Managing Report Templates in CEDRI

This job aide guides you through the process of adding and modifying reporting requirements in CEDRI. CEDRI collects required reports from stationary sources using spreadsheet templates and uploading (zipped) documents. Spreadsheet templates define the regulatory requirements and format of the reports to be collected from the stationary sources subject to the Parts 60, 62, and 63 rules.

There are three types of reports supported by CEDRI.

1) **Periodic Reports** – Compliance Reports, Annual Reports, Summary Reports, etc., submitted using the EPA provided Microsoft Excel spreadsheet template.
2) **Performance Tests** - Performance Test Reports, Performance Evaluation Reports, Relative Accuracy Test Audit (RATA) Reports, and Test Data created using the EPA provided Electronic Reporting Tool (ERT).
3) **Notification Reports** – Notification of Compliance Reports or Initial Notification Reports submitted to EPA as a document upload or as a Microsoft Excel Template when combined with a Periodic Report.

The number of steps to add a new report in CEDRI depends on the type of report that is selected. Performance Test Reports and Notification Reports are the simplest to add, requiring only the selection of 40 CFR Part and Subpart and the report name with citation (Performance Test and Notification Reports have not yet been implemented, but will be implemented in a future release). Periodic Reports require two additional steps before the report can be added in CEDRI. The spreadsheet template must first be created and then 'tagged' with data field names (i.e., XML tags) so the spreadsheet data may be properly interpreted by CEDRI.

Exhibit 1 illustrates the process for adding reports in CEDRI. Each step of this process is detailed in this job aide.
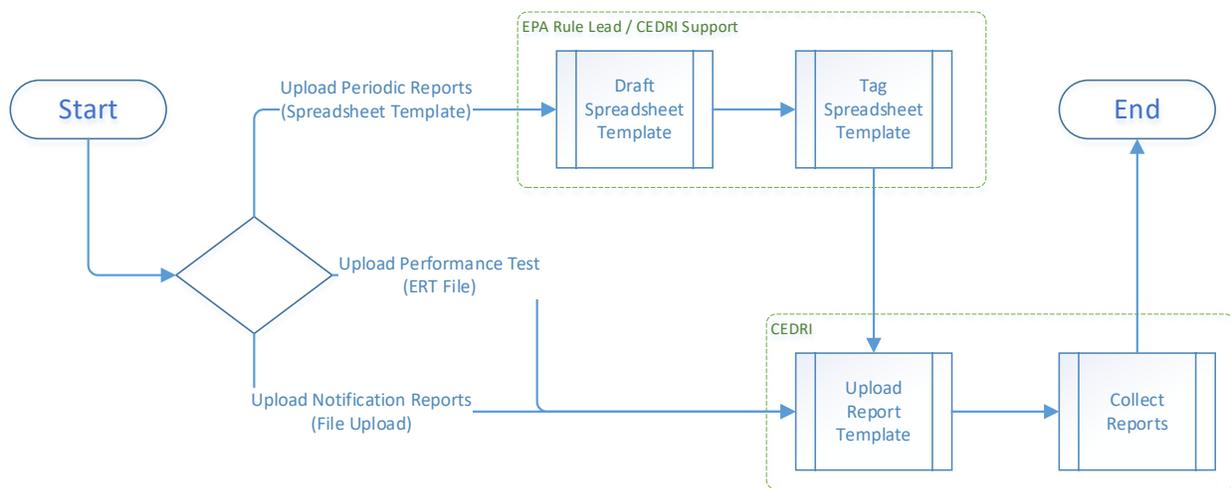
Exhibit 1 CEDRI Reporting Template Creation Process

Drafting a Spreadsheet Template

Spreadsheet templates are Microsoft Excel workbooks consisting of multiple worksheets: three standard worksheets and one or more rule specific worksheets. The spreadsheet templates are used to collect 40 CFR Part and Subpart reporting requirements for one or more facilities.

> **Note**: All Excel template spreadsheets should be saved as .xlsx, unless there is a necessary macro contained in the spreadsheet. Only then should the extension be saved as .xlsm.

All templates for Periodic Reports, ICR/RTR Workbooks, etc., (for single and multiple facilities) have the following worksheets:

Welcome (Instructions) worksheet	Workbook configuration control data (version, date, rule, etc.) and instructions to complete the template.
Facility or Company Information worksheet	Facility / Company name and address. May also include reporting period, attachments, etc.
Rule Specific worksheets	One or more worksheets depending on amount and variety of data required by the rule.
Template Mapping worksheet (hidden)	Maps worksheets to primary keys allowing the template upload feature to convert workbook to a JSON* representation.

*   JSON – JavaScript Object Notation

In addition to the three standardized worksheets specified above, each workbook has the following standard features:

1. Template configuration control is listed on the welcome worksheet and maintained using pre-defined fields. For reference see (Exhibit 2 & Exhibit 7):
    a) Template Name (e.g., 60.5422a(a) Semiannual Report (Spreadsheet Template))
    b) Citation ID (e.g., 60.5422a(a))
    c) Template Version (e.g., v2.00)
    d) Last Updated Date (e.g., 3/24/2020)
2. These fields are used to validate that the correct template is used in the data upload for the selected Part/Subpart/Report Type. All worksheets include a hidden column A. This is to ensure that the template is compliant with the parsing code in the CAER (Combined Air Emissions Reporting) EXCEL JSON Parser service.
3. All columns within a worksheet are used to collect data for a single data element. This means that each data table must be in a separate worksheet, or adjacent columns within the same worksheet. Data tables may not be "stacked" within the same worksheet.
4. Hidden columns may be included in the worksheet and used to store default data. This is the preferred method for specifying default data values.
5. Naming convention of the spreadsheet templates:
    Format:
    [citation reference] [report name].xlsx
    Example:
    63.7841_b_Semiannual_Compliance_Report.xlsx

6. Templates should not be locked until XML tagging is completed.

Welcome (Instructions) Worksheet

This worksheet contains general reporting instructions as well as regulation-specific information related to the report (Exhibit 2). This worksheet is required in all CEDRI workbooks.

- **Row 1 - 6**: Reserved for recording metadata related to the template.

The metadata includes the following information:

- Template Name (**cell B2**): The name of the report as it is to appear to the user in the CEDRI application.
- Citation ID (**cell B3**): 40 CFR citation requiring the report. A Unique ID will be specified if the information collection is not associated with an existing citation.
- Template Version (**cell B4**): Version is used by CEDRI to validate proper template usage and trigger conditional processing, if applicable.
- Last Updated Date (**cell B5**): Date that the Template Version was changed.
- OMB Control Number (**cell B6**): Reserved for OMB Control Number.

The template metadata is updated when the template is revised for technical or regulatory reasons. The CEDRI application uses this metadata for validation and schema lookup.

- **Row 7 onwards**: Available for general reporting instructions as well as Regulation specific information related to the report. Regulation specific information will be managed by EPA in collaboration with the development team.
- Refer to Exhibit 2 for Sample Welcome (Instructions) Worksheet.
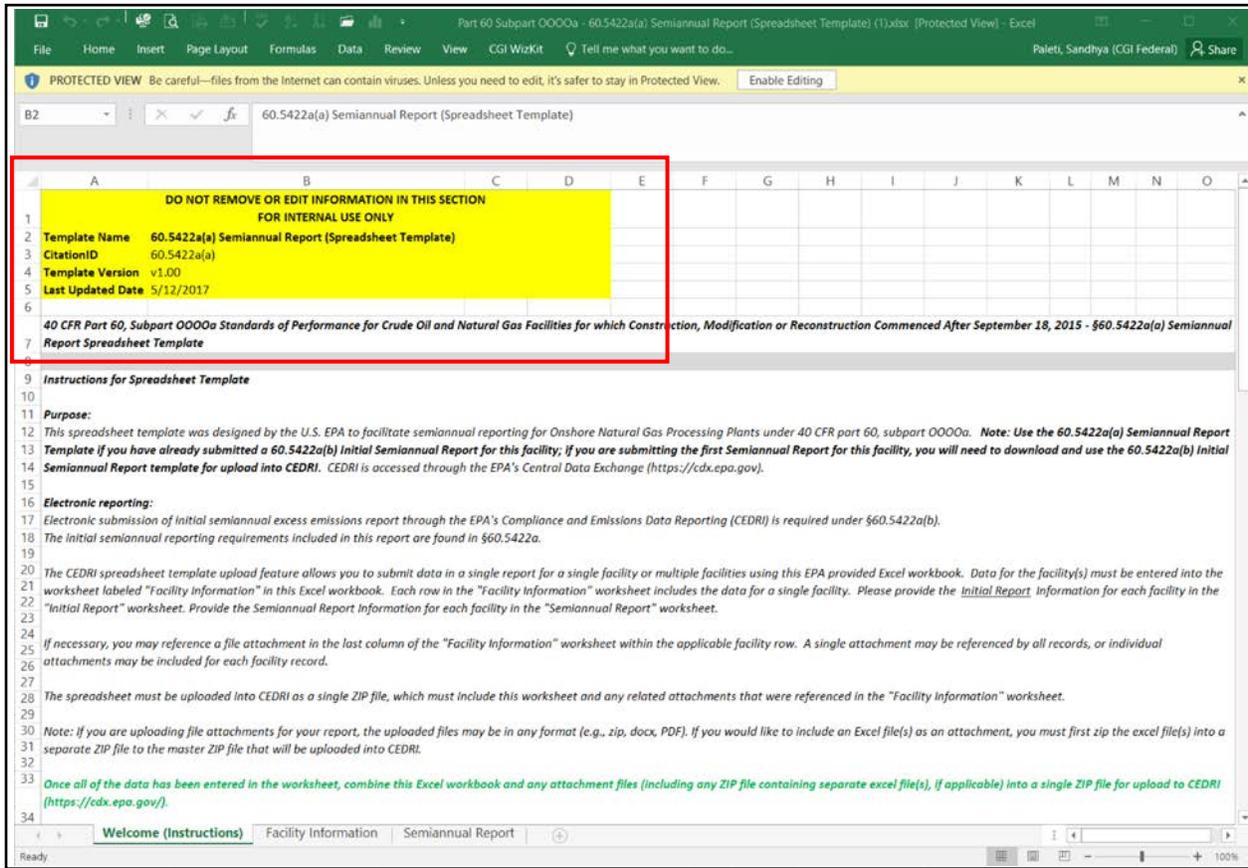
Exhibit 2 Sample Welcome (Instructions) Worksheet

Facility or Company Information Worksheet

The Facility or Company Information Worksheet is parsed for bulk upload submissions since the facility specified in CEDRI for the report submission may not apply to all records within the spreadsheet. A Facility or Company Information Worksheet may be included with non-bulk upload submissions, such as ICR/RTR report submissions, but in these cases the facility information in the workbook is superseded by the facility information specified in CEDRI for the report.

The following rules apply to the rows in the Facility or Company Information worksheet:

Worksheet Rows:
- **Row 1 - 6**: Hidden – reserved for future use.
- **Row 7**: Reserved for Part, Subpart, Report Name, General Instruction, and Column Group Headers.
- **Row 8**: Reserved to show '* Required Field'.
- **Row 11**: Reserved for Column Headers.
- **Row 12**: Reserved for Column Titles.
- **Row 13**: Reserved for XML tags for system processing.
- **Row 14**: Reserved for sample data/examples.
- **Row 15 - 23**: Hidden – reserved for future use or for sample data/examples.
- **Row 24 +**: User data entry will begin.

Worksheet Columns:
- **Column A**: Hidden. This column should be blank and not contain any data.
- **Column B**: The XML tag for "Facility Record No." or "Company Record No." shall be "Record ID"

Refer to Exhibit 3 for Facility or Company information data element definitions and for a Sample Facility Information Worksheet.

The Facility or Company Information data collection worksheet shall follow the standard column layout below. The asterisk (*) next to each field indicates that the corresponding field is required.

Question Group	Question Label	XML Tag	System Validation
Facility Information	Facility Record No.*	RecordId	Field value automatically generated.
	Facility Name*	FacilityName	None
	Address Line 1*	AddressLine1	None
	Address Line 2	AddressLine2	None
	City*	CityName	None
	County*	CountyName	None
	State Abbreviation*	StateName	Dropdown list of US States and territories.
	Responsible Agency Facility ID	StateFacID	None
	Date of Report	Report Date	Date data type validation and not nullable enforced in Excel if required by applicable rule.
	Zip Code*	ZIPCode	Numeric data type validation enforced in Excel.
Reporting Information	Beginning Date of Reporting Period*	PeriodStartDate	Date data type validation and not nullable enforced in Excel if required by applicable rule.
	Ending Date of Reporting Period*	PeriodEndDate	
Additional Information	Please enter any additional information	AddInfo	None
	Enter associated file name reference	AddFile	None

Exhibit 3 Required Columns for Facility Information Worksheet
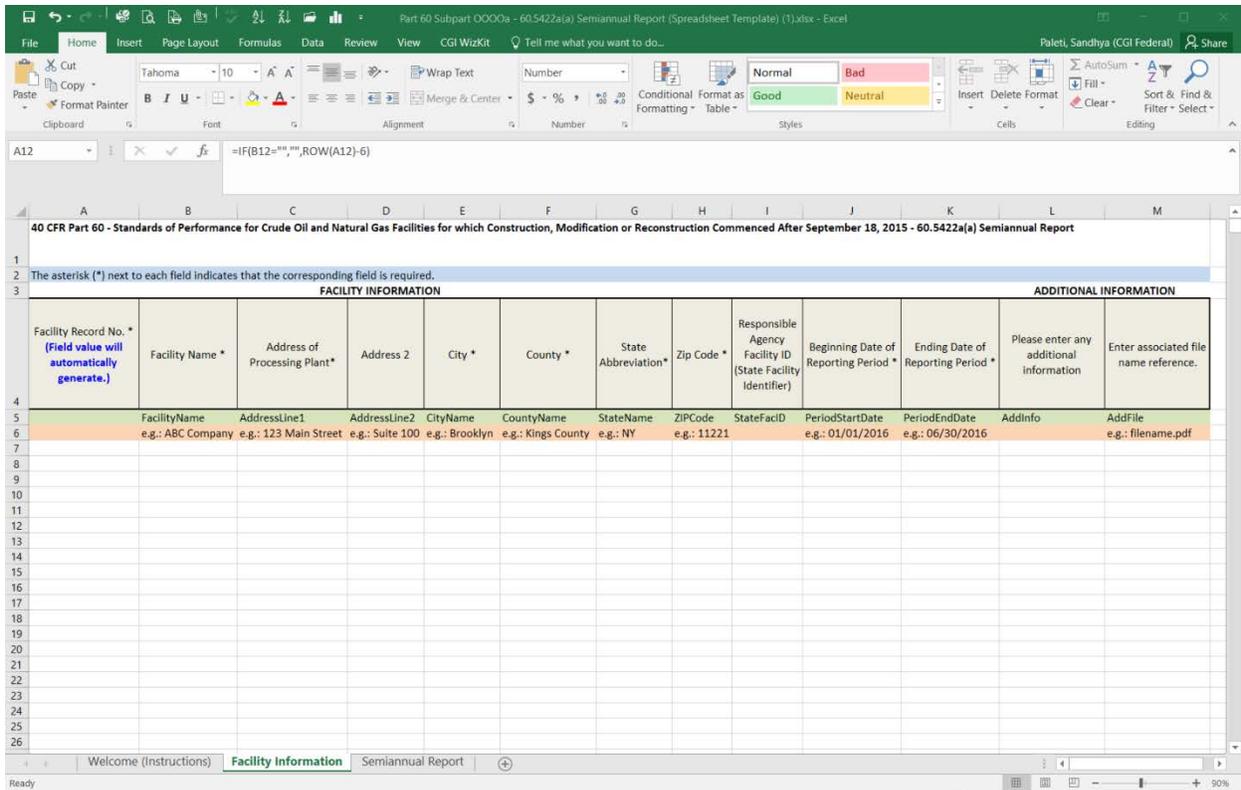
Exhibit 4 Sample Facility Information Worksheet

Template Mapping Worksheet

A template mapping worksheet is required for all templates to be compatible with the CAER EXCEL JSON Parser service. This worksheet creates a schema of all sheets contained in the workbook, specifying primary key relationships between worksheets. The Template Mapping Worksheet will be created by CGI and will remain hidden when the template is implemented in CEDRI.

> **Note**: All worksheets except for the Facility or Company Information worksheet must have a defined parent. Typically, the Facility or Company Information worksheet is the parent of all other worksheets.

All mapping worksheets must follow the following layout:

Column	Field Name	Contents
A	Worksheet Name	Exact name of worksheet (worksheet tab at footer of Excel).
B	Parent	JSON Key of parent sheet (Facility or Company Information worksheet is always "records").
C	JSON Key	JSON Key of worksheet. Facility or Company Information worksheet is always "records". All other worksheets should be named using CamelCase concatenation of worksheet name in Column A.
D	Parent Primary Key	Primary Key of parent worksheet. Usually "Record ID".
E	Child Foreign Key	Child Foreign Key related to Primary Key of Parent worksheet (Typically "Record ID").

Exhibit 5 below is an example of a Template Mapping Worksheet.

	A	B	C	D	E
1	**Worksheet Name**	**Parent**	**JSON Key**	**Parent Primary Ke**	**Child Foreign Key**
2	Company_Information		records		
3	No_CPMS_Limits_Details	records	NoCPMSLimitsDetails	RecordId	RecordId
4	Mercury	records	Mercury	RecordId	RecordId
5	CEM_COM_CPMS_Identification	records	CEMCOMCPMSIdentification	RecordId	RecordId
6	Malfunction	records	Malfunction	RecordId	RecordId
7	CPMS_Detail	records	CPMSDetail	RecordId	RecordId
8	CPMS_Summary_Report	records	CPMSSummaryReport	RecordId	RecordId
9	Limits_Details_w_CPMS	records	LimitsDetailsWCPMS	RecordId	RecordId
10	Limits_Summary_Report_w_CPMS	records	LimitsSummaryReportWCPMS	RecordId	RecordId
11	Description_of_Changes	records	DescriptionOfChanges	RecordId	RecordId
12	Certification	records	Certification	RecordId	RecordId

Exhibit 5 Template Mapping Worksheet (hidden)

Rule Specific Worksheets

The following general rules apply when creating a new report template:

1. The workbooks are intended to collect information for one or more facilities. Therefore:
   a. Each worksheet represents a table.
   b. Each column represents a data element.
2. Parent worksheets should use column B for the primary key to "link" to records in child worksheets (foreign key).
3. Child worksheets should use column B for the foreign key unless the child worksheet is also a parent to other worksheets. If the child is also a parent, then the next available column should be used.
4. Column B of each rule specific worksheet shall be the Facility or Company foreign key, unless the worksheet is a child worksheet of another rule specific worksheet. (See Exhibit 6, 63 ZZZZ template below, for an example of this situation.)
5. Primary keys shall be auto-generated. A separate column should be used to collect source specified Facility IDs, Engine IDs, Process IDs, etc.
6. Foreign keys shall be dropdown menus populated from the worksheet containing the primary key.
7. All data validation shall be performed in the report template. CEDRI only validates the proper template version that is being used and that reference file is included. The following validation techniques should be utilized:
   a. Dropdown menus: Add a hidden worksheet to store lookup values for dropdown menus.
   b. Format validation: Use Excel field formatting to enforce data types (numeric, dates, etc.).

Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines - 63.6650(h)(3) Annual Report

* Required Field

ENGINE INFORMATION

Engine Record No. *	Company Record No. *	Engine Description	Engine Site Rating * (Brake Horsepower) (§63.6650(h)(1)(iii))	Engine Model Year * (§63.6650(h)(1)(iii))	Latitude of the Engine * (§63.6650(h)(1)(iv))	Longitude of the Engine * (§63.6650(h)(1)(iv))	Did you use this engine for the purpose specified in §63.6640(f)(4)(ii): 50 hours per year for non-emergency situations? *	Were there deviations from the fuel requirements in §63.6604? *
EngineId	RecordId	EngineDescription	EngineRating	EngineYear	EngineLatitude	EngineLongitude	NonEmergencyFlag	DeviationFlag
e.g.: 1	e.g.: 1	e.g.: Engine 1	e.g.: 100	e.g.: 2020	e.g.: 12.12345	e.g.: -12.12345	e.g.: Yes	e.g: No

Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories Subpart ZZZZ

Stationary Reciprocating Internal Combustion Engines - 63.6650(h)(3) Annual Report

* Required Field   **NON-EMERGENCY USE SUMMARY**

Engine Record No. *	Non-Emergency Use Event Begin Date *	Non-Emergency Use Event Begin Time *	Non-Emergency Use Event End Date *	Non-Emergency Use Event End Time *	Entity who dispatched the engine *	Situation that necessitated the dispatch of the engine *
EngineId	NonEmergencyStartDate	NonEmergencyStartTime	NonEmergencyEndDate	NonEmergencyEndTime	DispatchEntity	DispatchReason
e.g.: 1	e.g.: 02/01/2020	e.g.: 15:00	e.g.: 02/02/2020	e.g.: 15:00	e.g.: Dispatcher	e.g.: Engine Malfunction

EngineId is the primary key of the child worksheet, Non-emergency Use. It is the child worksheet of Company Information, so in this case, RecordId goes to column C, and EngineId goes to column B. In Non-emergency Use, it is primary key association to Engine Information, and thus takes column B spot.

Exhibit 6 Example use of Primary Key other than Facility ID

Tagging a Spreadsheet Template

Extensible Markup Language (XML) tags must be applied to each worksheet so that the data contained in the workbook may be extracted in a structured manner for downstream reporting and analysis.

> **Note**: Welcome (Instruction) worksheet and Facility or Company Information worksheet tags are standardized. Tags for these sheets should not be changed from workbook to workbook.

The XML tagging can be completed by EPA staff as a start and CGI will be able to fill in and complete final QA.

The following general instructions apply to the standard worksheets and the rule specific worksheets contained in the workbook.

1. XML tags should be used consistently across templates so that the same data element uses the same XML tag in all cases. This will simplify downstream reporting and analysis.
2. Refer to the CEDRI Spreadsheet Template Data Dictionary to locate XML tags to use when creating a new template. (CGI Confluence account required to access data dictionary).
3. If new data elements need to be defined for the template they must be added to the data dictionary for future reference.
4. XML tag naming convention for new tags:
   a. Descriptive of the table (worksheet) and data field (column).
   b. Concatenation of worksheet name and field label (preferred).

    c.   Contain no spaces or special characters.

5. When tagging is complete the template should be locked to prevent template changes by template users.

6. Completed template should be stored to the appropriate directory at: https://www3.epa.gov/ttn/chief/CEDRIfiles

7. The file should be displayed on the EPA CEDRI page and appear under the appropriate rule in the List of Rules and Required Reports Available in CEDRI.

Worksheet-specific instructions are provided below.

Welcome (Instruction) Worksheet

The Welcome (Instruction) worksheet (Exhibit 7) does not contain any XML tags, but does contain template metadata that must be validated. Confirm accuracy of Template Name, Citation ID and Template Version number and update as necessary. If any of these metadata elements are changed, record the date of change in the Last Updated Date field.

The following rules apply to the version number:

1. **Version format**: v[Major Version].[Minor Version]
2. **Major Version**: Increment when new fields/worksheets added, removed, or modified
3. **Minor Version**: Increment when field validation updates are made, header information changes, instructions updated, etc.

> **Note:** The 'Report Template or ERT Version Accepted in CEDRI' column provides the periodic report template (found on Welcome tab) or ERT versions accepted in CEDRI. For example, if the version is listed as 1.XX for a given periodic report (i.e., Annual Report), any version template (i.e., 1.01, 1.02, etc.) would be acceptable in CEDRI. A user will only have to download and use a new reporting template when a version changes from 1.XX to 2.XX, etc.
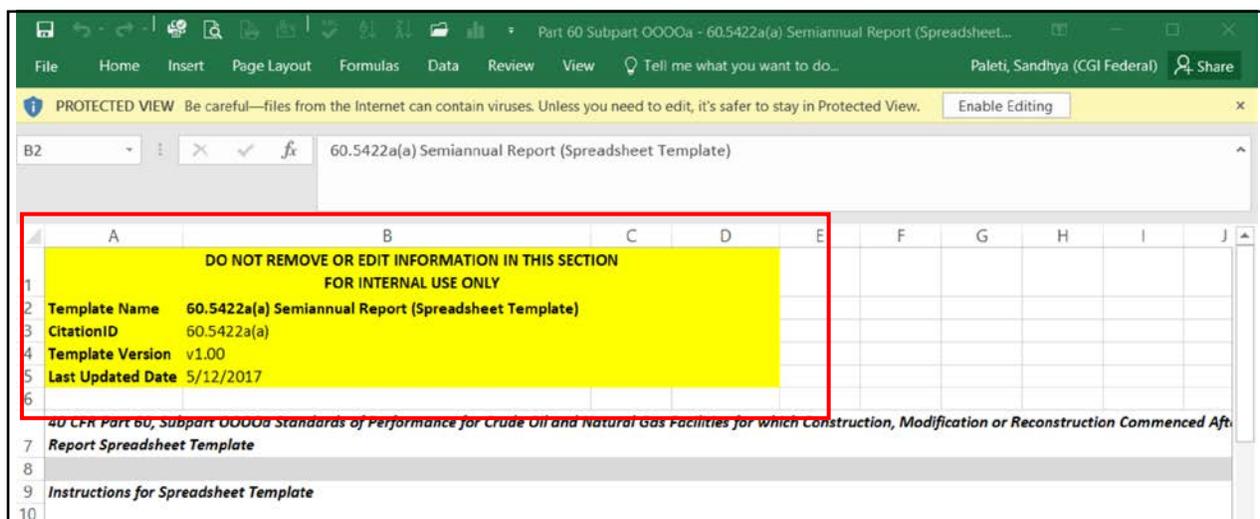
Exhibit 7 Sample Welcome (Instruction) worksheet

Facility or Company Information Worksheet

The Facility or Company Information worksheet contains the standard fields listed in . Additional fields may be added to the worksheet if required by the rule. The Reporting Information question group is optional and should be included depending on the rule being implemented.

Question Group	Question Label	XML Tag
Facility Information	Facility Record No.*	Record ID
	Facility Name*	CompanyName
	Address Line 1*	AddressLine1
	Address Line 2	AddressLine2
	City*	CityName
	County*	CountyName
	State Abbreviation*	StateName
	Zip Code*	ZIPCode
	Responsible Agency Facility ID	StateFacID
Reporting Information	Date of Report	ReportDate
	Beginning Date of Reporting Period*	PeriodStartDate
	Ending Date of Reporting Period*	PeriodEndDate
Additional Information	Please enter any additional information.	AddInfo
	Enter associated file name reference.	AddFile

Exhibit 8 Required XML Tags for Facility Information Worksheet

Rule Specific Worksheets

Refer to the CEDRI Spreadsheet Template Data Dictionary to tag the Rule Specific Worksheets in the workbook. The Data Dictionary identifies other templates where the tag is also used. Referring to these report templates is useful for confirming the tag is being applied properly.

As explained in the Exhibit 6 Example use of Primary Key other than Facility ID

Tagging a Spreadsheet Template section all data elements must have an associated field and XML tag. The XML tag should be a combination of field title and sheet name, and have a description notated in Title Case. It is important that these XML tags are descriptive, as they are used to create Qlik reporting tables based upon information parsed from uploaded spreadsheets.

When a new tag is required, add the XML tag and rule to the data dictionary for use in other report templates.

Cataloging Report Templates in CEDRI

Once tagging of the spreadsheet template is complete, and the template has been locked and posted to the CEDRI web site, it can be cataloged in CEDRI for use by reporting sources. After logging into CEDRI as an EPA Reviewer, click the 'Manage Reports' button on the CEDRI dashboard (or click the hyperlink at the top of the page in Exhibit 9) to access the 'Manage Reports' page where you can add or edit reporting requirements supported by CEDRI.
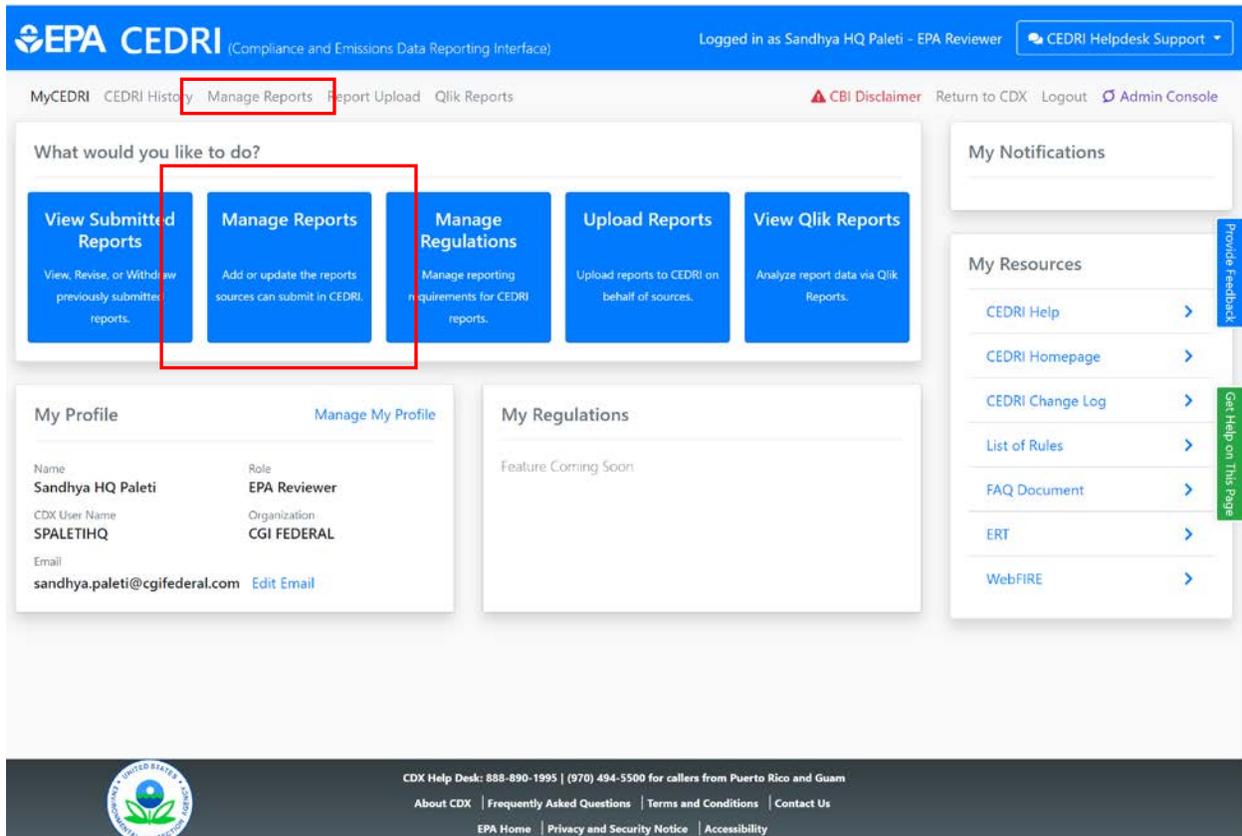
Exhibit 9 CEDRI EPA Reviewer Dashboard

Note: The status of Active and Inactive reports in the CEDRI application is displayed under the 'Is Active' column. Active reports are marked with a green checkmark and inactive reports are marked with a red cross.

Clicking the 'Download Active Reports' button (Exhibit 10) downloads an excel spreadsheet of all the reports supported by CEDRI along with the status of each report and the version of the report template used for reporting requirements using spreadsheet templates.

Exhibit 10 Manage Reports Page

Enable New Reports

Clicking the 'Enable New Report' button (Exhibit 10) opens the 'Add/Edit Report Configuration' screen (Exhibit 11) where you may add or edit reports.

To add a report select the appropriate 'Report Type' and then upload the spreadsheet template in the 'Spreadsheet Template' field using the 'Browse' and 'Upload' buttons (Exhibit 11).

Exhibit 11 Add/Edit Report Configuration

Note: Only 'Periodic' and 'Notification and Periodic' report types are currently supported. 'Performance Test' and 'Notification' report types will be added in the future.

Upon upload, the spreadsheet template is parsed and template details extracted and displayed for review (Exhibit 12). Fields in grey may not be directly edited. If any information in these fields is incorrect, the information must be corrected in the template and the template must be re-uploaded.

Exhibit 12 Review & Edit Report Template Details

The following fields may be edited.

- **Subpart**: Select the applicable subpart from the dropdown menu.
- **Is This Report Active**: Select 'Yes' to activate the report. Activated reports are available to reporting sources for report selection.
- **Template Download Link**: Location where template is stored for download by reporting sources. Default template location is auto-populated. Use the 'Test Download' button to confirm file location (Exhibit 12).

Click 'Save' to commit change. Click 'Cancel to exit without committing changes.

Edit Existing Report

To edit an existing report, click on the row of the desired report in the 'Current CEDRI Reports' table (Exhibit 10) to open the Add/Edit Report Configuration window.

You may upload a new version of the report template, change the report template download location, or change the status of the report (Exhibit 12).

Verifying Report Availability in CEDRI

To verify whether the uploaded report is available in CEDRI, log in as a 'Preparer' or 'Certifier' and confirm that the report is available by finding the report in the Periodic Report type Report Selection (Exhibit 13). Refer to the Create Reports job aide for more details.

Exhibit 13 Confirm Reporting Requirement is Available in Report Selection

Posting CDX Alert Announcing New Report Available in CEDRI

When new reports are added to CEDRI, a CDX alert should be created and posted informing reporting sources that the report is available in CEDRI. CEDRI RMAMs may post alerts using the CDX Communications tool (Exhibit 14).

Alerts may be displayed in CDX, CEDRI, or both. Select 'CDX Web' to display in CDX. Select 'Application' to display the alert in the CEDRI Notifications pane.

Sample alert language is provided in Exhibit 15.

Exhibit 14 Alert Publishing using the CDX RMAM Tool

Exhibit 15 Sample CDX Alert Announcing Spreadsheet Template Availability