 |

#### Create a proposed LC tap waiver for next period.

This action creates two waiver records and two WS\_MNTRG\_WAIVER records (to associate the waivers to the WS). When a user validates the candidate waivers, other non-BRE actions will modify and create the appropriate monitoring schedules. This action creates two waivers: one for lead and one for copper. It is similar to 2.3.27.17.

| **MNTRG\_WAIVER Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MNTRG\_WAIVER\_ID | Primary key | Generated by Prime |
| MW\_STATUS\_ID | Set to KEY\_VALUE\_REF.KEY\_VALUE\_ID  FROM KEY\_VALUE\_REF  WHERE KEY\_VALUE\_REF.REF\_CATEGORY = 'MNTRG\_WAIVER\_STATUS'  AND KEY\_DATA = 'P' |  |
| BEGIN\_DT | Set to the first day of the calendar year that follows the year in which the COLLECTED\_TO\_DT of the last sample summary falls. |  |
| END\_DT | Set to the MP\_END\_DT of the 9-year monitoring period with a MP\_BEGIN\_DT that equals the BEGIN\_DT above. |  |
| WAIVER\_TYPE\_ID | Set to KEY\_VALUE\_REF.KEY\_VALUE\_ID  FROM KEY\_VALUE\_REF  WHERE KEY\_VALUE\_REF.REF\_CATEGORY = 'MNTRG\_WAIVER\_TYPE'  AND KEY\_DATA = 'I' |  |
| LEGAL\_ENTITY\_GOV\_ID | Set to LEGAL\_ENTITY.LEGAL\_ENTITY\_ID  WHERE PRIMACY\_AGENCY\_CD = of the MS being evaluated and PRIMARY\_RA\_FLG = 'Y' |  |
| MR\_WAIVED | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 1080 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed]  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE for the analyte paired with the one being processed] | 1030 and 1022 are the paired analytes. |
| MR\_REQUIRED | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'LCR' and INTERVAL\_FIXED\_DAYS = 3240 and NUMB\_SAMPLES\_REQUIRED = number from column C in table under 2.3.27.14 based on the population served by the water system  and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE being processed]  For the second MS, use all the above except select and MR\_CONTAMINANT\_CODE = [MR\_CONTAMINANT\_CODE for the analyte paired with the one being processed] | If a monitoring requirement does not exist, then create it. |
| COMMENTS | Set to 'Waiver proposed by Prime Business Rule Engine.' |  |

| **WS\_MNTRG\_WAIVER Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| WS\_MNTRG\_WAIVER\_ID | Primary key | Generated by Prime |
| MNTRG\_WAIVER\_ID | Set to MNTRG\_WAIVER\_ID generated when the above MNTRG\_WAIVER record was created. |  |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID of the MS being evaluated. |  |
| FACILITY\_ID | Set to Facility.STATE\_ASSIGNED\_FAC\_ID of the MS being evaluated. |  |

If a monitoring requirement does not exist, then create it first using the following specifications:

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to 'LCR' |  |
| CFR\_REFERENCE | Set to '141.86' |  |
| MONITORING\_REQUIREMENT\_TYPE | Set to 'LC ANNUAL TAP REDUCED MONITORING' |  |
| MR\_CONTAMINANT\_CODE | Set to Monitoring\_Requirement.MR\_CONTAMINANT\_CODE for either '1030' or '1022'. |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | Set to 'YR' |  |
| INTERVAL\_UNIT\_COUNT | Set to 9 |  |
| INTERVAL\_FIXED\_DAYS | Set to 1080 or 3240, depending on which MR is being created. |  |
| NUMB\_SAMPLES\_REQUIRED | = NUMB\_SAMPLES\_REQUIRED number from column C in table under 2.3.27.14 based on the population served by the water system. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 23 | VT 52 |

### RTCR MS Determination Functions

RTCR monitoring schedules are created for each active distribution system. Use the following SQL to identify each facility for which a candidate monitoring schedule should be created. (Note that this is the same SQL used for 2.5.3.7 - Create Candidate Subpart H/GW (DBP) Routine Monitoring Schedule.)

SELECT FACILITY.WATER\_SYSTEM\_ID, FACILITY. STATE\_ASSIGNED\_FAC\_ID, facility.fac\_activity\_status\_dt

FROM FACILITY

INNER JOIN FAC\_FED\_STATUS ON FACILITY.FACILITY\_ID = FAC\_FED\_STATUS.FACILITY\_ID

INNER JOIN KEY\_VALUE\_REF FAC\_TYPE\_REF ON FACILITY.FAC\_TYPE\_ID = FAC\_TYPE\_REF.KEY\_VALUE\_ID

WHERE FACILITY.WATER\_SYSTEM\_ID = [water system being processed] AND FAC\_FED\_STATUS.STATUS\_CD = 'A' AND FAC\_TYPE\_REF.KEY\_DATA = 'DS'

#### Create RTCR RT MS for NC, GW, <= 1000 Reduced Adopted, Seasonal

This action creates one or more monitoring\_schedule (MS) records for the water system being processed. The number of MS created is based on the number of WS\_POPULATION\_SERVED records in effect on the day the action is run. Create each MS based on the following specifications.

A WS\_POPULATION\_SERVED records is in effect WHERE POP\_EFFEC\_BEGIN\_DT <= CURRENT\_DATE and (POP\_EFFEC\_END\_DT is null OR POP\_EFFEC\_END\_DT >= CURRENT\_DATE).

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID for the distribution system selected in the above SQL. | If more than one DS selected, then create one MS for each DS. |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 2 rows. |  |
| CFR\_REFERENCE | '141.854(i)(2)' |  |
| RULE\_CD | 'RTCR' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '04/01/2016', set to '04/01/2016'  Else set to the first day of the first calendar month that starts on or after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2016', then set to '11/01/2016'.  If the activity date is '01/01/2018', then set to '01/01/2018' |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,1,2) |
| MS\_SEASON\_BEGIN\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,4,2) |
| MS\_SEASON\_END\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,1,2) |
| MS\_SEASON\_END\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,4,2) |

#### Create RTCR RT MS for NC, GW, <= 1000 Reduced Adopted, Not Seasonal

This action creates one or more monitoring\_schedule (MS) records for the water system being processed. The number of MS created is based on the number of WS\_POPULATION\_SERVED records in effect on the day the action is run. Create each MS based on the following specifications.

A WS\_POPULATION\_SERVED records is in effect WHERE POP\_EFFEC\_BEGIN\_DT <= CURRENT\_DATE and (POP\_EFFEC\_END\_DT is null OR POP\_EFFEC\_END\_DT >= CURRENT\_DATE).

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID for the distribution system selected in the above SQL. | If more than one DS selected, then create one MS for each DS. |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 2 rows. |  |
| CFR\_REFERENCE | '141.854(b)' |  |
| RULE\_CD | 'RTCR' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '04/01/2016', set to '04/01/2016'  Else set to the first day of the first calendar month that starts on or after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2016', then set to '11/01/2016'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,1,2) |
| MS\_SEASON\_BEGIN\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,4,2) |
| MS\_SEASON\_END\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,1,2) |
| MS\_SEASON\_END\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,4,2) |

#### Create RTCR RT MS for CWS, GW, <= 1000 Reduced Adopted

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID for the distribution system selected in the above SQL. | If more than one DS selected, then create one MS for each DS. |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 2 rows. |  |
| CFR\_REFERENCE | '141.855(b)' |  |
| RULE\_CD | 'RTCR' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '04/01/2016', set to '04/01/2016'  Else set to the first day of the first calendar month that starts after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2016', then set to '11/01/2016'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |

#### Create RTCR RT MS for GW <= 1000 Reduced Not Adopted

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID for the distribution system selected in the above SQL. | If more than one DS selected, then create one MS for each DS. |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 3 rows. |  |
| CFR\_REFERENCE | '142.16(q)(2)(ii)' |  |
| NUMB\_SAMPLES\_REQUIRED | 1 |  |
| RULE\_CD | 'RTCR' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '04/01/2016', set to '04/01/2016'  Else set to the first day of the first calendar month that starts on or after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2016', then set to '11/01/2016'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,1,2) |
| MS\_SEASON\_BEGIN\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,4,2) |
| MS\_SEASON\_END\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,1,2) |
| MS\_SEASON\_END\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,4,2) |

#### Create RTCR RT MS for Subpart H <= 1000

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID for the distribution system selected in the above SQL. | If more than one DS selected, then create one MS for each DS. |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 3 rows. |  |
| CFR\_REFERENCE | '141.856(b)' |  |
| NUMB\_SAMPLES\_REQUIRED | 1 |  |
| RULE\_CD | 'RTCR' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '04/01/2016', set to '04/01/2016'  Else set to the first day of the first calendar month that starts on or after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2016', then set to '11/01/2016'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,1,2) |
| MS\_SEASON\_BEGIN\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,4,2) |
| MS\_SEASON\_END\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,1,2) |
| MS\_SEASON\_END\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,4,2) |

#### Create RTCR RT MS for PWS > 1000

The "Create RTCR RT MS for PWS > 1000" function calls for several different monitoring requirements to be used when creating the candidate RTCR routine monitoring schedule, depending on the population served by the water system being evaluated.

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | WATER\_SYSTEM\_ID from the water system being processed. |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | STATE\_ASSIGNED\_FAC\_ID for the distribution system selected in the above SQL. | If more than one DS selected, then create one MS for each DS. |
| MONITORING\_REQUIREMENT\_ID | Select from MONITORING\_REQUIREMENT using the criteria in the following 3 rows. |  |
| CFR\_REFERENCE | '141.857(b)' |  |
| MONITORING\_REQUIREMENT\_TYPE | Like '%[Range from "Population Served" condition]%' | So, for example, if the PWS population served is 5,825, it would satisfy rule #11 because the population served range for #11 is '5801-6700'. To find the right monitoring requirement, supply '5801-6700' in the like statement, i.e., Like '%5801-6700%' to select the correct MR. |
| RULE\_CD | 'RTCR' |  |
| MONITORING\_SCHD\_BEGIN\_DATE | If the facility.fac\_activity\_status\_dt is <=  '04/01/2016', set to '04/01/2016'  Else set to the first day of the first calendar month that starts on or after the facility.fac\_activity\_status\_dt, | For example, if the facility.fac\_activity\_status\_dt is '10/31/2016', then set to '11/01/2016'. |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,1,2) |
| MS\_SEASON\_BEGIN\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,4,2) |
| MS\_SEASON\_END\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,1,2) |
| MS\_SEASON\_END\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,4,2) |

#### Create candidate chlorine MRDL MS

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Generated by Prime |
| MS\_STATUS\_CD | Set to "C - Candidate" |  |
| MS\_WATER\_SYSTEM\_ID | Water\_System.WATER\_SYSTEM\_ID being evaluated |  |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Facility.STATE\_ASSIGNED\_FAC\_ID being evaluated |  |
| MONITORING\_REQUIREMENT\_ID | Set to Monitoring\_Requirement.MONITORING\_REQUIREMENT\_ID where RULE\_CD = 'DDBP' and MR\_CONTAMINANT\_CODE = '0999' and CFR\_REFERENCE = '141.132(c)(1)(i)' and INTERVAL\_UNIT = [INTERVAL\_UNIT for the RTCR RT schedule determined in decision table RTCR:RT] and SAMPLE\_TYPE\_CD = 'RT' and NUMB\_SAMPLES\_REQUIRED = [NUMB\_SAMPLES\_REQUIRED for the RTCR RT schedule determined in decision table RTCR:RT] |  |
| MONITORING\_SCHD\_BEGIN\_DATE | Set to the first day of the calendar month that is on or after the facility status date or '07/01/1993', whichever is later. |  |
| MONITORING\_SCHD\_END\_DATE | Not valued |  |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Value the same as the MONITORING\_SCHD\_BEGIN\_DATE |  |
| MS\_ORIGINAL\_RESULT\_ID | Not valued |  |
| MS\_SEASON\_BEGIN\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,1,2) |
| MS\_SEASON\_BEGIN\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_BEGIN\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_BEGIN\_DT,4,2) |
| MS\_SEASON\_END\_MONTH | Set to the first two characters of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,1,2) |
| MS\_SEASON\_END\_DAY | Set to characters 4 and 5 of POP\_SERVICE\_PD\_END\_DT | Substr(WS\_POPULATION\_SERVED.POP\_SERVICE\_PD\_END\_DT,4,2) |

If there is not a monitoring\_requirement selected, then create it with the specifications that are in the following table.

| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| MONITORING\_REQUIREMENT\_ID | Primary key | Generated by Prime |
| RULE\_CD | Set to the Rule\_Cd used in the selection criteria (e.g., in 2.5.7.7, the selection criteria is 'DDBP') |  |
| CFR\_REFERENCE | Set to the CFR\_REFERENCE used in the selection criteria. |  |
| MR\_CONTAMINANT\_CODE | Set to the MR\_CONTAMINANT\_CODE used in the selection criteria. |  |
| SAMPLE\_TYPE\_CD | Set to 'RT' |  |
| INTERVAL\_UNIT | Set to the INTERVAL\_UNIT used in the selection criteria. |  |
| INTERVAL\_UNIT\_COUNT | Set to 1 |  |
| INTERVAL\_FIXED\_DAYS | Set to the number calculated as follows:  = X \* INTERVAL\_UNIT\_COUNT  Where X = 30, if INTERVAL\_UNIT = 'MN';  X = 90, if INTERVAL\_UNIT = 'QT';  X = 360, if INTERVAL\_UNIT = 'YR'; |  |
| NUMB\_SAMPLES\_REQUIRED | Set to NUMB\_SAMPLES\_REQUIRED from Column B in 2.5.7.8 where PWS Total Population fits into Column A range. |  |
| REPORT\_DUE\_DATE\_DAYS | Set to 10 |  |
| CHECK\_DATE\_DAYS | Set to 30 |  |
| MAKEUP\_REQUIRED\_IND | Set to 'N' |  |
| VIOLATION\_TYPE\_REF\_ID | Set to 35 |  |

#### Number of Samples

|  |  |  |  |
| --- | --- | --- | --- |
| **A**  **Number of people served** | **B**  **NUMB\_SAMPLES\_REQUIRED** | **C**  **INTERVAL\_UNIT** | **D**  **INTERVAL\_UNIT\_COUNT** |
| <=1000 | 1 | MN | 1 |
| 1001-2500 | 2 | MN | 1 |
| 2501-3300 | 3 | MN | 1 |
| 3301-4100 | 4 | MN | 1 |
| 4101-4900 | 5 | MN | 1 |
| 4901-5800 | 6 | MN | 1 |
| 5801-6700 | 7 | MN | 1 |
| 6701-7600 | 8 | MN | 1 |
| 7601-8500 | 9 | MN | 1 |
| 8501-12900 | 10 | MN | 1 |
| 12901-17200 | 15 | MN | 1 |
| 17201-21500 | 20 | MN | 1 |
| 21501-25000 | 25 | MN | 1 |
| 25001-33000 | 30 | MN | 1 |
| 33001-41000 | 40 | MN | 1 |
| 41001-50000 | 50 | MN | 1 |
| 50001-59000 | 60 | MN | 1 |
| 59001-70000 | 70 | MN | 1 |
| 70001-83000 | 80 | MN | 1 |
| 83001-96000 | 90 | MN | 1 |
| 96001-130000 | 100 | MN | 1 |
| 130001-220000 | 120 | MN | 1 |
| 220001-320000 | 150 | MN | 1 |
| 320001-450000 | 180 | MN | 1 |
| 450001-600000 | 210 | MN | 1 |
| 600001-780000 | 240 | MN | 1 |
| 780001-970000 | 270 | MN | 1 |
| 970001-1230000 | 300 | MN | 1 |
| 1230001-1520000 | 330 | MN | 1 |
| 1520001-1850000 | 360 | MN | 1 |
| 1850001-2270000 | 390 | MN | 1 |
| 2270001-3020000 | 420 | MN | 1 |
| 3020001-3960000 | 450 | MN | 1 |
| >=3960001 | 480 | MN | 1 |

### CCR Activities Determination Functions

#### Create CCR Activities

This action creates one or more Activity records for the water system as follows.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID being processed |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd in ('71','72') and ACTIVITY\_TYPE\_REF.CFR\_REFERENCE like '141.155%'  If there is more than one activity\_type\_ref with this violation type code, create an Activity record for each. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
| DUE\_DT | Set to July 1 of the current year |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |

#### Create Wholesale CCR Activities

This action creates one or more Activity records for the water system as follows.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID being processed |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id where the referenced violation\_type\_cd in ('71','72') and ACTIVITY\_TYPE\_REF.CFR\_REFERENCE like '141.152%'  If there is more than one activity\_type\_ref with this violation type code, create an Activity record for each. |  |
| STATUS\_ID | Set to 35478 | 'Candidate' |
| STATUS\_DT | Set to Current Date |  |
| DUE\_DT | Set to April 1 of the current year |  |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |

### PN Activities Determination Functions

#### Create Violation PN Activity

This action creates one Activity record for the violation that triggered PN RLM Part 5.

| **Activity Elements** | **Source Data Element/Logic** | **Details** |
| --- | --- | --- |
| ACTIVITY\_ID | Primary key | Generated by Prime |
| WATER\_SYSTEM\_ID | Set to WATER\_SYSTEM\_ID of the violation being processed |  |
| ACTIVITY\_TYPE\_REF\_ID | Set to activity\_type\_ref\_id as described in the PN RLM Part 5 for condition “Matching Activity” |  |
| STATUS\_ID | Set to 35479 | 'Validated' |
| STATUS\_DT | Set to Current Date |  |
| DUE\_DT | Set to the current date + 1 (if the VIOLATION\_TYPE\_REF.TIER\_LEVEL\_NUMBER = 1 for the violation that triggered the RLM)  OR 30 (if the VIOLATION\_TYPE\_REF.TIER\_LEVEL\_NUMBER = 2 for the violation that triggered the RLM  OR 365 (if the VIOLATION\_TYPE\_REF.TIER\_LEVEL\_NUMBER = 3 for the violation that triggered the RLM) | If there is a function that will handle leap years for Tier 3 (i.e., 366 days), then use it instead of 365. |
| AGENCY\_RECEIVED\_DT | Null |  |
| FACILITY\_ID | Set to Null |  |
| MONITORING\_PERIOD\_ID | Set to Null |  |

#### Associate Violation PN Activity to Violation

This action associates the PN Activity created in 2.5.9.1 to the violation that triggered it. At the time of this writing, Lanthu was in process of creating the associative table.

Appendix A – Normalizing Monitoring\_Schedule

Note that, when normalized, the above table will consist of two tables as follows:

Monitoring\_Schedule:

| **Monitoring Schedule Elements** | **Source Data Element/Logic** | **Optionality** |
| --- | --- | --- |
| MONITORING\_SCHEDULE\_ID | Primary key | Required |
| MS\_STATUS\_CD |  | Required |
| MS\_WATER\_SYSTEM\_ID | Foreign Key to Water\_System | Required |
| MS\_STATE\_ASSIGNED\_FAC\_ID | Foreign Key to Facility | Required |
| MONITORING\_SCHD\_BEGIN\_DATE | Date | Required |
| MONITORING\_SCHD\_END\_DATE | Date | Optional |
| MS\_INITIAL\_MP\_BEGIN\_DATE | Date | Conditionally Required (if the MS\_SAMPLE\_TYPE\_CD of the referenced Monitoring\_Requirement = ‘RT’, then must be valued) |
| MS\_SEASON\_BEGIN\_MONTH | Numeric between 1 and 12 | Conditionally\_Mandatory (if any of the other MS\_SEASON fields are valued, this one must be valued) |
| MS\_SEASON\_BEGIN\_DAY | Numeric between 1 and 31 | Conditionally\_Mandatory (if any of the other MS\_SEASON fields are valued, this one must be valued) |
| MS\_SEASON\_END\_MONTH | Numeric between 1 and 12 | Conditionally\_Mandatory (if any of the other MS\_SEASON fields are valued, this one must be valued) |
| MS\_SEASON\_END\_DAY | Numeric between 1 and 31 | Conditionally\_Mandatory (if any of the other MS\_SEASON fields are valued, this one must be valued) |
| MS\_PA\_DESIGNATED\_YEAR | Numeric | Conditionally\_Mandatory (if any of the other MS\_PA\_DESIGNATED fields are valued, this one must be valued).  Default to 1 |
| MS\_PA\_DESIGNATED\_BEGIN\_MONTH | Numeric between 1 and 12 | Conditionally\_Mandatory (if any of the other MS\_PA\_DESIGNATED fields are valued, this one must be valued). |
| MS\_PA\_DESIGNATED\_BEGIN\_DAY | Numeric between 1 and 31 | Conditionally\_Mandatory (if any of the other MS\_PA\_DESIGNATED fields are valued, this one must be valued). |
| MS\_PA\_DESIGNATED\_END\_MONTH | Numeric between 1 and 12 | Conditionally\_Mandatory (if any of the other MS\_PA\_DESIGNATED fields are valued, this one must be valued). |
| MS\_PA\_DESIGNATED\_END\_DAY | Numeric between 1 and 31 | Conditionally\_Mandatory (if any of the other MS\_PA\_DESIGNATED fields are valued, this one must be valued). |
| MS\_ORIGINAL\_RESULT\_ID | Foreign Key to Sample\_Result | Optional |

Monitoring\_Requirement:

|  |  |  |
| --- | --- | --- |
| **Monitoring Requirement Elements** | **Source Data Element/Logic** | **Optionality** |
| SAMPLE\_TYPE\_CD |  | Required |
| NUMB\_SAMPLES\_REQUIRED |  | Required |
| INTERVAL\_UNIT |  | Required |
| INTERVAL\_UNIT\_COUNT |  | Required |
| INTERVAL\_FIXED\_DAYS |  | Conditionally Required (if MS\_SAMPLE\_TYPE\_CD = ‘RT’, then must be valued) |
| CONTAMINANT\_CODE | Foreign Key to Analyte table | Required |
| RULE\_CD | Foreign Key to Rule table | Required |
| MR\_REPORT\_DUE\_DATE\_DAYS | 10 | Optional |
| MONITORING\_REQUIREMENT\_TYPE | 50 character | Optional |
| CFR\_REFERENCE | Foreign Key to CodeFederalRegister  For now, we’ll populate it with the actual CFR\_Reference rather than the CFR\_ID | Optional |
| CHECK\_DATE\_DAYS |  |  |
| MAKEUP\_REQUIRED\_IND |  |  |
| VIOLATION\_TYPE\_CD |  |  |

Note that, for routine monitoring\_schedules, which include monitoring period fields, there will be two more tables: Monitoring\_Period and an associative to resolve the many to many relationship between Monitoring\_Schedule and Monitoring Period.

Appendix B - Calculating Running Annual Average (RAA), LRAA, and OEL

# Calculating Running Annual Average (RAA)

The process uses the current and previous monitoring period averages (MP\_AVERAGE) to calculate the COMPLIANCE\_VALUE as follows:

If the begin date of the MP Avg is within one year of the End Date of the current MP Avg regardless of whether the MP Avg is associated to the same schedule as the current MP Avg (e.g., if the current MP Avg is for the second quarter of a quarterly schedule and a previous quarterly schedule at the same WSF for the same analyte exists and has MP Avg associated with it, the last two are used).

* When less than four quarters have passed since quarterly monitoring began, we divide by 4 rather than by the number of quarters.
* When 4 or more quarters have passed since quarterly monitoring began, only use the current and last 3 quarters to calculate and divide by 4 if results have been obtained for each quarter. Reduce the denominator by 1 for each quarter in the set of 4 in which no result was obtained (or by 1 for each month in the set of 12)
* To insure that even when a combination of monthly monitoring results and quarterly monitoring results need to be averaged, use Fixed Days in the calculation rather than quarters/month. The following can be used to calculate the denominator

# SQL and Formulas to Use

**RA\_NUMB\_TOTAL\_FIXED\_DAYS**

Select SUM(MP\_FIXED\_DAYS)

FROM (

SELECT UNIQUE

MONITORING\_PERIOD.MONITORING\_PERIOD\_ID,

MP\_FIXED\_DAYS

FROM MNTRG\_SCH\_MNTRG\_PRD\_VIEW

INNER JOIN MONITORING\_SCHEDULE

ON MNTRG\_SCH\_MNTRG\_PRD\_VIEW.MONITORING\_SCHEDULE\_ID = MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID

INNER JOIN MONITORING\_PERIOD

ON MNTRG\_SCH\_MNTRG\_PRD\_VIEW.MONITORING\_PERIOD\_ID = MONITORING\_PERIOD.MONITORING\_PERIOD\_ID

INNER JOIN MONITORING\_REQUIREMENT

ON MONITORING\_REQUIREMENT.MONITORING\_REQUIREMENT\_ID = MONITORING\_SCHEDULE.MONITORING\_REQUIREMENT\_ID

WHERE MONITORING\_SCHEDULE.MS\_WATER\_SYSTEM\_ID IN

(SELECT monitoring\_schedule.MS\_WATER\_SYSTEM\_ID

FROM monitoring\_schedule

WHERE monitoring\_schedule.MONITORING\_SCHEDULE\_ID = [MONITORING\_SCHEDULE\_ID from the MNTRG\_SCH\_MNTRG\_PRD\_VIEW for which we are calculating RA\_NUMB\_TOTAL\_FIXED\_DAYS] ) )

AND MONITORING\_SCHEDULE.MS\_STATE\_ASSIGNED\_FAC\_ID IN

(SELECT monitoring\_schedule.MS\_STATE\_ASSIGNED\_FAC\_ID

FROM monitoring\_schedule

WHERE monitoring\_schedule.MONITORING\_SCHEDULE\_ID = [MONITORING\_SCHEDULE\_ID from the MNTRG\_SCH\_MNTRG\_PRD\_VIEW for which we are calculating RA\_NUMB\_TOTAL\_FIXED\_DAYS] ) )

AND MONITORING\_REQUIREMENT.MR\_CONTAMINANT\_CODE IN

(SELECT monitoring\_requirement.MR\_CONTAMINANT\_CODE

FROM monitoring\_requirement

INNER JOIN monitoring\_schedule

ON monitoring\_requirement.MONITORING\_REQUIREMENT\_ID = monitoring\_schedule.MONITORING\_REQUIREMENT\_ID

WHERE monitoring\_schedule.MONITORING\_SCHEDULE\_ID = [MONITORING\_SCHEDULE\_ID from the MNTRG\_SCH\_MNTRG\_PRD\_VIEW for which we are calculating RA\_NUMB\_TOTAL\_FIXED\_DAYS] )

AND MONITORING\_PERIOD.MP\_END\_DT <=

(SELECT MONITORING\_PERIOD.MP\_END\_DT

FROM MONITORING\_PERIOD

WHERE MONITORING\_PERIOD.MONITORING\_PERIOD\_ID = [MONITORING\_PERIOD\_ID from the MNTRG\_SCH\_MNTRG\_PRD\_VIEW for which we are calculating RA\_NUMB\_TOTAL\_FIXED\_DAYS] )

AND MONITORING\_PERIOD.MP\_BEGIN\_DT >=

(SELECT add\_months(MONITORING\_PERIOD.MP\_END\_DT, -12)

FROM MONITORING\_PERIOD

WHERE MONITORING\_PERIOD.MONITORING\_PERIOD\_ID = [MONITORING\_PERIOD\_ID from the MNTRG\_SCH\_MNTRG\_PRD\_VIEW for which we are calculating RA\_NUMB\_TOTAL\_FIXED\_DAYS] )

AND MONITORING\_PERIOD.MP\_FIXED\_DAYS <= 90);

Calculated after each MNTRG\_SCH\_MNTRG\_PRD record is created.

**RA\_NUMB\_DAYS\_W\_RESULTS**

Select SUM(MP\_FIXED\_DAYS)

FROM (

SELECT UNIQUE

MONITORING\_PERIOD.MONITORING\_PERIOD\_ID,

MP\_FIXED\_DAYS

FROM RESULT\_TO\_MS\_LINK

INNER JOIN MONITORING\_SCHEDULE

ON RESULT\_TO\_MS\_LINK.MONITORING\_SCHEDULE\_ID = MONITORING\_SCHEDULE.MONITORING\_SCHEDULE\_ID

INNER JOIN MONITORING\_PERIOD

ON RESULT\_TO\_MS\_LINK.MONITORING\_PERIOD\_ID = MONITORING\_PERIOD.MONITORING\_PERIOD\_ID

WHERE MONITORING\_SCHEDULE.MS\_WATER\_SYSTEM\_ID IN

(SELECT monitoring\_schedule.MS\_WATER\_SYSTEM\_ID

FROM monitoring\_schedule

WHERE monitoring\_schedule.MONITORING\_SCHEDULE\_ID = [MONITORING\_SCHEDULE\_ID from the MNTRG\_SCH\_MNTRG\_PRD for which we are calculating RA\_NUMB\_DAYS\_W\_RESULTS] )

AND MONITORING\_SCHEDULE.MS\_STATE\_ASSIGNED\_FAC\_ID IN

(SELECT monitoring\_schedule.MS\_STATE\_ASSIGNED\_FAC\_ID

FROM monitoring\_schedule

WHERE monitoring\_schedule.MONITORING\_SCHEDULE\_ID = [MONITORING\_SCHEDULE\_ID from the MNTRG\_SCH\_MNTRG\_PRD for which we are calculating RA\_NUMB\_DAYS\_W\_RESULTS] )

AND RESULT\_TO\_MS\_LINK.RESULT\_CONTAMINANT\_CD IN

(SELECT monitoring\_requirement.MR\_CONTAMINANT\_CODE

FROM monitoring\_requirement

INNER JOIN monitoring\_schedule

ON monitoring\_requirement.MONITORING\_REQUIREMENT\_ID = monitoring\_schedule.MONITORING\_REQUIREMENT\_ID

WHERE monitoring\_schedule.MONITORING\_SCHEDULE\_ID = [MONITORING\_SCHEDULE\_ID from the MNTRG\_SCH\_MNTRG\_PRD for which we are calculating RA\_NUMB\_DAYS\_W\_RESULTS] )

AND MONITORING\_PERIOD.MP\_END\_DT <=

(SELECT MONITORING\_PERIOD.MP\_END\_DT

FROM MONITORING\_PERIOD

WHERE MONITORING\_PERIOD.MONITORING\_PERIOD\_ID = [MONITORING\_PERIOD\_ID from the MNTRG\_SCH\_MNTRG\_PRD for which we are calculating RA\_NUMB\_DAYS\_W\_RESULTS] )

AND MONITORING\_PERIOD.MP\_BEGIN\_DT >=

(SELECT add\_months(MONITORING\_PERIOD.MP\_END\_DT, -12)

FROM MONITORING\_PERIOD

WHERE MONITORING\_PERIOD.MONITORING\_PERIOD\_ID = [MONITORING\_PERIOD\_ID from the MNTRG\_SCH\_MNTRG\_PRD for which we are calculating RA\_NUMB\_DAYS\_W\_RESULTS] ));

Calculated after each RESULT\_TO\_MS\_LINK record is created.

**RAA\_Denom**

= 360 - (RA\_NUMB\_TOTAL\_FIXED\_DAYS - RA\_NUMB\_DAYS\_W\_RESULTS)

# Examples

## Example One

ID1090182 - LITTLE BLACKTAIL RANCH WATER DISTRICT

000000010181 - MANIFOLD - WELLS 6 & 15

Note that an annual result > MCL caused the quarterly monitoring. This result is NOT used in the RAA calculations because the MP to which it is associated has FIXED\_TOTAL\_DAYS > 90.

Annual start: MR\_ID 325, MS\_ID 368241, SR\_ID 34270, R\_ID 1314248, 05/07/2012, 0.014 mg/L IOC 6963 SETUP

## Test IOC 6963 A

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **SR & MS Eval** |  | **Rslt\_to\_MS** | **MP\_AVG\_**  **COMPL\_VALUE** | | **MNTRG\_SCH\_MNTRG\_**  **PRD or new child table** | | |
| **Quarter** | **Result** | **SR\_**  **ID** | **R\_ID** | **Test Scenario** | **MP\_ID** | **Cmpl\_Rslt** | **MPA** | **RAA** | **RA\_#\_**  **CLNDR**  **\_MP** | **RA\_#\_**  **MP\_w\_Rslt** | **RAA\_**  **Denom** |
| Q1 (3rd 2012): | 0.012 mg/L | 17675 | 1203646 | IOC 6963 A1 |  | 0.012 | 0.012 | 0.003 | 1 | 1 | 4 |
| Q2 (4th 2012): | 0.015 mg/L | 17636 | 1203599 | IOC 6963 A2 |  | 0.015 | 0.013 | 0.006 | 2 | 2 | 4 |
| Q2 (4th 2012): | 0.010 mg/L | 21127 | 1218403 | IOC 6963 A3 |  | 0.010 |  |  | 2 | 2 | 4 |
| Q3 (1st 2013): | No result |  |  |  |  |  |  |  | 3 | 2 | 3 |
| Q4 (2nd 2013): | 0.008 mg/L | 27575 | 1253983 | IOC 6963 A4 |  | 0.008 | 0.008 | 0.011 | 4 | 3 | 3 |

## Test IOC 6963 B

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **SR & MS Eval** |  | **Rslt\_to\_MS** | **MP\_AVG\_**  **COMPL\_VALUE** | | **MNTRG\_SCH\_MNTRG\_**  **PRD or new child table** | | |
| **Quarter** | **Result** | **SR\_ID** | **R\_ID** | **Test Scenario** | **MP\_ID** | **Cmpl\_Rslt** | **MPA** | **RAA** | **#\_CLNDR**  **\_Qtrs** | **#\_Qtrs**  **w\_Rslt** | **RAA\_**  **Denom** |
| Q5 (3rd 2013): | 0.001 mg/L | 27989 | 1259373 | IOC 6963 B1 |  | 0.001 | 0.001 | 0.007 | 4 | 3 | 3 |
| Q6 (4th 2013): | 0.004 mg/L | 29225 | 1270583 | IOC 6963 B2 |  | 0.004 | 0.004 | 0.004 | 4 | 3 | 3 |
| Q7 (1st 2014): | 0.008 mg/L | 43717 | 1399430 | IOC 6963 B3 |  | 0.008 | 0.008 | 0.005 | 4 | 4 | 4 |

## Example Two

The table below provides another set of examples of correct calculations.

Example is for mercury (analyte\_cd = 1035). It's MCL is 0.002 mg/L, These results are all from the SAME Water\_System and Facility. They may **not** be the same Monitoring\_Schedule but will all be from Monitoring\_Schedules with Fixed Days <= 90 days.

This **first set of records** show both how to calculate the first 3 quarters, when there are results for each, how to calculate when there is a result that is less than detect, and how to calculate when there is one or two quarters without a result

| **Quarter** | **Result** | **MP\_**  **AVERAGE**  **(MG/L)** | **COMPLIANCE\_**  **VALUE**  **(MG/L)** | **Calculation** |
| --- | --- | --- | --- | --- |
| Q1 (1st 2010): | 0.0028 mg/L | 0.0028 | 0.001 | .0028 / 4 = .0007 rounded to MCL = 0.001 |
| Q2 (2nd 2010): | 0.0033 mg/L | 0.0033 | 0.002 | (.0028 + .0033) / 4 = .001525 rounded to MCL = 0.002 |
| Q3 (3rd 2010): | 0.0002 mg/L | 0.0002 | 0.002 | (.0028 + .0033 + .0002) / 4 = .001575 rounded to MCL = 0.002 |
| Q4 (4th 2010): | 0.0009 mg/L | 0.0009 | 0.002 | (.0028 + .0033 + .0002 + .0009) / 4 = .0018 rounded to MCL = 0.002 |
| Q5 (1st 2011) | 0.0008 mg/L | 0.0008 | 0.001 | (.0033 + .0002 + .0009 + .0008) / 4 = .0013 rounded to MCL = 0.001 |
| Q6 (2nd 2011) | 0.0003 mg/L | 0.0003 | 0.001 | (.0002 + .0009 + .0008 + .0003) / 4 = .00055 rounded to MCL = 0.001 |
| Q7 (3rd 2011) | LTD | 0 | 0.001 | (.0009 + .0008 + .0003 + **0**) / 4 = .0005 rounded to MCL = 0.001 |
| Q8 (4th 2011) | No results |  | 0.000 | (.0008 + .0003 + 0) / **3** = .000366 rounded to MCL = 0.000 |
| Q9 (1st 2012) | No results |  | 0.000 | (.0003 + 0) / **2** = .00015 rounded to MCL = 0.000 |

One of the challenges may be to figure out when a MP\_AVG\_COMP\_VALUE doesn't exist because a result was not collected versus one that doesn't exist because it isn't fully in the past yet.

This **second set of records** show how to calculate the first 3 quarters when one or more is missing a result (the same principal applies: i.e., reduce the denominator by 1 for each quarter in the set of quarter in which no result was obtained).

| **Quarter** | **Result** | **MP\_**  **AVERAGE**  **(MG/L)** | **COMPLIANCE\_**  **VALUE**  **(MG/L)** | **Calculation** |
| --- | --- | --- | --- | --- |
| Q1 (1st 2010): | No results |  |  |  |
| Q2 (2nd 2010): | 0.0033 mg/L | 0.0033 | 0.001 | (.0033) / **3** = .0011 rounded to MCL = 0.001 |
| Q3 (3rd 2010): | 0.0002 mg/L | 0.0002 | 0.001 | (.0033 + .0002) / **3** = .001167 rounded to MCL = 0.001 |
| Q4 (4th 2010): | 0.0009 mg/L | 0.0009 | 0.001 | (.0033 + .0002 + .0009) / **3** = .001467 rounded to MCL = 0.001 |
| Q5 (1st 2011) | 0.0008 mg/L | 0.0008 | 0.001 | (.0033 + .0002 + .0009 + .0008) / 4 = .0013 rounded to MCL = 0.001 |

# Calculating Locational Running Annual Average (LRAA)

The process uses the current and previous monitoring period averages (MP\_AVERAGE) **for the same Sampling Point** (FAC\_SAMPLING\_POINT\_ID) to calculate the COMPLIANCE\_VALUE as follows:

If the begin date of the MP Avg is within one year of the End Date of the current MP Avg regardless of whether the MP Avg is associated to the same schedule as the current MP Avg (e.g., if the current MP Avg is for the second quarter of a quarterly schedule and a previous quarterly schedule at the same WSF for the same analyte exists and has MP Avg associated with it, the last two are used).

* When less than four quarters have passed since quarterly monitoring began, we divide by 4 rather than by the number of quarters.
* When 4 or more quarters have passed since quarterly monitoring began, only use the current and last 3 quarters to calculate and divide by 4 if results have been obtained for each quarter. Reduce the denominator by 1 for each quarter in the set of 4 in which no result was obtained.
* To insure that even when a combination of monthly monitoring results and quarterly monitoring results need to be averaged, use Fixed Days in the calculation rather than quarters/month. Use the same basic logic for LRAA denominator as was used for RAA.

## LRAA Example

The table below provides a set of examples of correct calculations for LRAA.

Example is for total trihalomethanes (analyte\_cd = 2950). It's MCL is 0.080 mg/L, These results are all from the SAME Water\_System and Facility but two different Sampling Points. They may **not** be the same Monitoring\_Schedule but will all be from Monitoring\_Schedules with Fixed Days <= 90 days.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Quarter** | **Sampling Point** | **Result** | **MP Avg (mg/L)** | **LRAA (mg/L)** |
| 2Q2012 | DBP2A | 0.0312 mg/L | 0.0312 | 0.031 |
| 2Q2012 | DBP2B | 0.0494 mg/L | 0.0494 | 0.049 |
| 3Q2012 | DBP2A | 0.0261 mg/L | 0.0261 | 0.014 |
| 3Q2012 | DBP2B | 0.0407 mg/L | 0.0407 | 0.023 |
| 4Q2012 | DBP2A | 0.033 mg/L | 0.033 | 0.023 |
| 4Q2012 | DBP2B | 0.0246 mg/L | 0.0246 | 0.029 |
| 1Q2013 | DBP2A | 0.0336 mg/L | 0.0336 | 0.031 |
| 1Q2013 | DBP2B | 15.4 ug/L | 0.0154 | 0.033 |
| 2Q2013 | DBP2A | 0.0287 mg/L | 0.0287 | 0.030 |
| 2Q2013 | DBP2B | 0.0308 mg/L | 0.0308 | 0.028 |
| 3Q2013 | DBP2A | 0.0421 mg/L | 0.0421 | 0.034 |
| 3Q2013 | DBP2B | 0.0386 mg/L | 0.0386 | 0.027 |
| 4Q2013 | DBP2A | 0.0468 mg/L | 0.0468 | 0.038 |
| 4Q2013 | DBP2B | 0.0355 mg/L | 0.0355 | 0.030 |
| 1Q2014 | DBP2A | 0.0134 mg/L | 0.0134 | 0.033 |
| 1Q2014 | DBP2B | 0.0129 mg/L | 0.0129 | 0.029 |

# Calculating Operational Evaluation Level (OEL)

**An OEL is calculated almost the same way as an LRAA except that, instead of using the current quarter's MPA and the previous 3 quarters, you double the current quarter and use the previous 2 quarters.**

The process uses the current and previous monitoring period averages (MP\_AVERAGE) **for the same Sampling Point** (FAC\_SAMPLING\_POINT\_ID) to calculate the COMPLIANCE\_VALUE as follows:

If the begin date of the MP Avg is within **270 fixed days** of the End Date of the current MP Avg regardless of whether the MP Avg is associated to the same schedule as the current MP Avg (e.g., if the current MP Avg is for the second quarter of a quarterly schedule and a previous quarterly schedule at the same WSF for the same analyte exists and has MP Avg associated with it, the last two are used).

* ~~When less than three quarters have passed since quarterly monitoring began,~~ **~~do not calculate an OEL~~**~~.~~ Note that this is not implemented. If, at a later date, the user community prioritizes this as important, then we'll revise the BRE so that starts calculating after 3 quarters of monitoring.
* **If there is not a MPA for the Sampling Point in the current quarter, do not calculate an OEL.**
* When 3 or more quarters have passed since quarterly monitoring began, only use the current and last 2 quarters to calculate and divide by 4 if results have been obtained for each quarter. Reduce the denominator by 1 for each quarter in the set of 3 in which no result was obtained.
* To insure that even when a combination of monthly monitoring results and quarterly monitoring results need to be averaged, use Fixed Days in the calculation rather than quarters/month. Use the same basic logic for LRAA denominator as was used for RAA.

## OEL Example

The table below provides a set of examples of correct calculations for OEL for the same timeframe and results as the LRAA example above.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Quarter** | **Sampling Point** | **Result** | **MP Avg (mg/L)** | **OEL (mg/L)** |
| 2Q2012 | DBP2A | 0.0312 mg/L | 0.0312 |  |
| 2Q2012 | DBP2B | 0.0494 mg/L | 0.0494 |  |
| 3Q2012 | DBP2A | 0.0261 mg/L | 0.0261 |  |
| 3Q2012 | DBP2B | 0.0407 mg/L | 0.0407 |  |
| 4Q2012 | DBP2A | 0.033 mg/L | 0.033 | 0.031 |
| 4Q2012 | DBP2B | 0.0246 mg/L | 0.0246 | 0.035 |
| 1Q2013 | DBP2A | 0.0336 mg/L | 0.0336 | 0.032 |
| 1Q2013 | DBP2B | 15.4 ug/L | 0.0154 | 0.024 |
| 2Q2013 | DBP2A | 0.0287 mg/L | 0.0287 | 0.031 |
| 2Q2013 | DBP2B | 0.0308 mg/L | 0.0308 | 0.025 |
| 3Q2013 | DBP2A | 0.0421 mg/L | 0.0421 | 0.037 |
| 3Q2013 | DBP2B | 0.0386 mg/L | 0.0386 | 0.031 |
| 4Q2013 | DBP2A | 0.0468 mg/L | 0.0468 | 0.041 |
| 4Q2013 | DBP2B | 0.0355 mg/L | 0.0355 | 0.035 |
| 1Q2014 | DBP2A | 0.0134 mg/L | 0.0134 | 0.029 |
| 1Q2014 | DBP2B | 0.0129 mg/L | 0.0129 | 0.025 |

# End Notes

1. Note for designer: The RLM included condition "Matching User Result" which already excludes the association of a 4010 result that was entered by a user so I do not need to include that case in this specification. [↑](#footnote-ref-1)
2. Designer Note: EPA reporting specification say this violation can be reported with either contaminant code 4100 or 4101. In this design, 4101 will be used because its name is "Beta Particle and Photon Radioactivity," which matches the name in the NPDWR for the MCL. However, since the regulations explicitly say to monitor for gross beta particle activity, the monitoring requirements reference 4100 rather than 4101. When a PWS must identify the major radioactive constituents present in a sample and calculate and sum the appropriate doses, the annual dose equivalent will be store with analyte 4101 but linked to a 4100 monitoring schedule. [↑](#endnote-ref-1)
3. Change made in response to PB clarificaiton received on December 29, 2014 via email, in which Jamie Harris wrote "My understanding is that is the situation for all" in response to this question " Does your understanding (that Prime should look at the history of results to determine when the annual monitoring should occur) extend to the other Phase II/V contaminants as well or is it limited to nitrate?" [↑](#footnote-ref-2)
4. Design note: only results that are valid or accepted and from a "for compliance" routine sample. [↑](#footnote-ref-3)
5. Design note: only results that are valid or accepted and from a "for compliance" routine sample. [↑](#footnote-ref-4)
6. Per Wentong, when fixing SBI-45 in September 2017, these two additional where statements are in the code (after revision I provided). [↑](#footnote-ref-5)