Technical Support for Assessment, TMDL Tracking and Implementation System (ATTAINS) Redesign Planning (EP-C-12-054, TO 1)

Workgroup 2 'Data Exchange Methodology'

Recommendations Report

FINAL

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Acronym List

Acronym	Description
ADB	Assessment Database
ATTAINS	Assessment TMDL Tracking & Implementation System
AU	Assessment Unit
BMPs	Best Management Practices
BP	Business Process
BPJ	Best Professional Judgment
CDX	Central Data Exchange
CROMERR	Cross-Media Electronic Reporting Regulation
CWA	Clean Water Act
EN	Exchange Network
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
FOIA	Freedom of Information Act
FTP	File Transfer Protocol
GIS	Geographic Information System
GRTS	Grants Reporting and Tracking System
IR	Integrated Reporting
NHD	National Hydrography Dataset
NARS	National Aquatic Resources Survey
NWQ	National Water Quality Portal
NTTS	National TMDL Tracking System
OWIR	Office of Water – Integrated Report Exchange Network Flow
PWS	Public Water Supply
QA	Quality Assurance
QA/QC	Quality Assurance/ Quality Control
SRF	Clean Water State Revolving Fund
STORET	STOrage and RETrieval Data Warehouse
SQL	Structured Query Language
TMDL	Total Maximum Daily Load
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WQS	Water Quality Standards
WG	Workgroup
WQX	Water Quality Exchange Network
WQS	Water Quality Standards
XML	Extensible Markup Language

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Executive Summary

The ATTAINS re-design project is part of the larger Water Quality Framework, which seeks to better integrate EPA's existing data systems (ATTAINS, NHDPlus, STORET/WQX, GRTS). The Framework will first focus on the ATTAINS data system. This project seeks to leverage state and EPA Regional staff knowledge to refine the process used to submit Integrated Reporting (IR) data to EPA and then make that data visible to the public. One goal of this Workgroup will be to redesign the ATTAINS data system and make it the system of record for Strategic Measures reporting to reduce the reporting burden on states.

Timeline for the new ATTAINS system:	
	Late 2014 – Begin designing new system (Oct/Nov)
	Early 2015 – Begin System development
	Late 2015 – New system is ready to use
	2016 – States can continue to use current system to submit data; however EPA will be looking for approximately 10 states to volunteer to use the new system. Lessons learned from the volunteer states will be used to tweak the system.
	Compile lessons learned from 2016 release of ATTAINS system and compile list of needed changes.
	2018 – Finalize system and transition all states to new system

This project consists of four workgroups: WG1 – Data Elements and Schema, WG2 – Data Exchange Methodology, WG3 – Performance Measure Evaluation and WG4 – Improved Assessment Methods.

WG2 was tasked with making recommendations on data exchange approaches and system design. As a starting point for this discussion, EPA presented the group with a conceptual approach that replaces the Assessment Database (ADB) with a web user interface, and provides the ability for the exchange of data via the Exchange Network (EN) for those states that are not ADB users. This workgroup also reviewed the current functionality of the National TMDL Tracking System (NTTS) and evaluated how to incorporate the NTTS into the new ATTAINS system. The group focused on how data is exchanged between states and EPA. Currently there are several methods states use to exchange water quality data (ADB, internal state systems, OWIR data flow, spreadsheets, and ADB compatible spreadsheets). EPA would like to document the current universe of how states capture IR data, and then find ways to improve and standardize this process. To meet this goal, the WG was asked to provide a short write-up on how they currently use the ADB. WG members that do not currently use ADB were asked to provide information on how they submit IR data to EPA.

The WG discussed the existing state and EPA business process for developing, submitting, and approving IR information including TMDLs. EPA used this discussion to develop the ATTAINS Re-design Requirements spreadsheet to capture requirements for the new ATTAINS data system. The spreadsheet developed by EPA captures requirements by business process (BP).

The final product for WG2 is this report that compiles a list of requirements and design approaches that will be used to develop the new ATTAINS system. This report will also be used to develop a Flow Configuration Document which is needed for describing how data are to be exchanged over the EN.

1. Methodology

In order to create a document capturing the requirements for the re-designed ATTAINS data system; the workgroup held bi-weekly conference calls to discuss the requirements. A totally of nine meetings were held via conference call and webinar, in which two EPA regions and 16 States participated. A Microsoft SharePoint site was used to exchange data and post shared documents for the workgroup.

Before the workgroup started the process of requirements gathering, EPA provided an overview of the draft conceptual diagram for the re-designed ATTAINS data system (see appendix C). EPA's vision for the new system is to create a web interface that would replace the multiple methods (e.g., State Scale surveys, ADB, Excel, Paper) states currently use for exchanging IR data with one standardized method.

The workgroup was asked to provide a short write-up on how they currently use the ADB. Workgroup members that do not currently use ADB were asked to provide information on how they submit IR data to EPA. The group was also encouraged to provide any web links/documents for state systems used for submitting IR data. The state provided write-ups are available in Appendix B.

The workgroup discussed the existing state and EPA business process for developing, submitting, and approving IR information including TMDLs. EPA used this discussion to develop the ATTAINS Re-design Requirements spreadsheet to capture requirements for the new ATTAINS data system. The spreadsheet developed by EPA captures requirements by business process (BP).

2. List of Requirements

The workgroup started discussions by brainstorming high level system goals. Table 1 below shows the high level goals and whether that goal applies to the states, EPA or both.

Table 1 – ATTAINS System High Level Goals

Goal Number	Description	EPA	State
1	Electronic Submittal of Integrated Report		X
2	Electronic Review of Integrated Report	X	
3	Provide tools to support '30-day review' of 303(d) list	X	
4	Provide for communication between EPA and states on the IR	X	X
5	Serve as 'System of Record' for performance measures	X	X
6	Serve as 'System of Record' for TMDL decisions	X	X
7	Serve as 'System of Record' for 303(d) list decisions	X	X
8	Reduce burden of IR reporting	X	X
9	Provide more transparency to the public on water quality	X	X
10	Added utility for the state beyond basic 303(d)/305(b) reporting		X
11	Electronic Quality Assurance/ Quality Control (QA/QC) of Final Public Report	X	X
12	Track public comments, including responses to comments		X

Goal Number	Description	EPA	State
13	Encouraging consistency between electronic data and 'official' 303(d) list	X	X
14	Streamline process with all data submittal through one interface (One-stop shopping)	X	X
15	Ability to revise TMDLs or edit other data that's already been approved, including changes	X	X
16	Track changes at all levels; changes need to be transparent	X	X
17	Ability to link to state reports (narrative)	X	X
18	Include Assessment methodology and Monitoring strategy or links to those documents on state websites	X	X
19	Include state reports (narrative) in system (see 17)	X	X
20	Store both draft and final data	X	X
21	Direct linkage between GIS components and attribute components		X
22	Public interface that integrates water quality information across 303(d)/305(b)/Monitoring/National and state surveys	X	X
23	Public Geographic Information System (GIS) interface	X	X
24	Public GIS displays state GIS data	X	X
25	Public interface to display measures data	X	X
26	Mechanism for tracking/submitting change requests for the system	X	X
27	Governance process for deciding on changes to the system	X	X

The workgroup also developed ground rules for developing requirements:

- Focus on the "what" as opposed to the "how"
- Be expansive rather than restrictive
- Focus on the business process (i.e. how states perform assessment and reporting) instead of limiting ourselves to how the current data systems are being used.

Priorities for implementing requirements are not identified in this report. Priorities will be developed at a later date. Additional requirements will be considered through discussion with the EPA Regions.

The following sections discuss the requirements for each business process. The tables capturing the requirements for each business process also indicate the primary actor (State or EPA) and level of data availability (Private – password protected section of system, or Public – open for general public to view) that applies.

2.1 Collect Water Quality Monitoring Data

The collection of water quality information is the foundation of state assessment programs. It is through this data that all monitoring and assessment requirements of the Clean Water Act (CWA) and EPA Program Measures are met. Although it varies widely by state, in all cases water monitoring requires a large level of effort. In many cases, states need to adapt their desired monitoring plan to fit within their program budgets. This situation necessitates such strategies as monitoring by rotating basins, probabilistic surveys, and targeted sampling.

BP #1 - Collect Water Quality Monitoring Data		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.1.1	1.1	Provide a way to identify locations to target for future monitoring.
2.1.2	1.2	When Best Management Practices (BMPs) are in place or restoration is complete, be able to identify future monitoring locations.
2.1.3	1.3	Provide the ability to track the most recent year of sampling and most recent year of exceedance by monitoring location.

2.2 Call for External Monitoring Data

States request data from external providers, such as USGS, volunteer monitoring organizations, watershed groups, and other federal agencies and data sources. Data is validated and considered for inclusion in the assessment process. Submission and QA procedures vary by state. Data is not always integrated into local data management systems.

BP #2 - Call for External Monitoring Data		
Primary Actor = State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.2.1	2.1	Provide users with a way to interface with the National Water Quality Portal (Portal) for discovering other sources of water quality monitoring data.
2.2.2	2.2	Provide users with the ability to determine if Portal data is duplicative of other data.
2.2.3	2.3	Provide ability to query water quality data by data quality, including links to metadata that describes QA/QC.

2.3 Perform Assessments

For each assessment unit, the assessment team compares chemistry and/or biological monitoring data against state water quality standards (WQS) for each of the designated uses. The Level of Effort required for this activity is medium to high and varies by state depending on local capabilities for automating the comparison of monitoring data with state WQS. Many states indicated that they do not have the necessary resources to complete all of the assessments each cycle.

BP #3 – Perform Assessments		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.3.1	3.1	Provide the ability to determine data quality. Data must be of sufficient quality in order to be used for assessments.

BP #3 – Perform Assessments		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.3.2	3.2	Provide a way for states to determine if there is enough data available to make an assessment decision, per state specific requirements.
2.3.3	3.3	Review and compare water column data against state numeric criteria.
2.3.4	3.4	Ensure that any revisions/changes are date stamped and identified by person who made the changes.
2.3.5	3.5	Provide reports on changes to assessments sorted by who and when.
2.3.6	3.6	Data validation and/or automation for QA of assessment conclusions.
2.3.7	3.7	Capture the relevant data that was used to make the assessment.
2.3.8	3.8	Provide the functionality to allow states to prepare formal listing decisions.
2.3.9	3.9	Provide ability to share with EPA the background and supporting documentation for formal listing decisions.
2.3.10	3.10	Allow for batch upload of assessment conclusions.

2.4 Initial informal EPA/State consultation regarding state listing/delisting determinations

This is an optional step, in which some states let the EPA region review an informal draft IR and specifically the 303(d) list prior to the public review and the final submission. This process allows for input from the region before the public comment and formal IR submission.

BP #4 – Initial informal EPA/State consultation regarding state listing/delisting determinations		
Primary Actor = EPA/State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.4.1	4.1	Include as an option, the ability to share GIS information for AU ID – cause combination to be delisted. (*This had not been required in the past*).
2.4.2	4.2	Include delisting reasons for AU ID – cause combination to be delisted.
2.4.3	4.3	Provide the ability to report changes in use support. (*This may require a change to the data model.*)
2.4.4	4.4; 4.8; 4.9	Provide users with the ability to include other relevant data supporting a delisting decision, as well as other supporting documents (This may require a change to the data model).
2.4.5	4.5	Facilitate the informal sharing of information related to planned delistings.
2.4.6	4.6	Provide Assessment Unit (AU) information and causes.
2.4.7	4.7	Provide summaries of why an AU ID – cause combination is being delisted.

Note: In the requirements spreadsheet, requirements 4.4, 4.8, and 4.9 are duplicates, and have been combined under requirement number 2.4.4.

2.5 Input Assessment Conclusions in System, including 303(d) priority rankings and targets for TMDL development

For this business process, states input assessment conclusions into either the ADB or an alternative state assessment tracking system. Capabilities for this process vary depending upon the system used, but they generally provide QA, reporting, and tracking functions. The Level of Effort required for this activity is medium and often completed as part of the assessment process. The ADB does not have any ability to batch load this data without contractor support. Many states attempt to batch load this data on their own rather than entering it all by hand.

BP #5 – Input Assessment Conclusions in Database, including 303(d) priority rankings and targets for TMDL development		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.5.1	5.1	Data needs to be flagged as follows: preliminary, draft for public comment, and final. (*This may require a change to the data model.*)
2.5.2	5.2	Provide a date flag for each phase of the data and how the data changed through the process.
2.5.3	5.3	Provide security for water quality data loaded to new system. This may be necessary for individual waters, and could be driven by the data flag.
2.5.4	5.4	Provide the ability for states to make incremental updates via EN.
2.5.5	5.5	Maintain functionality that exists in the current ADB.
2.5.6	5.6	Performance must be steady even when multiple cycles have been loaded.
2.5.7	5.7	State and regional review of processed data should be as efficient as possible.
2.5.8	5.8	Changes in the data need to be tracked and documented.
2.5.9	5.9	Provide the ability to export 303(d) and other reporting data to Excel.
2.5.10	5.10	Provide flexibility in submitting data to ATTAINS.
2.5.11	5.11	The new database needs to support state 303(d) listing structure. For example, include the ability to list by state-defined watersheds not just NHD watersheds (i.e. add a data element that captures state watershed names).
2.5.12	5.12	Data entry should be as streamlined as possible.
2.5.13	5.13	Provide version control on data sets (there are current issues of version control with ADB through submittal and review process).
2.5.14	5.14	Previous cycles need to be benchmarked (not changeable after finalized), or initial report locked and then changes tracked.
2.5.15	5.15	Provide integration with GIS data (both via interface and spatial web services).
2.5.16	5.17	EPA public website should accurately reflect state data.
2.5.17	5.18	System must satisfy 303(d) and 305(b) reporting requirements

BP #5 – Input Assessment Conclusions in Database, including 303(d) priority rankings and targets for TMDL development		
Primary Actor = State		Data Availability = Private
Tracking #	**Tracking #**	
2.5.18	5.19	New System should support data validation (i.e. are pollutant flags being applied correctly? Was the correct cause applied for the impairment of the use? Have all AU-cause combinations been delisted with the correct TMDL IDs?).
2.5.19	5.20	Provide state users with the ability to enter assessment and use decisions.
2.5.20	5.21	Provide users with the ability to add/remove causes, sources, TMDLs.
2.5.21	5.22	Process of creating and tracking AUs should be streamlined.
2.5.22	5.23	Allow users to provide comments on assessment decisions, causes, and sources.
2.5.23	5.24	Make it easier to migrate data from prior cycles.
2.5.24	5.25	Provide users with the ability to manage user access (read; read/write)
2.5.25	5.26	The procedure/Structured Query Language (SQL) used to create a report should be transparent to the user.
2.5.26	5.27	All records should have a unique identifier that doesn't change especially look-up tables.
2.5.27	5.28	Make new system interactive and compatible with other state data systems.
2.5.28	5.29	Provide a spell check feature.
2.5.29	5.30	Provide ability to set mandatory fields. New system will clearly show which fields are mandatory.
2.5.30	5.31	Provide a summary statistics report.
2.5.31	5.32	Provide users with the ability to submit data via EN.
2.5.32	5.16; 5.33	Provide users with a batch upload function.
2.5.33	5.34	Provide user friendly prompts and/or errors if a required data element is missing.
2.5.34	5.35	Provide additional fields for supporting documentation (i.e. delisting or Best Professional Judgment [BPJ] documentation).
2.5.35	5.36	Multiple categorizations of AUs should be straight forward.
2.5.36	5.37	Provide users with the ability to capture administrative record information.
2.5.37	5.38	The new system should reflect the IR guidance, including required and optional data elements.
2.5.38	5.39	Provide users with an *AU Copy* function that allows users to copy uses, causes, and sources associated with an AU.
2.5.39	5.40	Provide users with the ability to open and edit the comment fields with a text editor.

BP #5 – Input Assessment Conclusions in Database, including 303(d) priority rankings and targets for TMDL development		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.5.40	5.41	Provide a Pop-up message if a method or cause code is being used for the first time. Also, provide a summary report on the number of times a cause has been used.
2.5.41	5.42	Provide a Pop-up message if a method or cause code is being used for the first time.
2.5.42	5.43	Provide a way for users to easily identify segments that have been updated vs. ones that have not been updated.
2.5.43	5.44	Provide users with a report of what AU/Use supports have changed from the previous cycle.
2.5.44	5.45	Provide a report that gives users a list of delistings. The user should be able to view the delisting table (AUID, cycle, cause delisted, delisting reason, comments) through the system's interface.
2.5.45	5.46	Provide the ability to produce a reporting for regional review (follow-up with Regions).
2.5.46	5.47	Provide references to the WQS, including the version of the WQS, or other applicable standard that was violated for a listed water.
2.5.47	5.48	Provide users with the ability to identify only one user with administrative access to the system.
2.5.48	N/A	Provide users with split/join features so that causes/sources/TMDL IDs can be transferred or combined to other AUIDs.
2.5.49	N/A	Lists of approved TMDLs should be instantly available so users can delist AU ID-causes at any time.

Note: In the requirements spreadsheet, requirements 5.16 and 5.33 are duplicates, and have been combined under requirement number 2.5.32

2.6 Prepare IR Draft

States prepare the IR report or separate 305(b) and 303(d) lists, using various means, including ADB, local state assessment tracking system, and other electronic documents. The Level of Effort required for this activity can be very high. The ADB and other local systems can help generate portions of the 303(d) and 305(b) reports but there is still considerable effort needed to add the narrative and explanation supporting the assessments.

BP #6 – Prepare IR Draft		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.6.1	6.1	The delisting report should identify: the category that the water was in, the year it was first listed and history before it was delisted. This would include individual AU/Cause history.
2.6.2	6.2	The attainment reports should show the prior category for an AU.
2.6.3	6.3	Provide users with a powerful query builder to allow for the creation of customizable reports.
2.6.4	6.4	The new system's Report module should provide clear information on how the reports are generated and which data elements are used.
2.6.5	6.5	Provide the ability to report on AU changes (splits, renames, etc.).
2.6.6	6.6	Provide the ability to report changes in AU category, use support, etc.
2.6.7	6.7; 6.8	Provide users with the ability to capture SP-12 success stories and generate a report.
2.6.8	6.9	Provide users with the ability to capture spending on Clean Water State Revolving Fund (SRF), 319 (linkage to GRTS), and Environmental Quality Incentives Program (EQIP, US Department of Agriculture (USDA) Farm Bill).
2.6.9	6.10	Provide reports from Public Water supply (PWS). For example, PWS compliance reports would include the number of PWS's in compliance vs. number of PWS's out of compliance.
2.6.10	6.11	Provide a way to report on Fish Kills, spills, Fish Advisories, etc.
2.6.11	6.12	Provide possible tie in with Groundwater data.
2.6.12	6.13	Provide the ability to run a Cost/Benefit Analysis.
2.6.13	6.14	The delisting report should show what causes were removed, and what other causes are still there. Also show the AU/use that the cause was associated with.
2.6.14	6.15	Delistings should preserve the causes that were associated with that AU, even if they no longer are impairing that use. This needs to be kept for historic reporting purposes.
2.6.15	6.16	The new system should track not just impairments, but also parameters that are fully supporting.
2.31.1	6.17	Provide state users with access to the back-end of the system.
2.6.16	N/A	Provide ability to generate tables/reports on AU IDs in each 305(b)/303(d) category by State watershed, including cause, pollutant flags, TMDLIDs/report numbers for category 4a, 4b, 4c, 5 or ability to create custom reports via back-end access to the system.

Note: In the requirements spreadsheet, requirements 6.7 and 6.8 are duplicates, and have been combined under requirement number 2.6.7

2.7 QA/QC of Assessment Conclusions

This BP refers to the State's internal process of reviewing assessment decisions and/or data entry into their own tracking systems. The Level of Effort required for this activity is Medium and can vary by state depending on review protocols.

BP #7 – QA/QC of Assessment Conclusions		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.7.1	N/A	Ability to query system for: 1) causes associated with each use, 2) causes and pollutant flags used in a given cycle (check for consistency in use of pollutant flag), 3) cause removals between cycles (were any delisting reasons not given?; were all pollutant causes properly delisted?).
2.7.2	N/A	Provide ability to query which uses are not supporting for each AU ID.
2.7.3	N/A	Check that causes/sources/TMDLIDs were transferred to split/joined AU IDs.
2.7.4	N/A	Provide check for AU ID class changes between cycles that may affect the inclusion/exclusion of uses and their assessment.

2.8 Public Comment on Draft IR

States are required to have a 30-day public comment period for the 303(d) list. Some states post all assessment and geospatial data while others only provide information on the category 5 waters. States may need to format data and develop delivery mechanism to make this information available for public comment. Note: this BP is optional for states.

BP #8 – Public Comment on Draft IR		
Primary Actor = State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.8.1	8.1	The new system should provide users with a way to manage public comment/review.
2.8.2	8.2	Public comment period should be variable to match a state's public review period.
2.8.3	8.3	Provide ability to export comments in a format that can be easily worked with in a word processor.
2.8.4	8.4	Ensure that comments would only be viewable by the state they are related to.
2.8.5	8.5	Using the system to capture public comments should be optional.
2.8.6	8.6	Provide ability to support multiple rounds of review.
2.8.7	8.7	*removed requirement and moved to BP# 15
2.8.8	8.8	Even if the system doesn't run the comment period, the comments could be uploaded to the system (similar to an FTP site).

BP #8 – Public Comment on Draft IR		
Primary Actor = State		Data Availability = Public
Tracking #	**Tracking #**	
2.8.9	8.9	New system should store final response to comments.
2.8.10	8.10	The website for the new system should be clear that the comment process is a state process and not federal.
2.8.11	8.11	New system should provide an option to allow for anonymous comments.
2.8.12	8.12	Constrain file size and types to specific types (txt, pdf, doc) and provide the ability to check for viruses, etc.

2.9 Review/QA IR Draft

This is an optional step in which a state may send a draft copy of the IR Report to a contractor for QA prior to the official submittal to the EPA region. This is only a data review; the 303(d) and/or narrative report are not reviewed. This optional review could help lower costs and effort for the EPA Region since it's more likely that the state will submit a complete initial submission.

BP #9 – Review/QA IR Draft		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.9.1	9.1	Data security should be such that state data are only viewable by state staff until the state flags that cycle as being ready for EPA viewing (at state discretion to share a preview draft). (*EPA will check with appropriate agencies to ensure that data marked as preliminary is not subject to Freedom of Information Act (FOIA) requests*).

2.10 Final Listing/Delisting Consultation

Some states need the ability to consult with the EPA Region on the draft 303(d) list prior to the official submittal of the IR Report.

BP #10 – Final Listing/Delisting Consultation		
Primary Actor = EPA/State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.10.1	10.1	Provide state users with the ability to consult with EPA on the draft 303(d) prior to official submittal.
2.10.2	10.2	Provide ability to communicate overall assessment methodology.
2.10.3	10.3	Provide ability to identify proposed delisting etc.

BP #10 – Final Listing/Delisting Consultation		
Primary Actor = EPA/State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.10.4	10.4	Provide ability to exchange any additional requested data.
2.10.5	10.5	Provide reports that identify changes from prior cycle.
2.10.6	10.6	Provide a GIS interface showing changes.

2.11 Incorporate/Resolve Comments

Any feedback from the internal, public, and contractor reviews are updated in the IR Report. Although the internal and contractor reviews are simply best practices, the public review process and resulting report modifications are required under the CWA.

BP #11 – Incorporate/Resolve Comments		
Primary Actor = State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.11.1	11.1	Provide States with the ability to develop responses to comments independently of the system and not have to share until complete.
2.11.2	11.2	Provide ability to capture changes that were made as a result of comments.
2.11.3	N/A	Provide ability to capture a Date stamp/initials of person addressing the public comment or EPA comments.

2.12 Submit Final IR to EPA Region

This business process is the official State submission of the final IR Report to the EPA Region. The official submission due date is April 1st of every even numbered year.

BP #12 – Submit Final IR to EPA Region		
Primary Actor = State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.12.1	12.1	Provide the ability for states to do incremental updates.
2.12.2	12.2	Allow EN users with the ability to flag the data as final.
2.12.3	12.3	Provide formal date stamping on submittal date as final.
2.12.4	12.4	Provide a report that allows users to see changes between draft lists and final, including the various 'record' stages.
2.12.5	12.5	The new system should lock 'copies' of the data at specific points in the process as 'official records'. This would include Public review draft, official state submittal, and final approval.

BP #12 – Submit Final IR to EPA Region		
Primary Actor = State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.12.6	12.6	New system should use WQX as a model to follow in terms of functionality, error reporting, etc.
2.12.7	12.7	Provide outbound services to give EPA-added data back to the state.
2.12.8	12.8	Provide ability to manage data coming from EN and direct data entry.
2.12.9	12.9	Provide ability to retrieve TMDL IDs as a web service that would return the listed water, pollutant, etc. and approval status.
2.12.10	12.10	New system should provide notifications to EPA Region when a submittal or status has changed.
2.12.11	12.11	Verify that EPA's Cross-Media Electronic Reporting Regulation (CROMERR) is fulfilled by state node submittal (including discussion on delegated authorities for sign off on final).

2.13 Receive and Review IR/Add Impaired Waters

This business process is when the EPA Region receives and reviews the initial IR Report from State. Where needed, the Region will work with the state to resolve any issues in the report or supporting information. If the region identifies any additional waters that should be identified as impaired, they will notify the state and then add them to the 303(d) list.

BP #13 – Receive and Review IR/Add Impaired Waters		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.13.1	13.1	The new system will maintain Approval letters, etc. as part of the official administrative record.
2.13.2	13.2	Provide ability to compare against draft and prior lists and report on changes.
2.13.3	13.3	Provide users with the ability to look at overall impaired waters (4A,4B, 4C, and 5).
2.13.4	13.4	Provide ability to review Assessment Methodology.
2.13.5	13.5	New system will allow users to see reasoning for changes that were made from draft to final.
2.13.6	13.6	Provide EPA with the ability to add flags and comments on the list in the system (should be for draft as well).
2.13.7	13.7	New system should ensure that added waters and causes of impairment are easily identified.
2.13.8	13.8	New system needs to be able to handle deferred listing approval decision for individual waters/causes. These waters should maintain their most recent status.

BP #13 – Receive and Review IR/Add Impaired Waters		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.13.9	13.9	New system will be able to capture partial approval/partial disapproval.
2.13.10	13.10	Provide users with the ability to query the system and export the data for summary reports that support the decision document as part of EPA's review.
2.13.11	N/A	Provide uses with the ability to reconcile EPA added waters with the state's AU ID numbering system, naming conventions, and georeferencing scheme.

2.14 Respond to Comments and Questions

After the EPA Region has reviewed the initial IR Report submittal, the state works with the Region to answer questions, provide supporting data, and justify assessment decisions.

BP #14 – Respond to Comments and Questions		
Primary Actor = State		Data Availability = Public/Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.14.1	14.1	The new system should facilitate phone and email discussion between EPA and states.
2.14.2	14.2	The new system should incorporate comments and flags that EPA has on the list as part of the discussion with the state. It should also create a report of these comments.
2.14.3	14.3	The new system will put comments on the list as part of the official record.
2.14.4	14.4	The new system could create two levels of comments: clarification vs. official public record.
2.14.5	14.5	Provide users with the ability to clarify which comments are public (or part of the administrative record) and which are not.
2.14.6	14.6	New system should provide both overall comments and waterbody/ pollutant specific comments.

2.15 If waters added to IR list, additional 30-day Public Review

If EPA Regional personnel identify additional waters that should be listed, they can add them to the impaired waters list (303(d) report). Regions only modify the 303(d) report by listing additional water bodies, not by delisting impairments identified by the state. In most cases, the Region can resolve listing issues with the state and the state updates the 303(d) report, not the region.

If the region adds any impairment to the 303(d) list they are required to re-post the added waters for an additional 30-day public comment period.

BP #15 – If waters added to IR list, additional 30-day Public Review		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.15.1	15.1	Provide users with the ability to easily identify the waters that are being added with reports that make it easy to put out for public notice.
2.15.2	15.2	Provide users with the ability to upload the public notice.
2.15.3	15.3	Users should be able to use the ATTAINS system to provide a report for the public on waters added to the state's list.
2.15.4	8.7	EPA would also be able to put waters out for review.

2.16 EPA Responds to Comments and Questions on EPA Added Waters

The EPA Regions need to respond to public comments and questions on the new listings in the 303(d) report. Any feedback from the public review is updated in the IR Report.

BP #16 – EPA Responds to Comments and Questions on EPA Added Waters		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.16.1	16.1	Provide users with the ability to upload response to comments, summary of comments, and comment documents to correspond with the specific list.

2.17 Finalize IR Report

EPA Regional personnel give final approval to the IR and send to EPA HQ for publishing the final IR on the public ATTAINS website.

BP #17 – Finalize IR Report		
Primary Actor = EPA/State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.17.1	17.1	New system should capture all final decision documents.
2.17.2	17.2	New system should capture partial approval/disapproval decision letters.
2.17.3	17.3	New system should capture supporting documents at different stages.
2.17.4	17.4	Allow state users the ability to provide IR Report addendums.
2.17.5	17.5	New system may be able to publish 305(b) conclusions while state is waiting on a 303(d) approval.
2.17.6	17.6	The new system should show the status of the list during the review process, including information on waters that are being added to the list by EPA.

BP #17 – Finalize IR Report		
Primary Actor = EPA/State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.17.7	17.7	The new system should allow for display of 'provisional' data to the public.
2.17.8	17.8	The new system should be able to capture changes that are made.
2.17.9	17.9	The new system should allow for easy publishing of data to public site.
2.17.10	17.10	Allow state users the ability to determine when a dataset can be made available on the public site.
2.17.11	17.11	Provide ability for users to allow for list 'status' at both the waterbody/pollutant level and list level.
2.17.12	17.12	The new system should include deferred waters in summary reports.
2.17.13	17.13	Provide users with the ability to query the system and export the data to go into the final paper IR report.
2.17.14	N/A	The new system should capture the EPA approval letters.

2.18 Provide Final GIS Data

For this business process, the states validate and geographically index the IR data. States use a variety of hydrographic data layers (e.g. NHD) and various scales to provide GIS data. Although the IR Guidance memo suggest states use NHD to satisfy this requirement, states are allowed to use any data layers they deem appropriate.

BP #18 – Provide Final GIS Data		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.18.1	18.1	The EPA should define which columns are necessary for state GIS data (AU ID, etc.).
2.18.2	18.2	Provide ability to capture metadata on GIS coverages.
2.18.3	18.3	GIS data should be incorporated into the Sandbox[1].
2.18.4	18.4	Allow user to use the GIS data to show cycle to cycle information for AUs.
2.18.5	18.5	Provide a report and GIS display of waters that have changed status (IR Category). For example category 5 to 2; including individual changes in use support or new impairments.
2.18.6	18.6	Provide a report and GIS display of waters that are newly listed.
2.18.7	18.7	Show a map for specific causes/pollutants and/or use support.
2.18.8	18.8	Show priority areas identified by states.
2.18.9	18.9	Allow for ability to show the extent of TMDL areas.

[1] The sandbox is the 'private' EPA/state only part of the system.

BP #18 – Provide Final GIS Data		
Primary Actor = State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.18.10	18.10	Provide the ability for states to submit correction via new or updated shapefiles.
2.18.11	18.11	Show approval status for impaired waters.
2.18.12	18.12	Show catchments that are being counted toward measures.
2.18.13	18.13	Provide a location in the Sandbox for states to upload shapefiles for GIS (workgroup suggested using a FTP site).
2.18.14	N/A	Provide links to State GIS data sets on external web pages and to State IR web mapping tools.

2.19 Processing of GIS Data

States provide GIS data in a variety of formats. EPA utilizes contractor support to migrate the GIS materials to a format that meets the needs of the national repository, the Reach Address Database (RAD). For the new system, an EPA contractor will process the state's GIS data using NHDPlus catchments.

BP #19 – Processing of GIS Data		
Primary Actor = EPA		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.19.1	19.1	Provide automated process with manual QA by EPA. Data can then be uploaded to the Sandbox.
2.19.2	19.2	Provide users with a report on missing AUs.
2.19.3	19.3	Provide users with a report on AUs that couldn't be processed.
2.19.4	19.4	Provide documentation on the automated process so that it could be shared with states.

2.20 Verify Display of IR Data

Once the IR data is migrated to formats compatible with EPA's national systems, the data is made available to the states for review.

BP #20 – Verify Display of IR Data		
Primary Actor = EPA/State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.20.1	20.1	Provide the ability to correct the catchment associations with AUs.

2.21 Make Final IR Report Public

The final IR report is made public after the states and EPA have reviewed and agreed on the final product.

BP #21 – Make Final IR Report Public		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.21.1	21.1	The new website should retain the functionality of the current public ATTAINS website.
2.21.2	21.2	New system should be integrated with other CWA data (monitoring, National Aquatic Resources Survey (NARS), state survey, 319, etc.).
2.21.3	21.3	The new system should be properly caveated so that the public doesn't assume that the STORET data contains all the data used in the assessment.
2.21.4	21.4	The new system should be able to distinguish between state-wide conclusions and other conclusions.
2.21.5	21.5	Provide a question based web-interface for the public (similar to the queries in Ask Waters).
2.21.6	21.6	Provide ability to show partial approvals, etc.
2.21.7	21.7	Provide ability to show decision documents (303(d), TMDL, etc.).
2.21.8	21.8	Provide ability to display/show measures.
2.21.9	21.9	New system should be integrated with the Public ATTAINS so that it's very easy to publish data as final.
2.21.10	21.10	Provide ability for users to link to state websites for more information.
2.21.11	21.11	Provide ability for users to link to federal register notices.
2.21.12	21.12	Provide a robust help document for users of the website.
2.21.13	21.13	Provide plain English definitions of terms.
2.21.14	21.14	Provide ability to include disclaimers for example "the state has the official copy of record", etc.

2.22 Produce Report to Congress

EPA uses the 303(d) and 305(b) data and narrative reports to produce the biennial report to congress. The National Water Quality Inventory Report to Congress (305(b) report) is the primary vehicle for informing Congress and the public about general water quality conditions in the United States. This document characterizes the Nation's water quality, identifies widespread water quality problems of national significance, and describes various programs implemented to restore and protect the Nation's waters.

BP #22 – Produce Report to Congress		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.22.1	22.1	For the new system, ATTAINS will become the Report to Congress.
2.22.2	22.2	Provide the ability for states to review the final numbers before the Report to Congress is released.

Note: Reporting by catchments and/or using both catchments and miles/acres for reporting will be explored by EPA.

2.23 Calculate and Report Measures

The EPA Regions have the responsibility to calculate and report on measures for their states.

BP #23 – Calculate and Report Measures		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.23.1	23.1	The process of calculating measures should be automated, seamless, and transparent.
2.23.2	23.2	States should be able to see how their data rolls up to measures prior to final submission.
2.23.3	23.3	Measures should be able to be displayed using GIS.
2.23.4	23.4	The new system should be very clear on how a measure is calculated as well as the definition.
2.23.5	23.5	Provide documentation on how the data and data elements trigger various measures.
2.23.6	23.6	The new system needs to provide a clear statement of baseline.
2.23.7	23.7	Provide ability to report measures on an annual cycle (need to be able report at the appropriate time period for the measure).

2.24 Provide Plans for TMDL and Alternatives Development

State personnel identify water bodies for TMDL development. This is not simply selecting the top items on the prioritized 303(d) list. For example, one TMDL may cover one or more of the 303(d) waters. Likewise, a single TMDL may not address all pollutants or causes of impairment for the 303(d) water.

BP #24 – Provide Plans for TMDL and Alternatives Development		
Primary Actor = State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.24.1	24.1	Provide the ability for the EPA Regions to enter this information as they're working with the states on TMDL development.
2.24.2	24.2	Provide the ability to control what's visible through the ATTAINS web site. However, if this is to be used for the measure, it would need to public. (see 24.3)
2.24.3	24.3	Provide users with the ability to link to state public affairs website for full information.
2.24.4	24.4	Provide states with the ability to enter this information as an option.

2.25 Review TMDL Development Plans

EPA regional personnel review the state TMDL development plans for the year.

BP #25 – Review TMDL Development Plans		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.25.1	25.1	Provide the ability to review public notice review version.
2.25.2	25.2	Provide the ability to see all related documents.

2.26 Develop TMDLs

State programs develop TMDLs. TMDLs set the standard levels, or allocated waste loads allowed, and assign reductions to specific point and non-point sources.

BP #26 – Develop TMDLs		
Primary Actor = EPA/State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.26.1	26.1	System will not be used in developing TMDLs.
2.26.2	26.2	Provide ability to use GIS materials in the new ATTAINS system to create maps that show the location of waters that TMDLs maybe be developed for.

2.27 Enter TMDLs in System

The EPA Regional personnel are responsible for entering TMDLs into the NTTS; however, under the new system, states will have the option to enter TMDL information if they so choose.

BP #27 – Enter TMDLs in System		
Primary Actor = EPA/State		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.27.1	27.1	Provide the ability to submit TMDLs electronically.
2.27.2	27.2	Provide the ability to exchange TMDL data from the state to EPA via the EN.
2.27.3	27.3	Provide the ability to exchange TMDL data entered by the Region with the state via the EN using web services.
2.27.4	27.4	Provide the ability for either states or Regions to enter TMDLs into the system.
2.27.5	27.5	Provide batch upload capability for TMDL information (i.e. excel).
2.27.6	27.6	New system should retain the current functionality of the NTTS.

2.28 Review and Approve TMDLs

EPA Regions have to review and approve the TMDLs developed by their states.

BP #28 – Review and Approve TMDLs		
Primary Actor = EPA		Data Availability = Private
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.28.1	28.1	New system should retain the current functionality of NTTS.
2.28.2	28.2	New system should automatically send a notification to the state upon approval of a TMDL.
2.28.3	28.3	Develop approval letters based on a template that can be modified by the region.
2.28.4	28.4	The new system should maintain the entire decision record on a TMDL.
2.28.5	28.5	Provide EPA Regions with the ability to upload additional documents that would be part of the administrative record.

2.29 Make TMDL Information Public

After the TMDL is reviewed and approved by the EPA Region, it is made available to the public.

BP #29 – Make TMDL Information Public		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.29.1	29.1	The new system will make TMDL information and TMDL documents publicly available.
2.29.2	29.2	The new system will allow EPA Regions to decide which supporting documents are publicly available and which are internal only.

BP #29 – Make TMDL Information Public		
Primary Actor = EPA		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.29.3	29.3	Provide ability to link to state documentation (i.e. TMDL document).
2.29.4	29.4	Provide the ability to show the extent on a map of the TMDL if that information is available: either the waters covered by the TMDL or the actual extent of the TMDL.

2.30 Develop State Assessment Methodologies

States develop assessment methodologies to guide the process of collecting water quality data for assessment purposes. The assessment methodologies are sometimes included in the IR Report that is submitted to EPA, but sometimes this information is kept separate. The system may not have a role in tracking state assessment methodologies.

BP #30 – Develop State Assessment Methodologies		
Primary Actor = State		Data Availability = Public
Requirement Tracking #	**Spreadsheet Tracking #**	
		No requirements were identified by the workgroup for this BP.

2.31 Other Requirements

This section provides additional requirements identified by the workgroup that are not covered in the other business processes.

BP #31 – Other Requirements		
Primary Actor = EPA/State		Data Availability = N/A
Requirement Tracking #	**Spreadsheet Tracking #**	**Requirement**
2.31.1		*Moved requirement to BP #6 table.
2.31.2	31.2	Provide ability to capture state statistical survey data similar to ATTAINS web-express.
2.31.3	31.3	Provide ability to copy forward prior statistical survey data.
2.31.4	31.4	Provide ability to derive priority areas from state data.
2.31.5	N/A	System should track state user logins and email addresses, and periodically verifying those ids and email addresses.

Appendix A

Meeting Minutes

Discussion for the workgroup was captured in the requirements spreadsheet. The workgroup met on the following dates. Conference calls were limited to 90 minutes.

1. November 12, 2013
2. February 20, 2014
3. March 13, 2014
4. March 27, 2014
5. April 10, 2014
6. April 24, 2014
7. May 8, 2014
8. May 22, 2014
9. June 5, 2014

Appendix B

State Management of Assessment Decisions for CWA Reporting.

In order to better understand how States manage and report to EPA their assessment decisions under CWA Sections 305(b) and 303(d) a short list of questions was sent to the states to gather this information. The list of questions sent to the state along with state responses is provided in this appendix.

List of questions:

1) Does your State use the EPA distributed Assessment Database (ADB)?
   a. Yes
   b. No

2) How does your State use the ADB? (If you answered No to Q1, go to Q3)
   a. To manage water quality assessment decision data for State purposes, and to report water quality assessment decision data to EPA
   b. Only to report water quality assessment decision data to EPA, and use in-house database to manage data
   c. Other (please specify):

3) If your State does not use the EPA distributed ADB, how does your State manage and report to EPA water quality assessment decision data. Please explain:

4) How does your State enter water quality assessment decision data into either the EPA distributed ADB or State assessment database? Please explain:

5) What challenges does your State face in preparing or reviewing water quality assessment decision data for submission to EPA? Please explain:

6) Are there any other thoughts or comments you have on water quality assessment decision data managing and reporting that were not covered that you would like to share? Please explain:

Respond to the following questions only if your State has received an Exchange Network Grant for either the OWIR-ATT flow or NHD_Event flow.

1) For which ATTAINS data flow component did you receive an Exchange Network Grant?
   a. OWIR-ATT flow
   b. NHD_Event flow
   c. Both OWIR-ATT and NHD_Event flows

2) What is the status of the grant project(s)? Please explain:

Appendix C

Draft Conceptual Diagram for ATTAINS Re-design