Ecological Data Analysis System
EDAS2
System Overview

STORET\WQX User's Conference

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What is EDAS2

- A relational database for aquatic environmental data that mirrors WQX core data categories and data standards
- An extensible, web-based application including:
  - Data entry, import, validation, analysis, and reporting
  - Tools for analyzing biological data collected as part of surface water sampling methods
  - Tools for import and export of data from and to EPA's Water Quality Exchange (WQX)

EDAS2

High level process overview

Surface Water Monitoring
- Streams/Rivers
- Lakes
- Wetlands
- Estuaries

EDAS2 WQX

Data Storage
- Relational Database Management Systems (RDMS)

Web-Based Assessment Tools

Data Analysis
- Metric Calculations
- Biological Indices
- Environmental Summaries
- Custom Assessment Tools

MONITORING REPORT

Reporting

Collection → Management → Analysis → Reporting

EDAS2

- Data Model Goals:
  - To use the WQX data standards as the EDAS2 data standards
    - Standard or common names and data types for the data elements
    - Minimizes the effort needed to receive or flow data to CDX - WQX
  - To be flexible and incorporate an organization's specific requirements into EDAS2
    - Allows states, tribes, and municipalities to incorporate unique information
    - Organizational specific data elements including data elements for sampling protocols, equipment tracking, personnel information, and unique biological and environmental variables

EDAS2
Primary Data Categories

Projects
- Project Name
- Project Description
- Project Documents

Organization
- Org. Description
- Org. Location

Activities
- Activity Description
- Activity Location
- Sample Description
- Sample Preparation
- Subsample Description
- QA\QC

Monitoring Locations
- Location Identity
- Location Description
- Location Geospatial

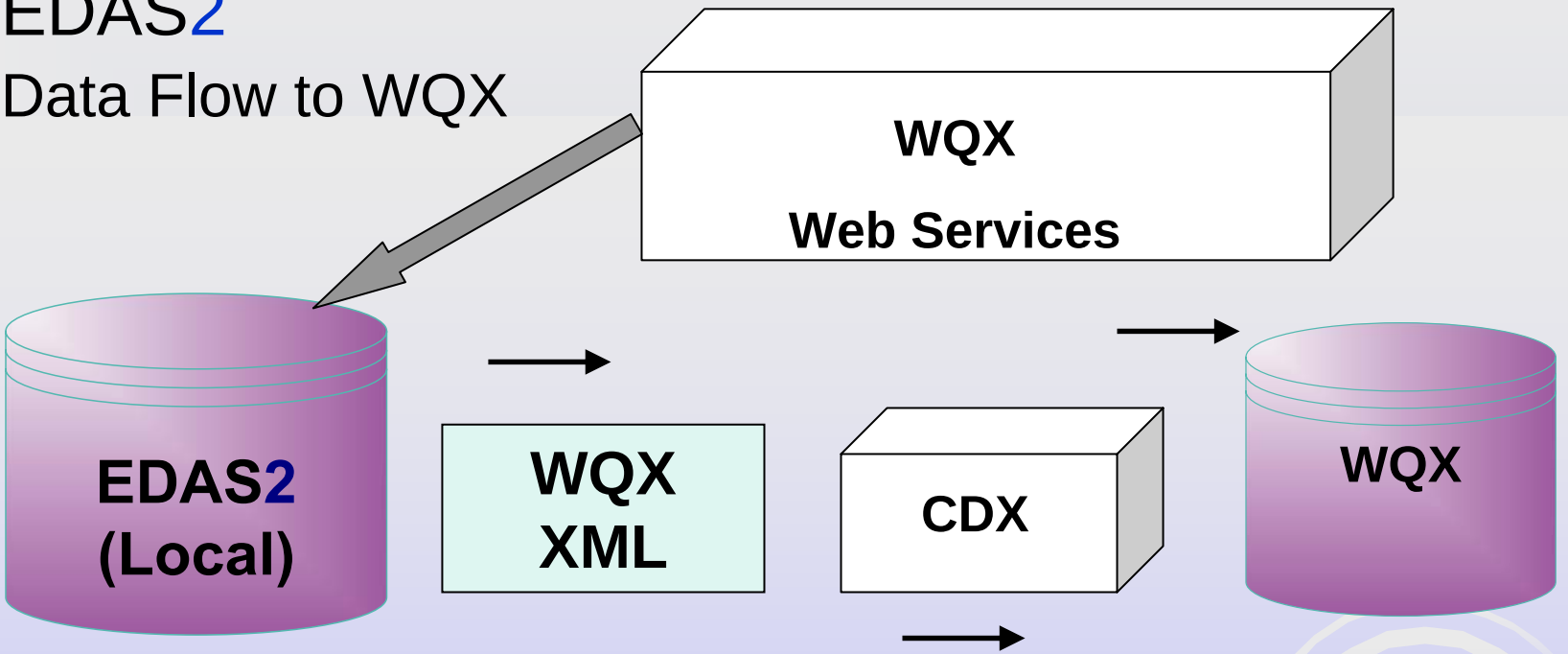
Results
- Result Description
- Result Analytical Method
- Result Lab Info
- Lab Sample Prep
- Lab QA\QC

EDAS2 Data Categories based on:

- WQX Data Standards
- Environmental Sampling, Analysis, and Results (ESAR) categories

EDAS2

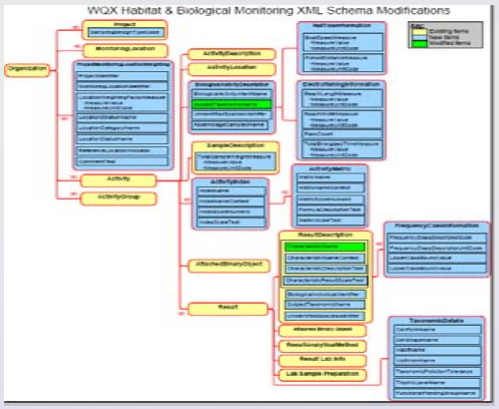
Data Flow to WQX



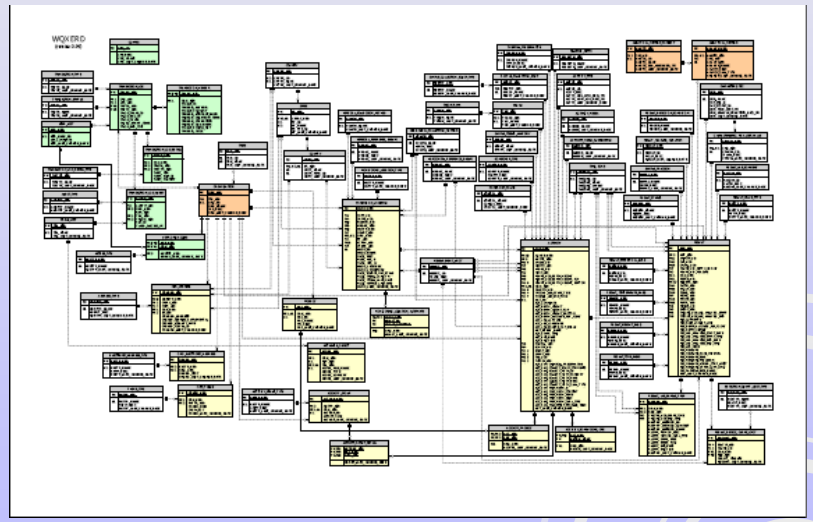
Adopting WQX data standards minimizes the effort needed to flow data from EDAS2 to CDX – WQX or to EDAS2 via web services

Local EDAS2 → Export as XML → CDX → WQX → STORET

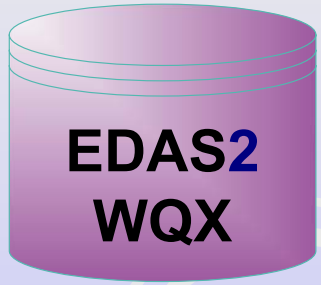
EDAS2
Based on WQX data standards



WQX Habitat and Biological Monitoring Schema



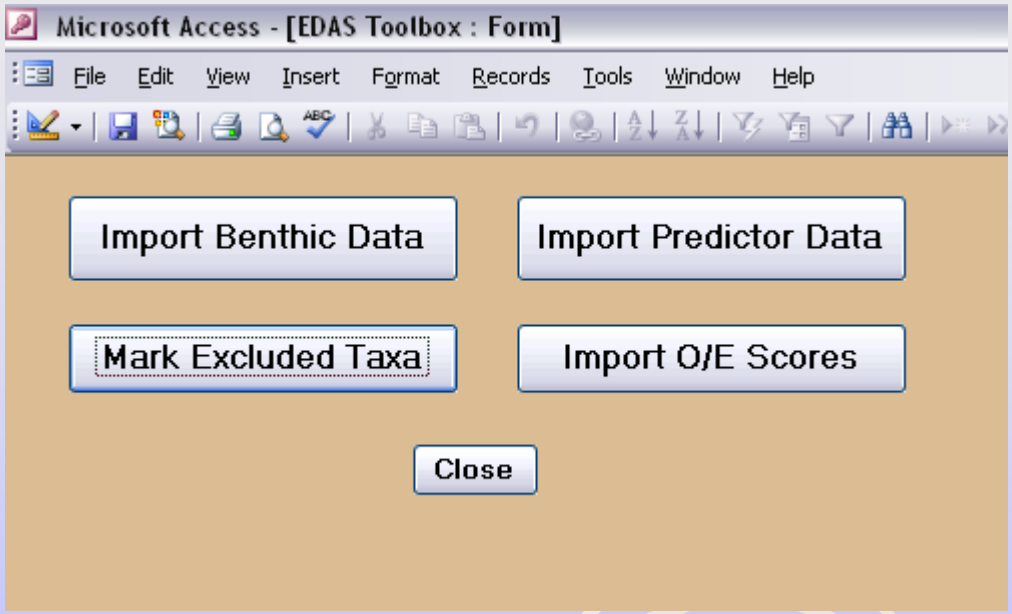
WQX Entity Relationship Diagram (ERD)



Goal: To use the WQX data standards as the EDAS2 data standards

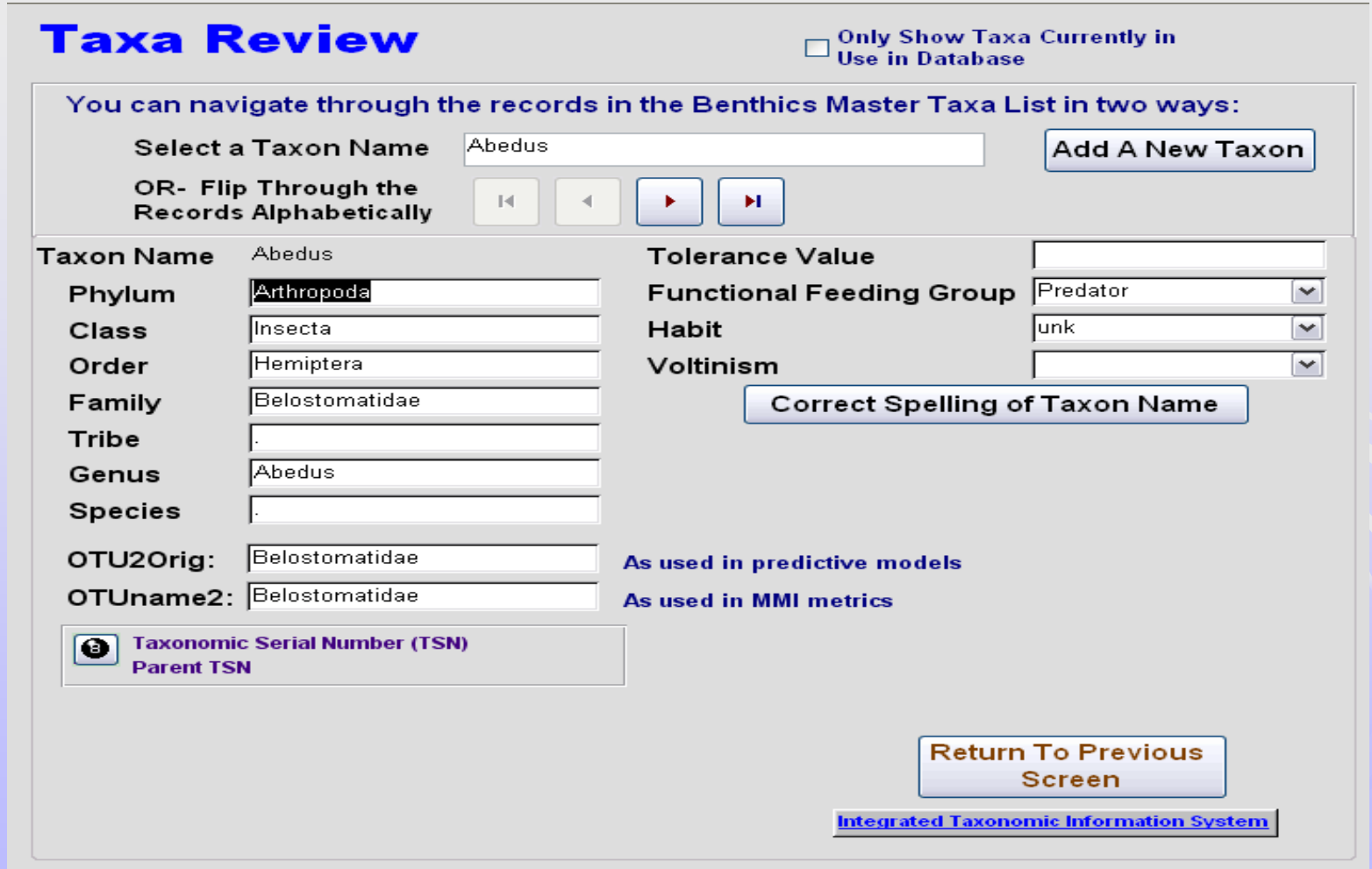
EDAS2

Examples of Organization Specific EDAS features



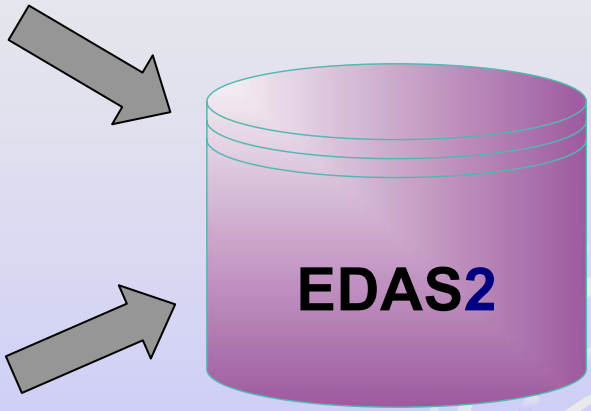
EDAS2

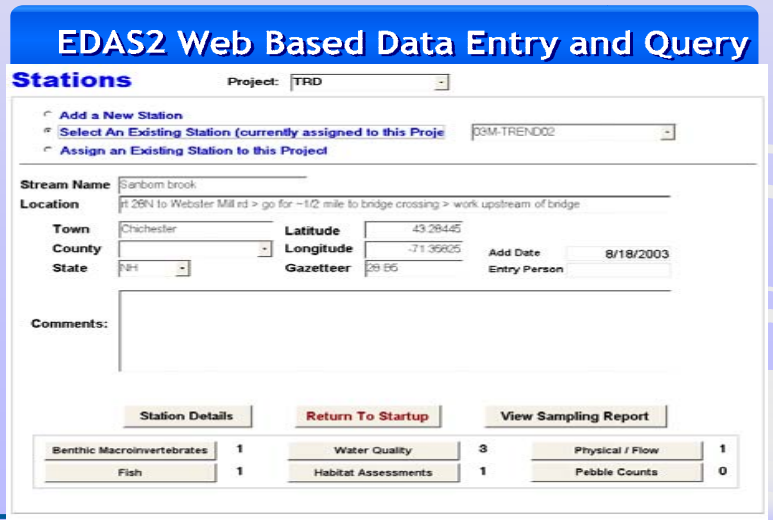
Examples of Organization Specific EDAS features



EDAS2
Data Input

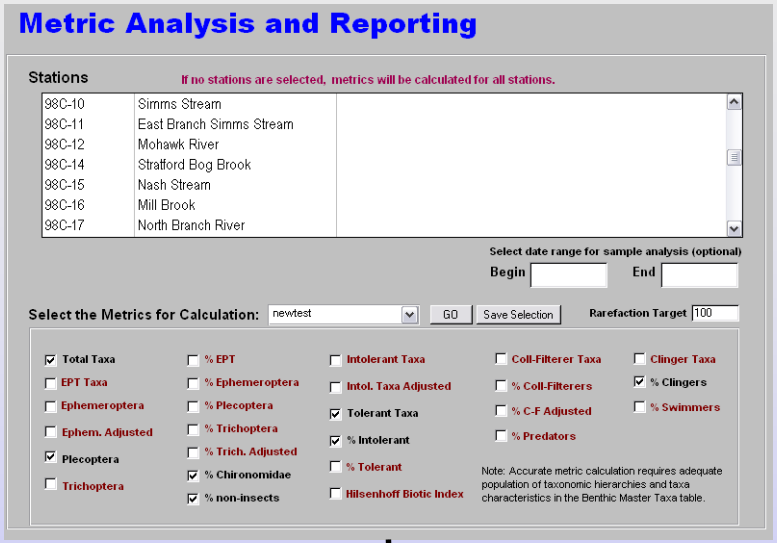
- Supported Data Formats
  - Laboratory Information Systems (LIMS)
  - XML, Web Services, WQX
  - Field Probes (Hydrolab, YSI)
  - Flat files
  - EDAS



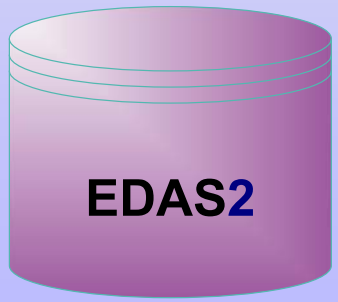


EDAS2
Analytical Tools

- Web or browser based user interface
- Analysis tools for calculating a wide selection biological and physical habitat metrics and indices



Download Formatted Reports and Tabular Data (IBIs, Master Taxa, etc)

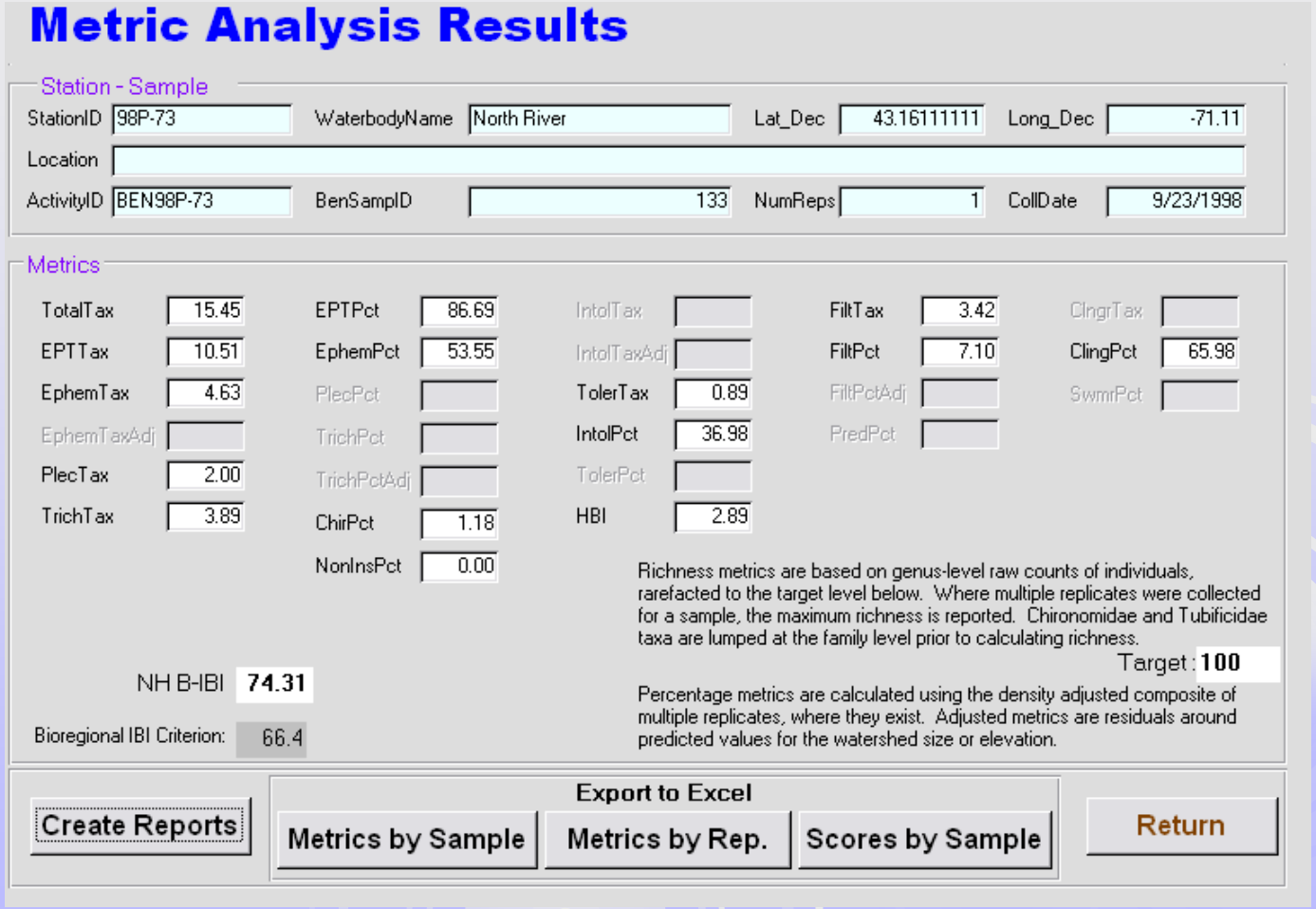


Web-Based Assessment Tools

- Biological/Habitat Indices
- Chemical/Physical Exceedances
- Reporting
- GIS Integration

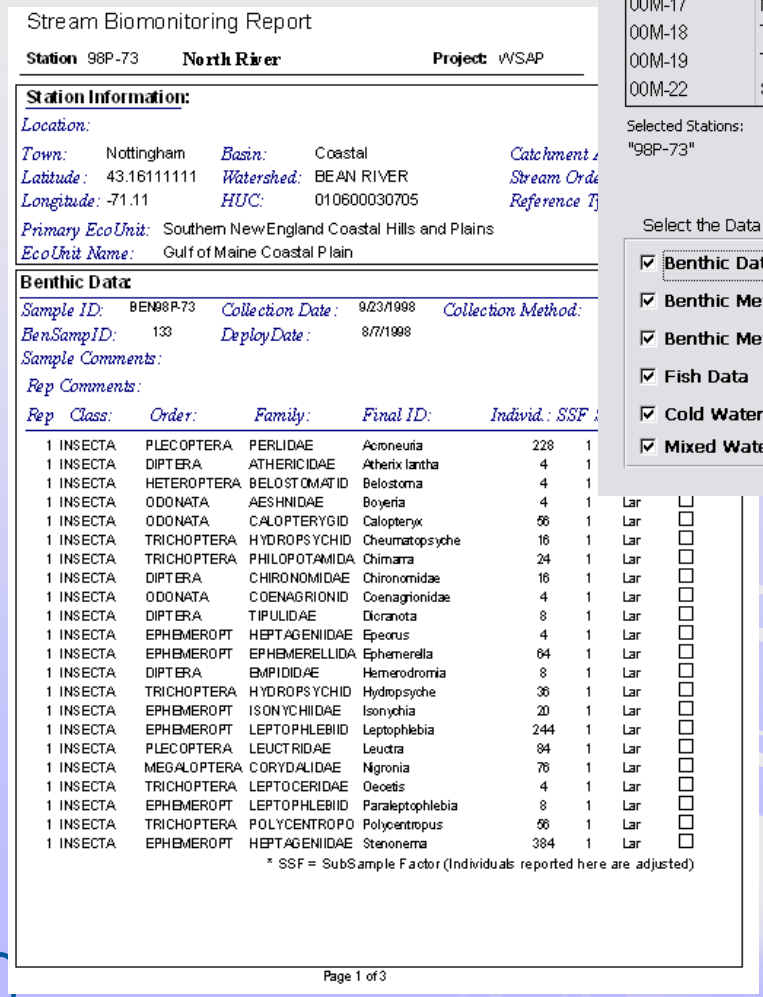
Reporting

EDAS2
Analytical Tools



Metric values calculated by EDAS

EDAS2 Reporting Tools



Stream Biomonitoring Report

Station 98P-73 **North River** **Project:** WSAP

Station Information:

Location:

Town: Nottingham *Basin:* Coastal *Catchment*

Latitude: 43.16111111 *Watershed:* BEAN RIVER *Stream Orde*

Longitude: -71.11 *HUC:* 010600030705 *Reference T*

Primary EcoUnit: Southern New England Coastal Hills and Plains

EcoUnit Name: Gulf of Maine Coastal Plain

Benthic Data:

Sample ID: BEN98P-73 *Collection Date:* 9/23/1998 *Collection Method:*

BenSampID: 133 *DeployDate:* 8/7/1998

Sample Comments:

Rep Comments:

Rep	Class:	Order:	Family:	Final ID:	Individ.:	SSF	
1	INSECTA	PLECOPTERA	PERLIDAE	Acroneuria	228	1	
1	INSECTA	DIPTERA	ATHERICIDAE	Atherix lantha	4	1	
1	INSECTA	HETEROPTERA	BELOSTOMATID	Belostoma	4	1	
1	INSECTA	ODONATA	AESHNIDAE	Boyeria	4	1	Lar
1	INSECTA	ODONATA	CALOPTERYGID	Calopteryx	56	1	Lar
1	INSECTA	TRICHOPTERA	HYDROPSYCHID	Cheumatopsyche	16	1	Lar
1	INSECTA	TRICHOPTERA	PHILOPOTAMIDA	Chimarra	24	1	Lar
1	INSECTA	DIPTERA	CHIRONOMIDAE	Chironomidae	16	1	Lar
1	INSECTA	ODONATA	COENAGRIONID	Coenagrionidae	4	1	Lar
1	INSECTA	DIPTERA	TIPULIDAE	Dicranota	8	1	Lar
1	INSECTA	EPHEMEROPT	HEPTAGENIDAE	Epeorus	4	1	Lar
1	INSECTA	EPHEMEROPT	EPHEMERELLIDA	Ephemerella	64	1	Lar
1	INSECTA	DIPTERA	EMPIDIDAE	Hemerodromia	8	1	Lar
1	INSECTA	TRICHOPTERA	HYDROPSYCHID	Hydropsyche	36	1	Lar
1	INSECTA	EPHEMEROPT	ISONYCHIIDAE	Isonychia	20	1	Lar
1	INSECTA	EPHEMEROPT	LEPTOPHLEBIID	Leptophlebia	244	1	Lar
1	INSECTA	PLECOPTERA	LEUCTRIDAE	Leuctra	84	1	Lar
1	INSECTA	MEGALOPTERA	CORYDALIDAE	Nigronia	76	1	Lar
1	INSECTA	TRICHOPTERA	LEPTOCERIDAE	Oecetis	4	1	Lar
1	INSECTA	EPHEMEROPT	LEPTOPHLEBIID	Paraleptophlebia	8	1	Lar
1	INSECTA	TRICHOPTERA	POLYCENTROPO	Polycentropus	56	1	Lar
1	INSECTA	EPHEMEROPT	HEPTAGENIDAE	Stenonema	384	1	Lar

* SSF = SubSample Factor (Individuals reported here are adjusted)

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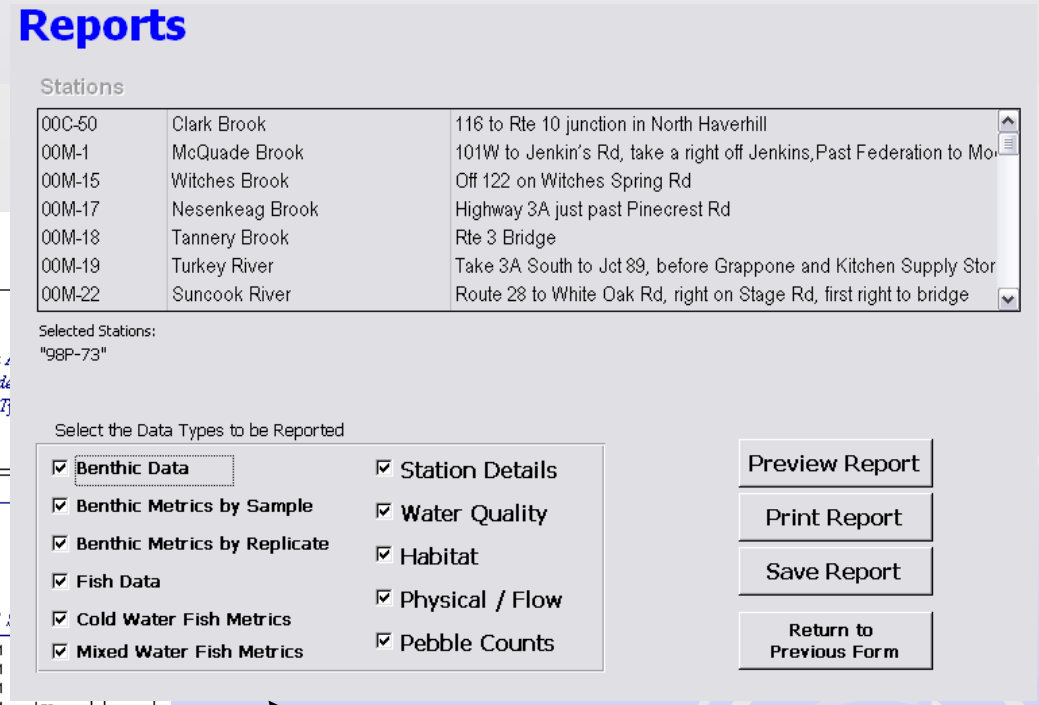


Reports

Stations

00C-50	Clark Brook	116 to Rte 10 junction in North Haverhill
00M-1	McQuade Brook	101W to Jenkin's Rd, take a right off Jenkins,Past Federation to Mo
00M-15	Witches Brook	Off 122 on Witches Spring Rd
00M-17	Nesenkeag Brook	Highway 3A just past Pinecrest Rd
00M-18	Tannery Brook	Rte 3 Bridge
00M-19	Turkey River	Take 3A South to Jct 89, before Grappone and Kitchen Supply Stor
00M-22	Suncook River	Route 28 to White Oak Rd, right on Stage Rd, first right to bridge

Selected Stations:
"98P-73"

Select the Data Types to be Reported

- ☑ Benthic Data
- ☑ Benthic Metrics by Sample
- ☑ Benthic Metrics by Replicate
- ☑ Fish Data
- ☑ Cold Water Fish Metrics
- ☑ Mixed Water Fish Metrics
- ☑ Station Details
- ☑ Water Quality
- ☑ Habitat
- ☑ Physical / Flow
- ☑ Pebble Counts

Preview Report

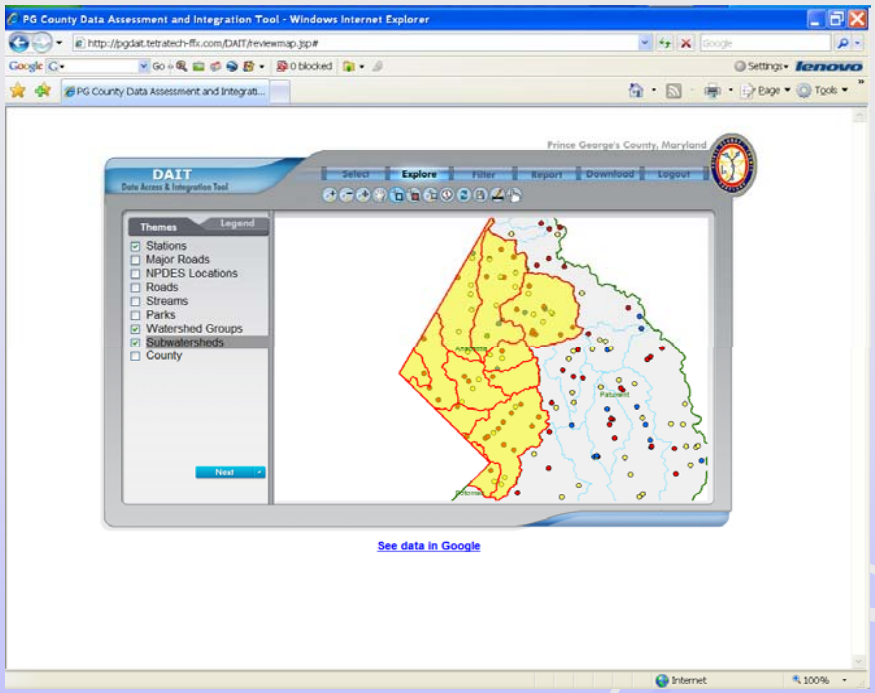
Print Report

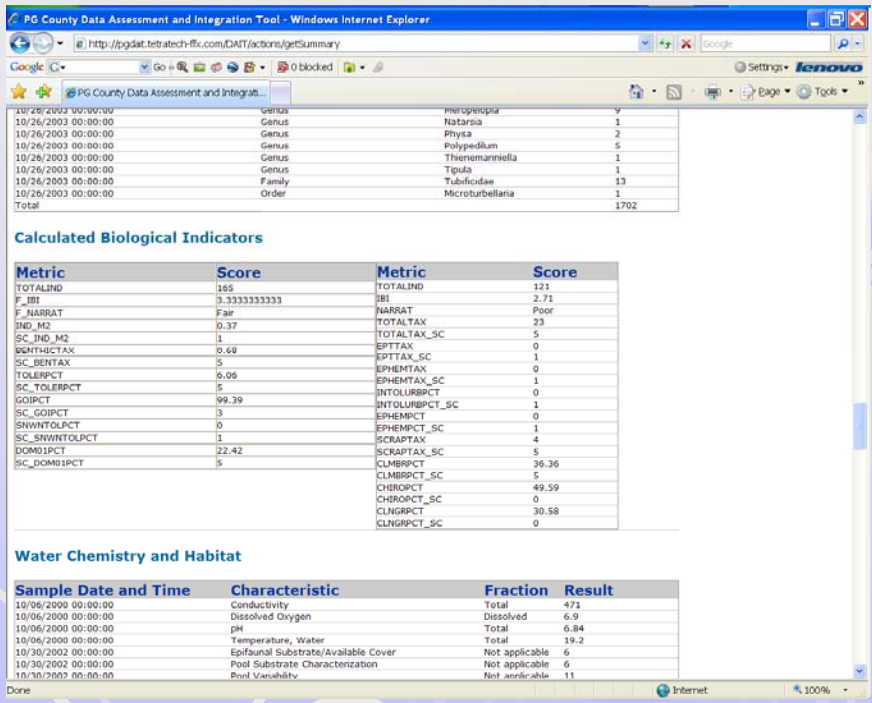
Save Report

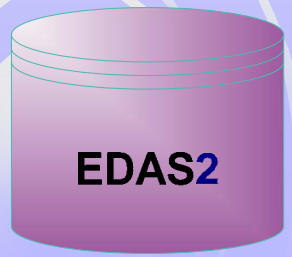
Return to Previous Form

A wide selection of reports are available

EDAS2
Web Based Data and Map Viewer







EDAS2
Next Steps

- Incorporate finalized Biological and Habitat data elements from the EPA STORET\WQX team
- Complete the core EDAS2 beta version
- Work has begun on screen mockups
- Interested in several organizations testing the beta version if EDAS2

EDAS2

Initial mock-ups of the interface has begun

Save Changes | Add Station | Cancel Changes | Delete Selected

Monitoring Locations

Select	MLOC_ID	ML Name	MLOC Type	County	HUC	Latitude	Longitude	More
☐	Mon Loc ID	abc	MLOC Type	County Name	HUC ID	Lat DD	Long DD	More Info.
☐	Mon Loc ID	abc	MLOC Type	County Name	HUC ID	Lat DD	Long DD	More Info.
☐	Mon Loc ID	abc	MLOC Type	County Name	HUC ID	Lat DD	Long DD	More Info.
☐	Mon Loc ID	abc	MLOC Type	County Name	HUC ID	Lat DD	Long DD	More Info.
☐	Mon Loc ID	abc	MLOC Type	County Name	HUC ID	Lat DD	Long DD	More Info.

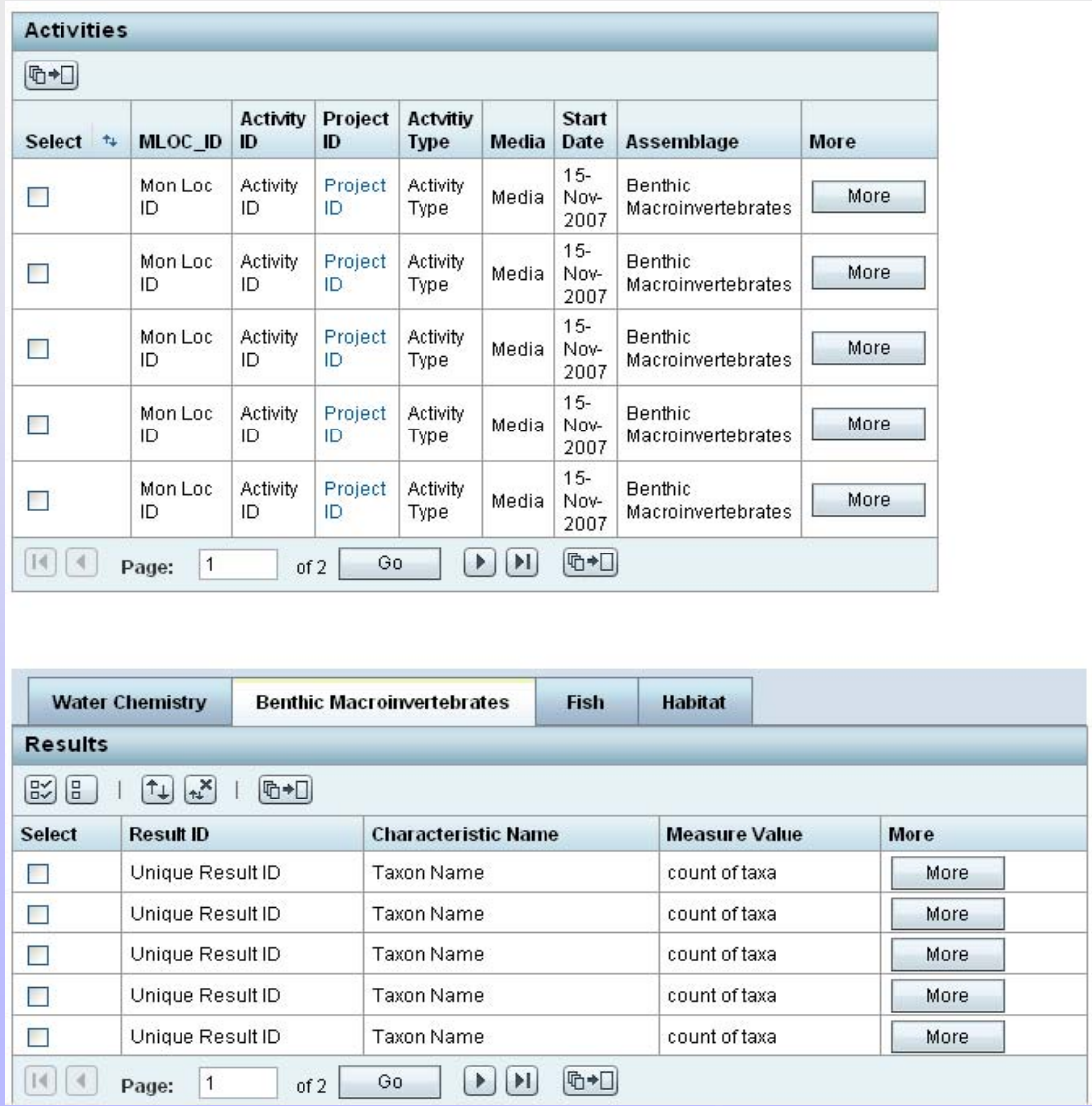
Page: 1 of 2 Go

View Monitoring Station Report | Export Monitoring Stations | Create PDF | Export to WQX

Refresh Map

EDAS2

Initial mock-ups of the interface has begun



Activities

Select	MLOC_ID	Activity ID	Project ID	Actvitiy Type	Media	Start Date	Assemblage	More
☐	Mon Loc ID	Activity ID	Project ID	Activity Type	Media	15-Nov-2007	Benthic Macroinvertebrates	More
☐	Mon Loc ID	Activity ID	Project ID	Activity Type	Media	15-Nov-2007	Benthic Macroinvertebrates	More
☐	Mon Loc ID	Activity ID	Project ID	Activity Type	Media	15-Nov-2007	Benthic Macroinvertebrates	More
☐	Mon Loc ID	Activity ID	Project ID	Activity Type	Media	15-Nov-2007	Benthic Macroinvertebrates	More
☐	Mon Loc ID	Activity ID	Project ID	Activity Type	Media	15-Nov-2007	Benthic Macroinvertebrates	More

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Water Chemistry | Benthic Macroinvertebrates | Fish | Habitat

Results

Select	Result ID	Characteristic Name	Measure Value	More
☐	Unique Result ID	Taxon Name	count of taxa	More
☐	Unique Result ID	Taxon Name	count of taxa	More
☐	Unique Result ID	Taxon Name	count of taxa	More
☐	Unique Result ID	Taxon Name	count of taxa	More
☐	Unique Result ID	Taxon Name	count of taxa	More

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EDAS2
Ecological Data Analysis System

EDAS2 is an extensible, web-based application providing data entry, import, validation, analysis, and reporting of aquatic environmental data.

Data management functions will be provided for chemical, physical, biological, and habitat data.

DATA INPUT

Receive and store monitoring data from field sampling and laboratories including:

- Web based data entry forms
- Laboratory Information Systems (LIMS)
- Delimited text files

Data validation is an integral part of the data input tools.

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EDAS2
Core Data Categories

Projects:
- Project name
- Project description

Monitoring locations:
- Location information

Activities:
- Activity intent
- Assemblage sampled
- Activity descriptive information
- Activity collection method
- Sample preparation method
- Activity QA method

Results:
- Characteristic name
- Measured value
- Analytical method
- Analytical QA

OUTPUT

Analytical tools
- Metrics
- Indices
- RIVPACS

File format
- Excel
- Text
- XML → WQX
- HTML

Fact sheet available as handout

EDAS2
Next Steps

Please contact us for further information.

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