Dredging Operations Technical Support:
Ocean Disposal Database and Bioaccumulation Databases

Presented by Justin Wilkens

Environmental Laboratory

Engineer Research and Development Center

Vicksburg, MS

DOTS Webinar

April 19, 2017

Presentation Outline

- Dredging Operations Technical Support (DOTS)
- Transferring knowledge through databases
  1. Ocean Disposal Database (ODD)
  2. Biota-Sediment Accumulation Factor Database (BSAF)
  3. Environmental Residue Effects Database (ERED)

Dredging Operations Technical Support (DOTS)

- Trusted partner since 1978
- Provide technical support to USACE
- Strong technology transfer activities

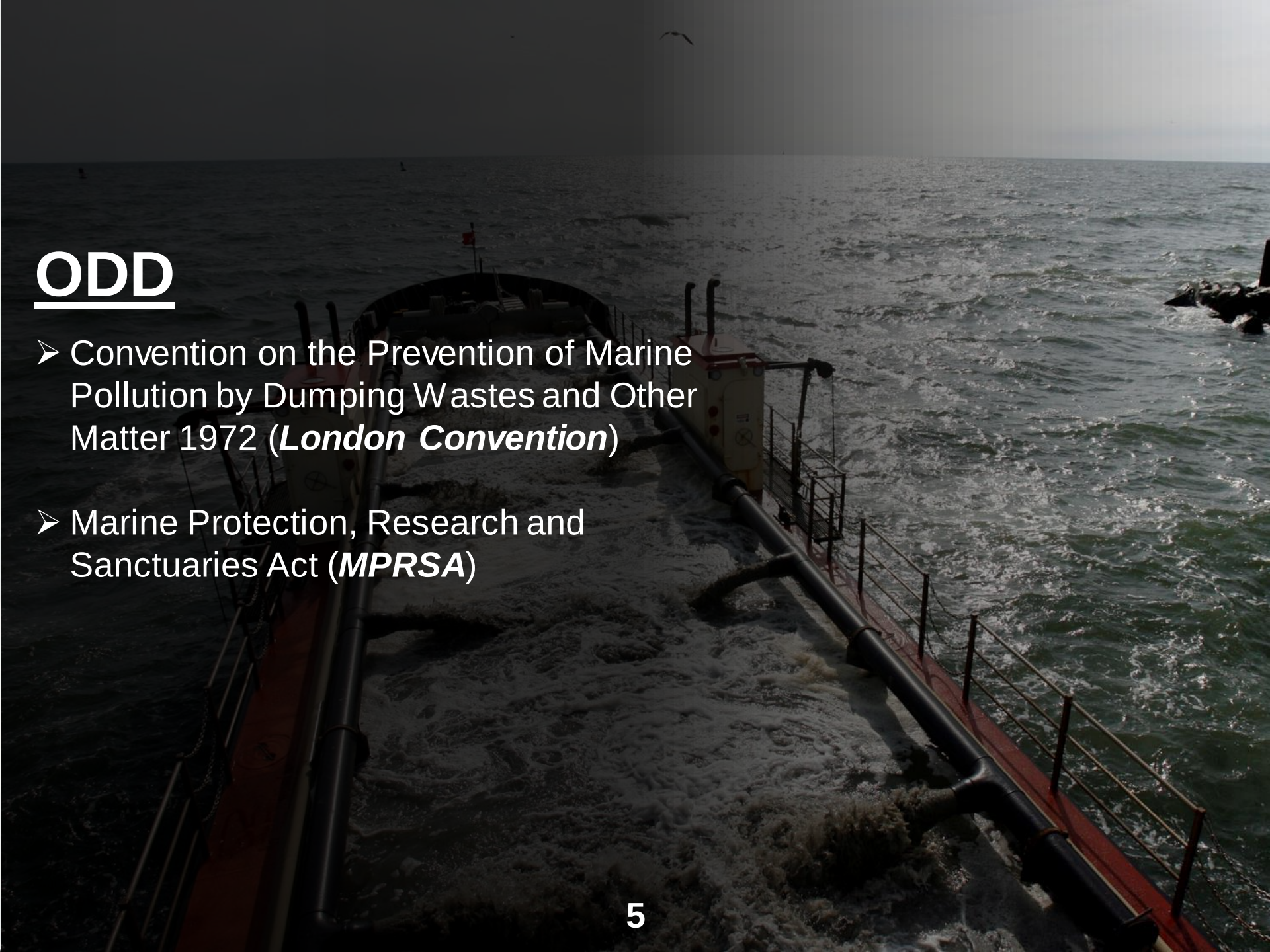
Tech note/report

Workshop/ Conference

Microsites

Ocean Disposal Database (ODD)

https://odd.el.erdc.dren.mil/



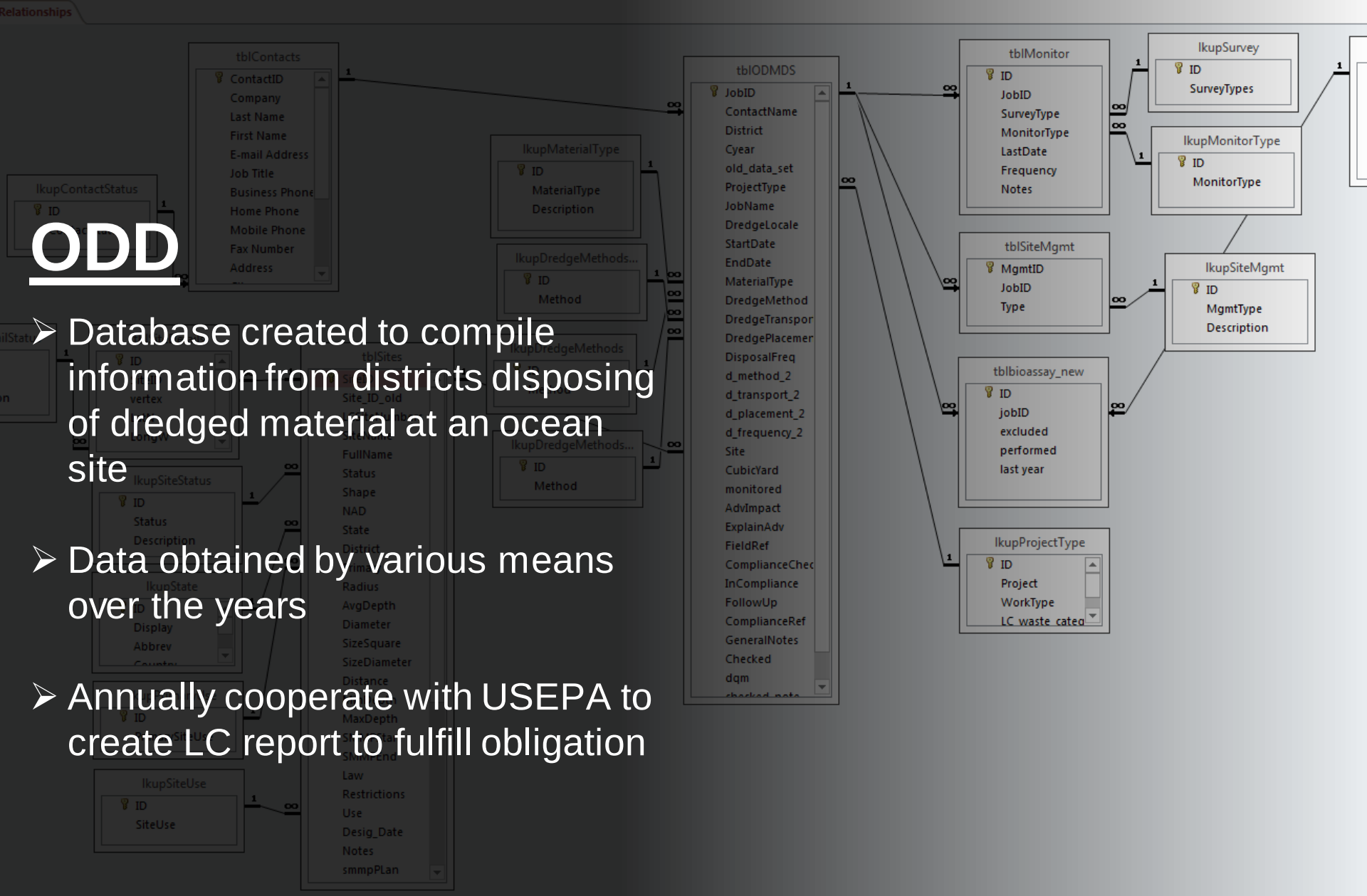
ODD

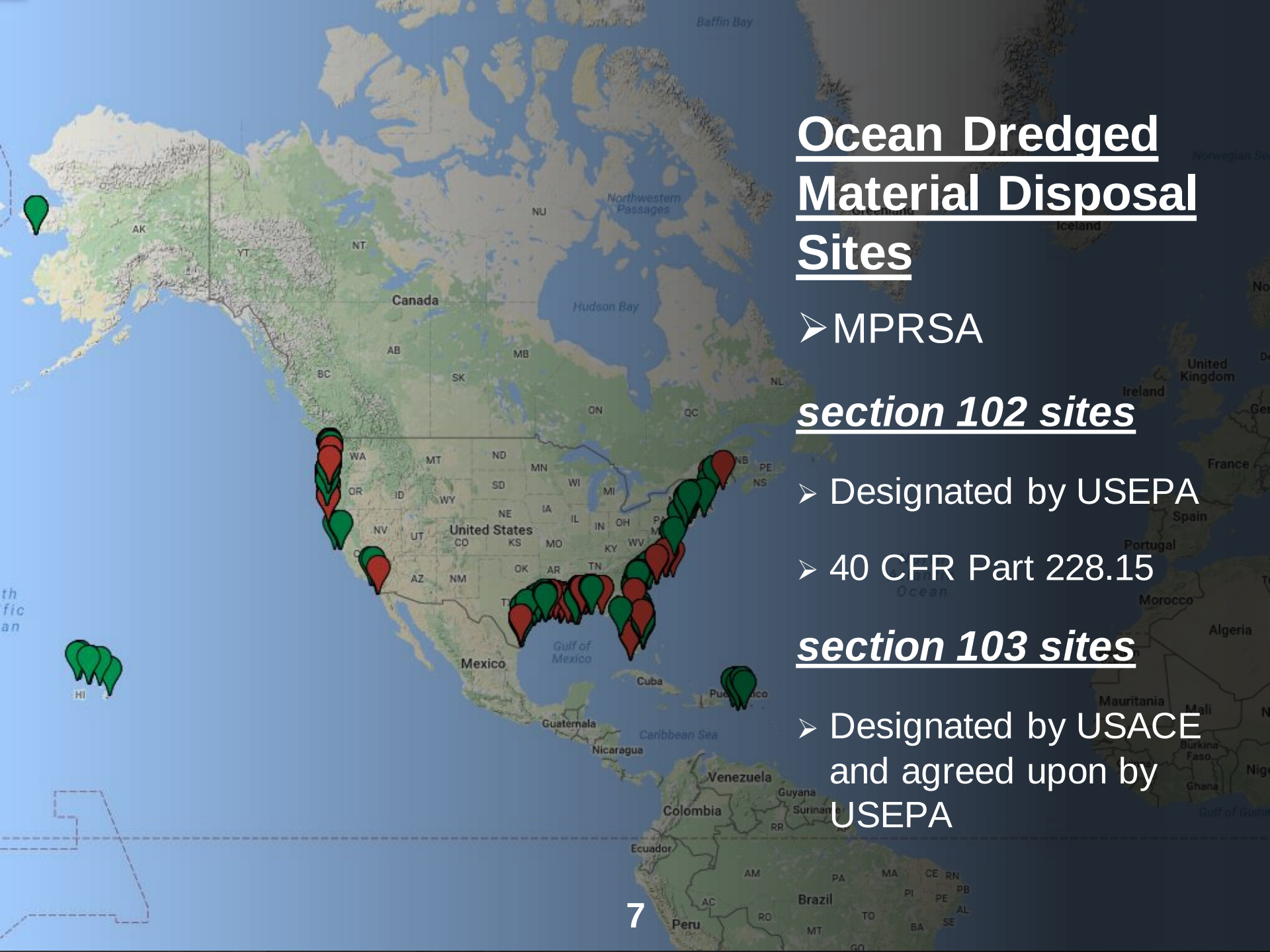
- Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter 1972 (***London Convention***)

- Marine Protection, Research and Sanctuaries Act (***MPRSA***)

ODD

- Database created to compile information from districts disposing of dredged material at an ocean site
- Data obtained by various means over the years
- Annually cooperate with USEPA to create LC report to fulfill obligation





Ocean Dredged Material Disposal Sites

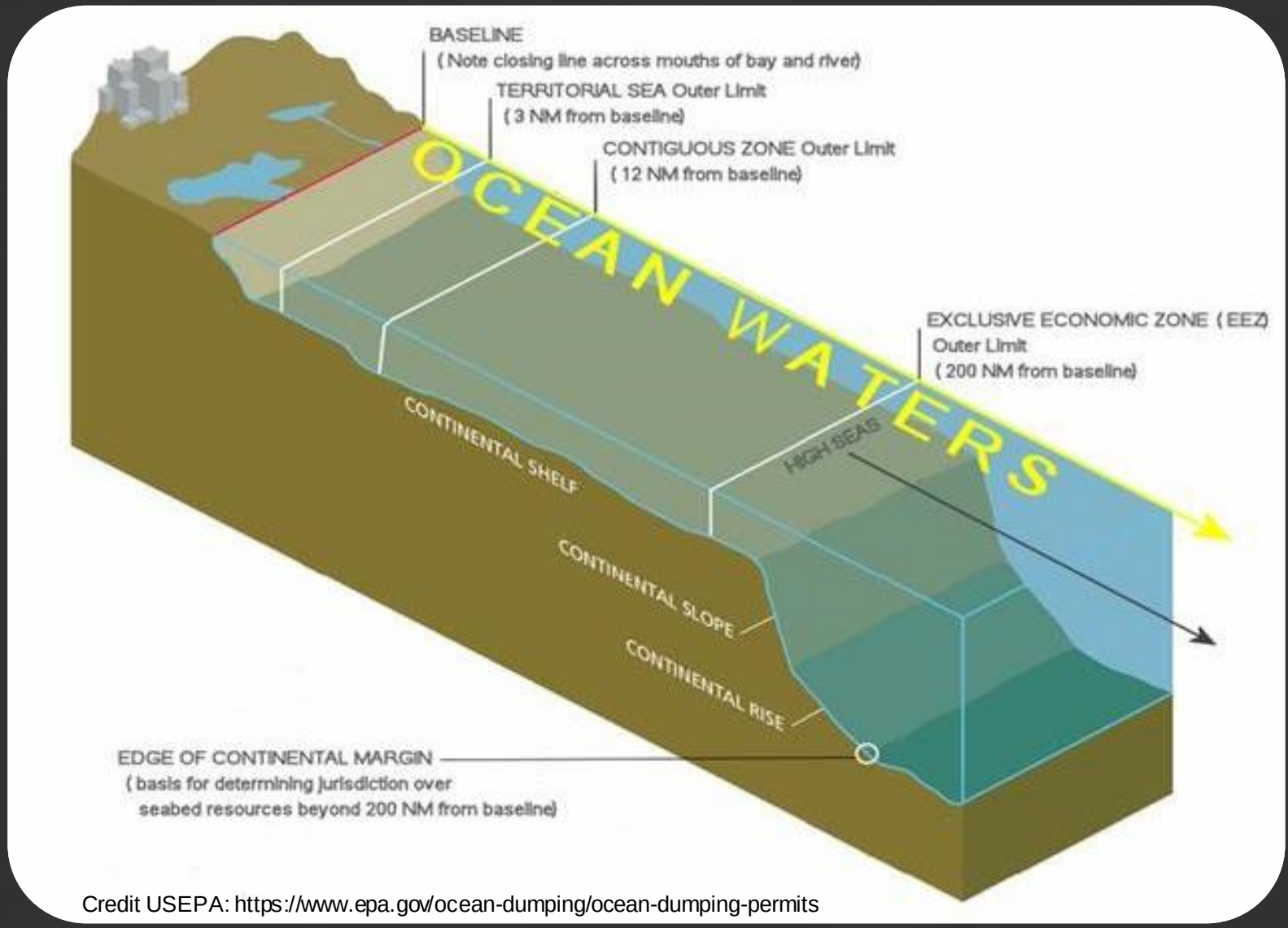
- MPRSA

section 102 sites

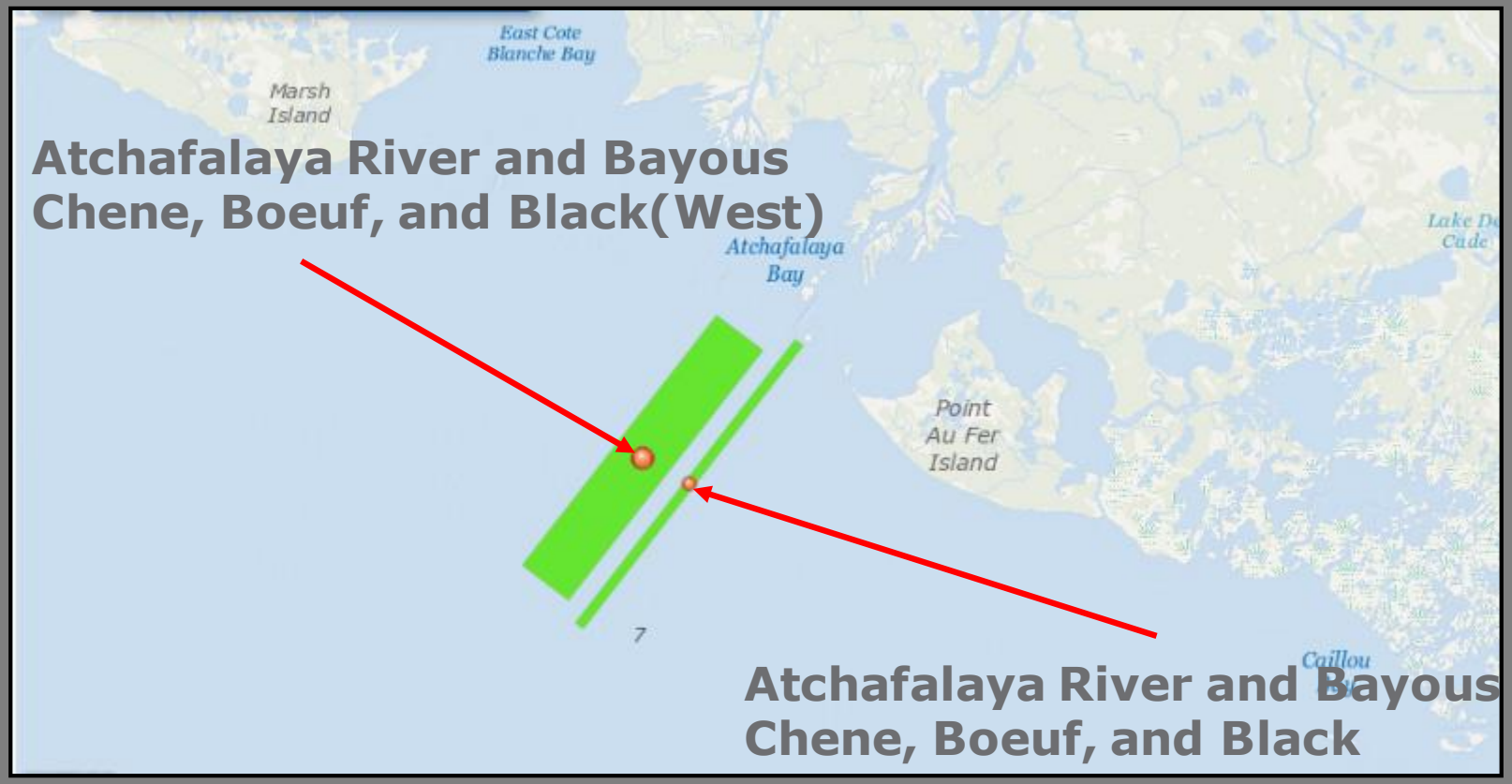
- Designated by USEPA
- 40 CFR Part 228.15

section 103 sites

- Designated by USACE and agreed upon by USEPA

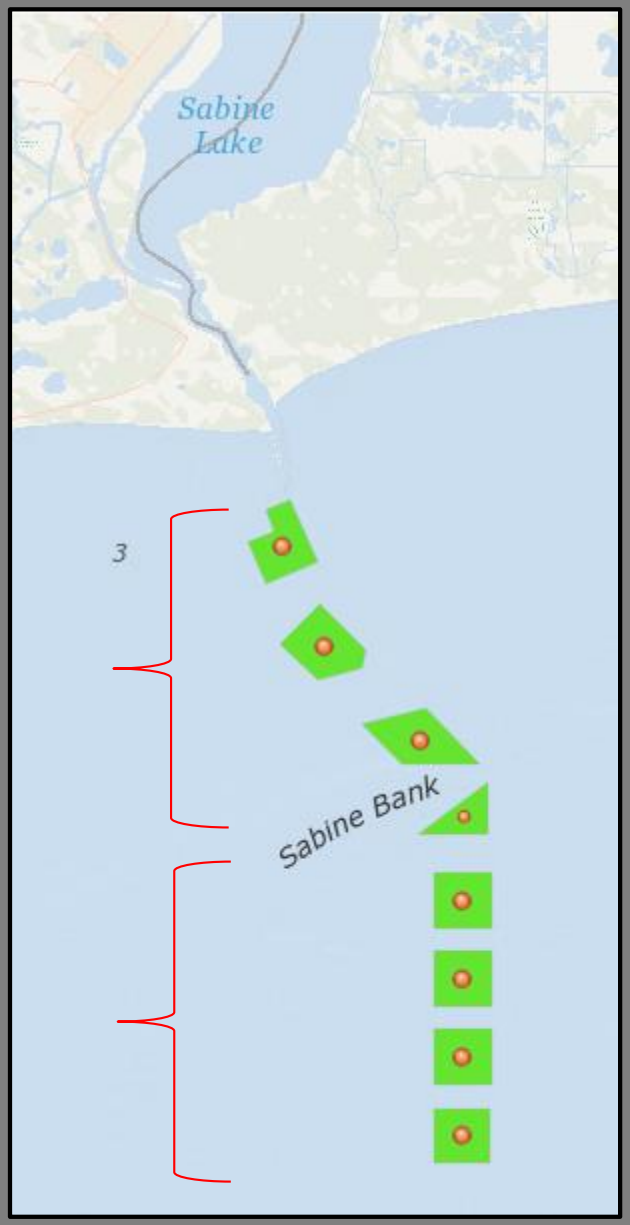


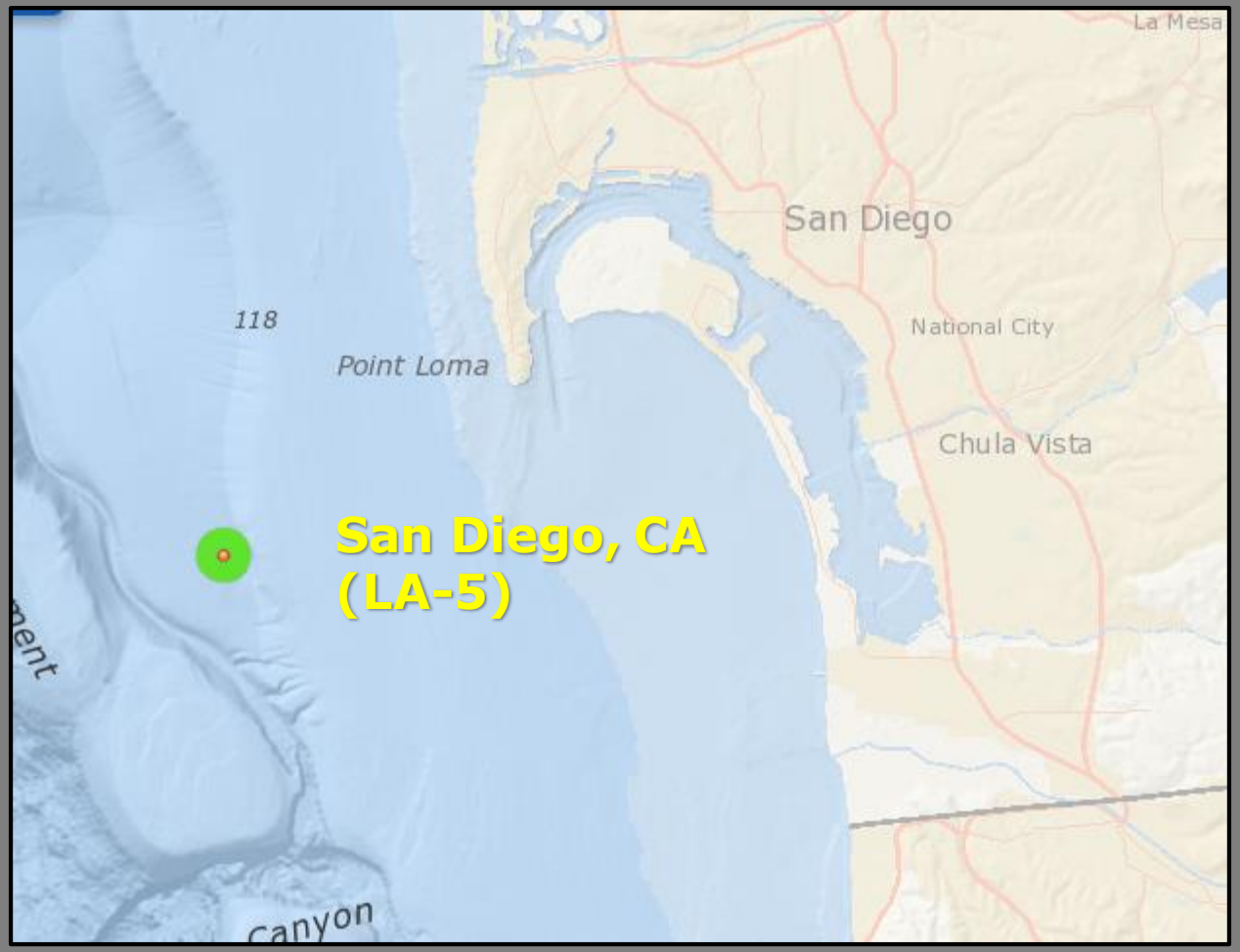
Credit USEPA: https://www.epa.gov/ocean-dumping/ocean-dumping-permits

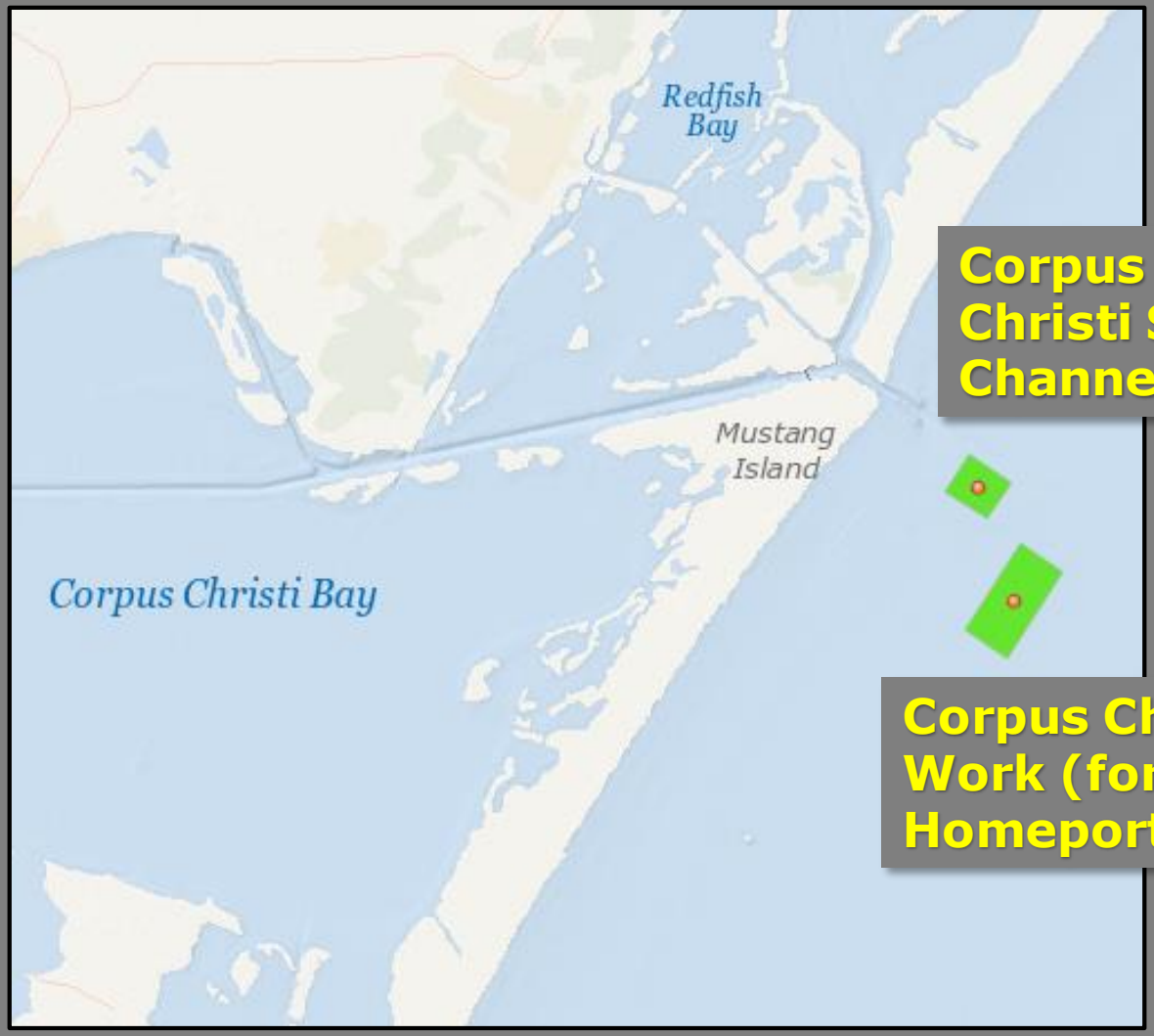

East Cote Blanche Bay
Marsh Island
Atchafalaya River and Bayous Chene, Boeuf, and Black(West)
Atchafalaya Bay
Point Au Fer Island
7
Caillou
Atchafalaya River and Bayous Chene, Boeuf, and Black

Sabine-Neches, Dredged Material Sites 1-4

Sabine-Neches Dredged Material Sites A-D




La Mesa
San Diego
118
National City
Point Loma
Chula Vista
San Diego, CA
(LA-5)
Canyon


Redfish Bay
Mustang Island
Corpus Christi Bay
Corpus Christi Ship Channel
Corpus Christi New Work (formerly Homeport Project)

INSTRUCTIONS

Purpose of form: The form is used to submit information about the disposal of dredged material at ocean dredged material disposal sites (ODMDS). This includes (1) all sites designated by the USEPA under MPRSA section 102; and (2) all short-term use sites designated by USACE under MPRSA section 103 and agreed upon by USEPA.

Who must submit data: Any USACE district transporting dredged material to an ocean site, designated under MPRSA section 102 or 103, for disposal, must submit ocean disposal data. Submit a separate form for each dredge project. Data is reported for the previous calendar year (i.e., in 2017 submit disposal data for calendar year 2016).

Question 1-4: Provide the ocean disposal point of contact, USACE district, DQM identification number (preferable) or other contract number (e.g., DIS), and dredge project name.

Question 5: Select whether the project is Federal or permitted and if the work is new or maintenance. Federal projects are authorized under MPRSA section 103 to transport uncontaminated dredged material for the purpose of disposal into ocean waters at designated sites. All other transportation of dredged material for the purpose of ocean disposal is permitted by the USACE under MPRSA section 103. New dredging work includes removal of materials previously undisturbed (e.g., new navigation channel, expansion of existing channel). Maintenance dredging is the removal of accumulated sediment from an existing navigation channel.

Question 6-8: Provide the location of the dredging project, start date, and end date. Ocean disposal is reported for a calendar year but sometimes dredge projects cross years. Only report the quantities disposed of during the requested reporting year. If the project crosses years it will need to be reported again the following year. If a project starts/stops often only report the first date dredging started in the reporting calendar year. In cases where projects cross calendar years, always use January 1 as the start date. The ending date is the date dredge operations are complete. If the project crosses calendar years, always use December 31 as the end date.

Question 9: The former selections (slurry or clumped) have been replaced by cohesive or non-cohesive (generally composed of clay, silt and fine sand and having a fluid consistency).

Question 10-17: Information about the dredge operation- Provide method used to dredge; method used to transport dredged material to an ocean site; and method use to place material at ocean site. Select the frequency of disposal. If the material is transported to a site 24/7, choose continuous; if material is transported to the ocean site during an 8-12 h work day only, choose daily; if the intervals between trips to the ocean site is longer than a day (24 h) then choose intermittently.

Question 18-20: Information about the ocean dredged material disposal site- Enter USACE district to filter ocean sites by district. Select the ocean site where the dredged material was placed. Enter the quantity in cubic yards. If your site is not listed inform the database manager and enter the site name in the notes section.

Question 21-24: Information about compliance and field monitoring is reported here. Compliance monitoring is used to verify that transport and placement conditions are met (e.g., compliance of disposal operations in accordance with specific site use requirements; was the material placed at the correct site; was the material placed in the correct area at the site; was there a short dump). This applies to Federal and permitted dredge projects. Field monitoring determines that assumptions made during permit and ODMDS selecting process were correct and sufficient to protect the environment and human health. This is often based on Environmental Impact Statements and Site Management and Monitoring Plans. Examples of field monitoring at the ODMDS include bathymetry and physical, chemical and biological testing or others (e.g., trawling surveys). If monitoring occurred select "yes". Enter a reference for a monitoring report if there is one. DQM is often reported as a compliance reference. A site management and monitoring plan is an acceptable field reference. If other references are available please list them.

Question 25: Information about the field monitoring activities at the ODMDS are reported here. This may include bathymetry and physical, biological and chemical testing. Other surveys (e.g., trawl surveys) may be reported as "other" and explained in the notes.

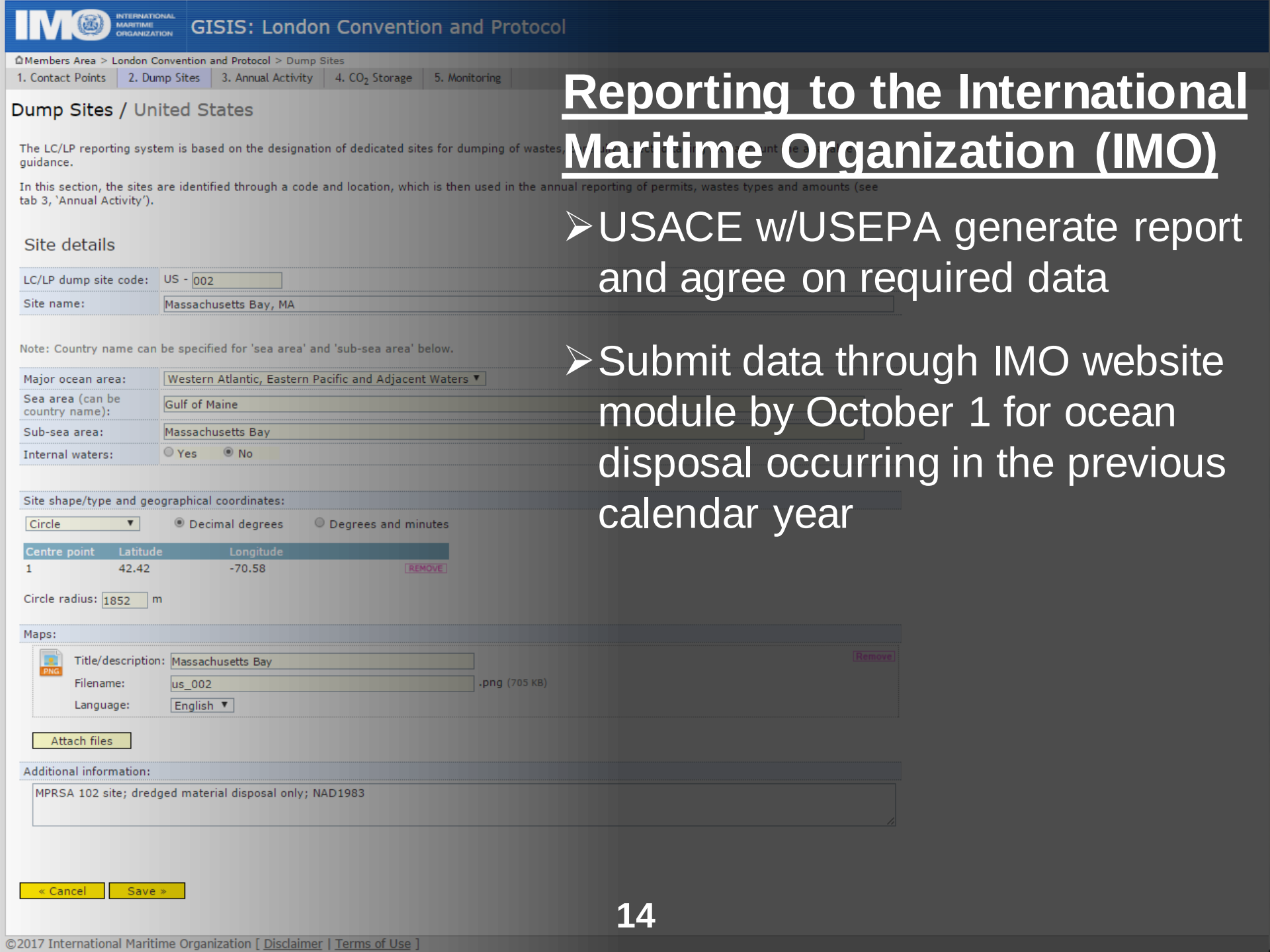
Question 26: Information about an adverse impact- if field monitoring determines that assumptions made during permit and ODMDS selecting process were not sufficient to protect the environment and human health then this is an adverse impact.

Question 27: Information about compliance monitoring- if the placement at sea operations were found to be in compliance with placement operations (i.e., used the correct site, no short dump, no burial of coral reefs, etc.) then select "yes". Otherwise select no and answer whether follow up action is planned (yes/no).

Question 28: Information about site management (select all that apply)- Selective disposal refers to using a specific area of the ODMDS. Seasonal restrictions refer to disposal during restricted time periods. Capping refers to disposal of material followed by covering (cap). None refers to no site management performed.

Question 29: Information about dredged material proposed to be disposed of at an ocean site- all dredge material prior to disposal at an ocean site must be tested for suitability. These tests occur approximately every 5 years depending on circumstances. If dredged material met the exclusion criteria (i.e., did not require testing- sand, rock) then answer "Yes" and stop. If the material did not meet exclusion criteria then answer "No" and enter the last year testing was completed.

Question 30: Space for additional notes or comments.

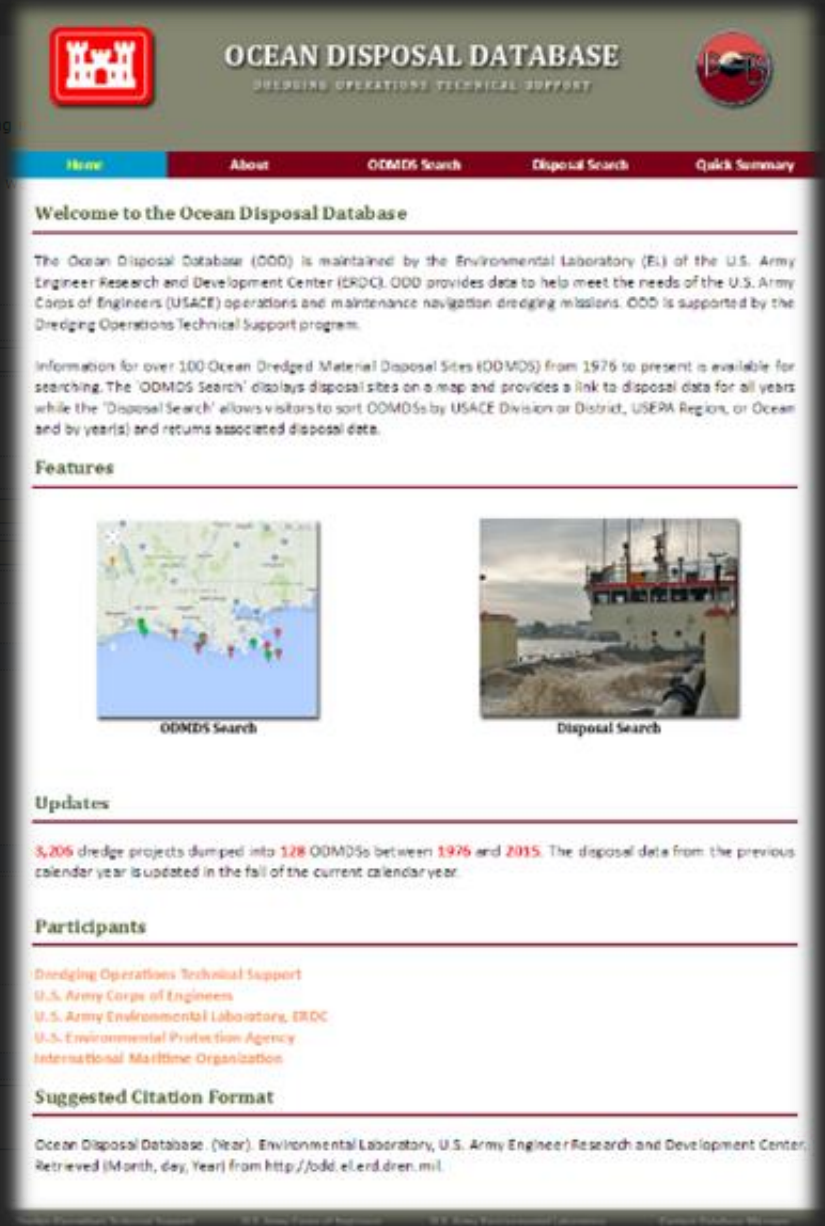


Reporting to the International Maritime Organization (IMO)

- USACE w/USEPA generate report and agree on required data
- Submit data through IMO website module by October 1 for ocean disposal occurring in the previous calendar year

ODD Website Application

- Constructed by ERDC
- Displays ODD data



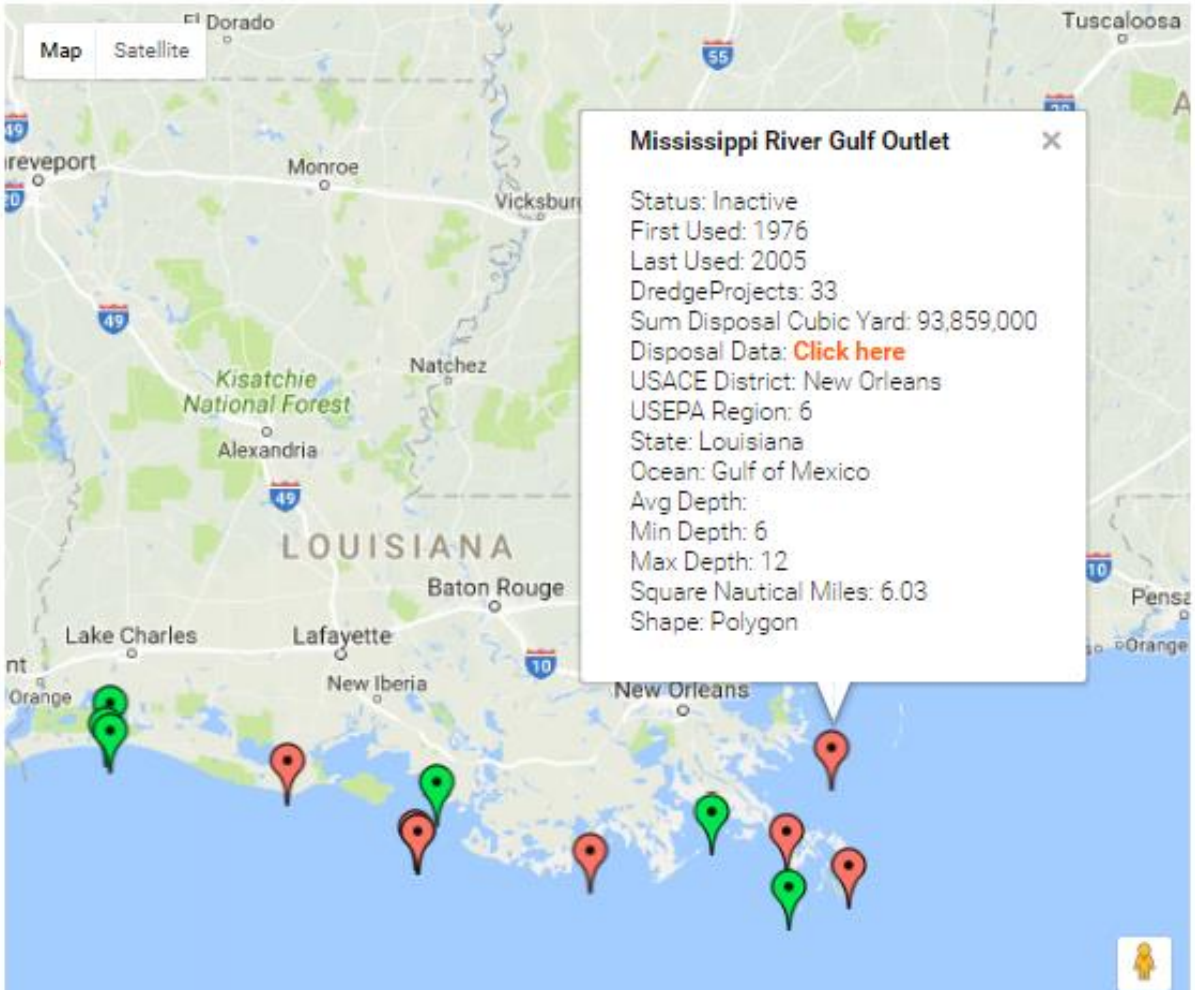
ODMDS Search

This map contains ODMDS location markers. Filter ODMDS by USACE Division. A GREEN marker represents a site is actively used while a RED marker represents a site is inactive. Click on the marker to see a description of the site. If a site has been used, a link to disposal data will be displayed in the description. This link returns disposal data for all years. Alternatively, use the Disposal Search query to look for specific disposal year(s).

Select Division

Mississippi Valley

Atchafalaya R., Bayous Chene, Boeuf, Black (East)
Atchafalaya River Bar 103
Atchafalaya River Bar Channel
Atchafalaya River, Bayous Chene, Boeuf, Black, LA (West)
Barataria Bay Waterway
Calcasieu Material Site 1
Calcasieu Material Site 2
Calcasieu Material Site 3
Freshwater Bayou, Bar Channel
Houma Navigation Canal
Mississippi River Gulf Outlet
Mississippi River South Pass
Mississippi River Southwest Pass
Mississippi River Tiger Pass Bar Channel



Disposal Search

Use the filters below to view USACE projects that placed dredged material into an ODMDS. Data will be presented in an HTML table. This can be copied to your clipboard and pasted into an Excel workbook. You must make at least one selection before searching.

NOTE: Reporting requirements have changed over time; therefore, projects do not have the same level of detail nor do districts report the same level of detail. Some ODMDSs do not recieve dredge material every year so your search may return no results. Please report errors to the **database manager**.

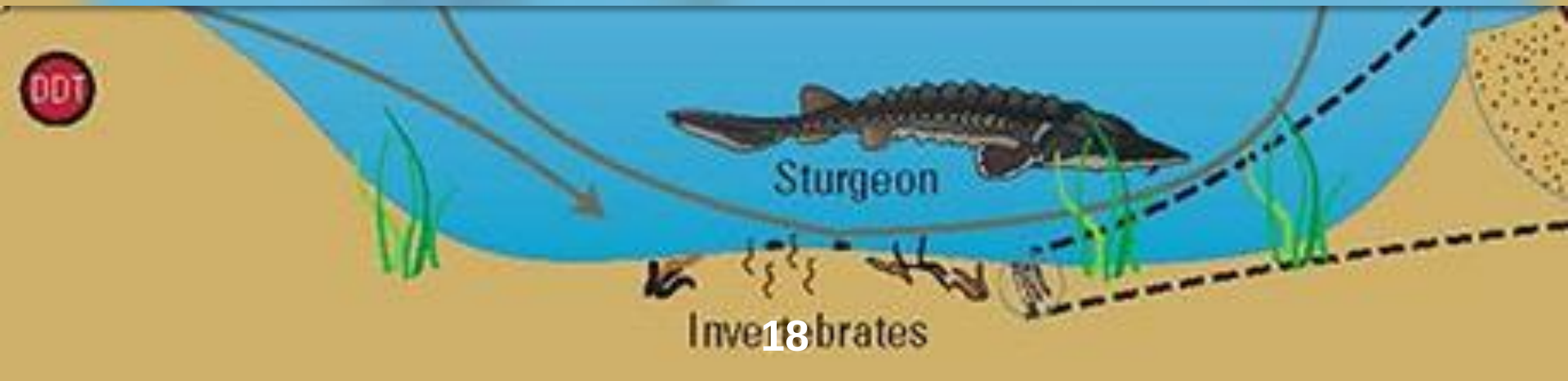
Select a Location

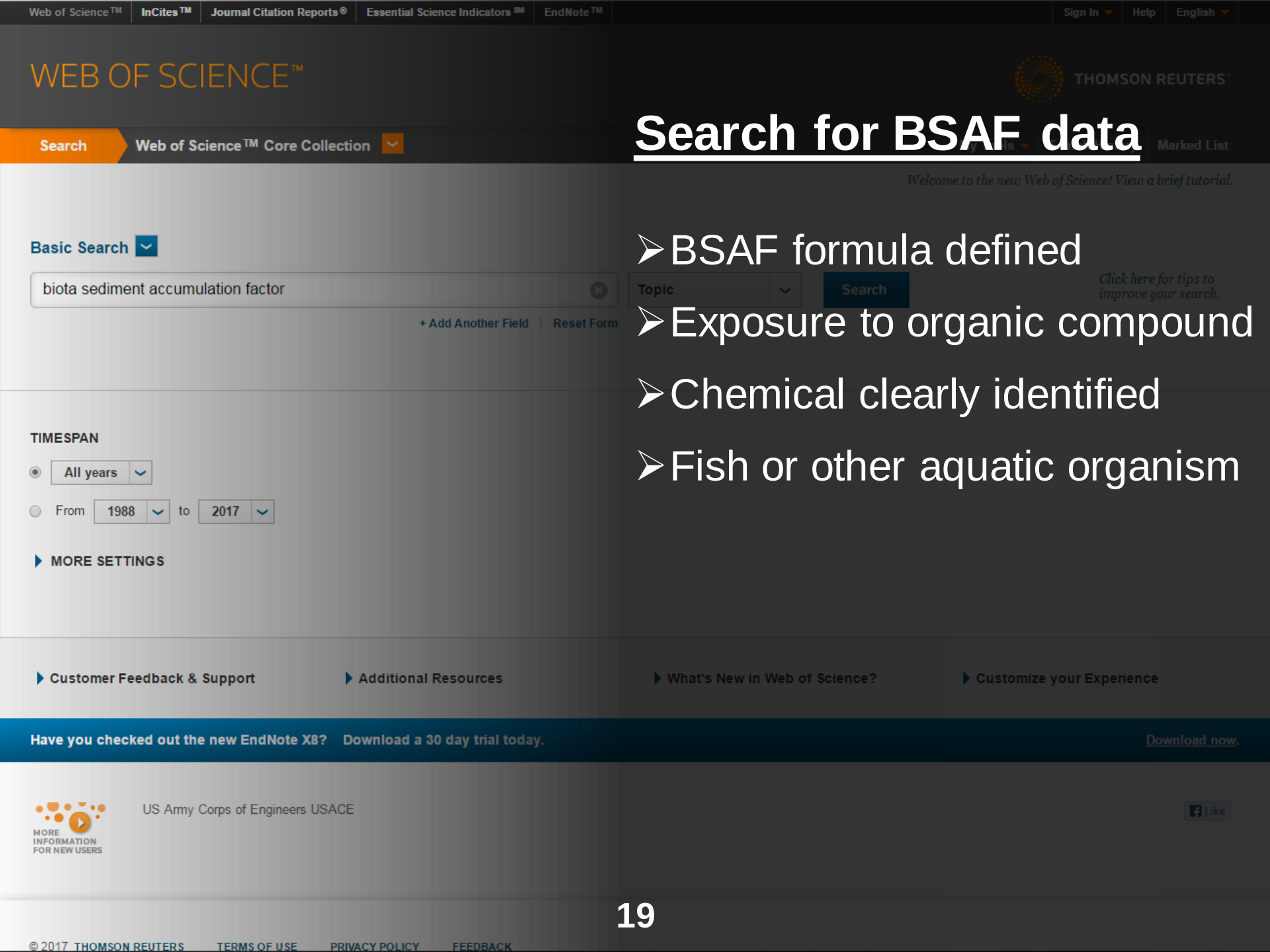
- (•) **USACE Division**
  - MVD (Mississippi Valley)
- ( ) **USACE District**
  - MVN (New Orleans)
- ( ) **Ocean**
  - Atlantic
- ( ) **USEPA Region**
  - Region 1
- [ ] **Time Frame (defualt all years)**
  - From 2015 To 2015

A dredge works in Galveston Bay in order to ensure America's waterways remain open for navigation and commerce (DVID photo).

Biota-Sediment Accumulation Database (BSAF)

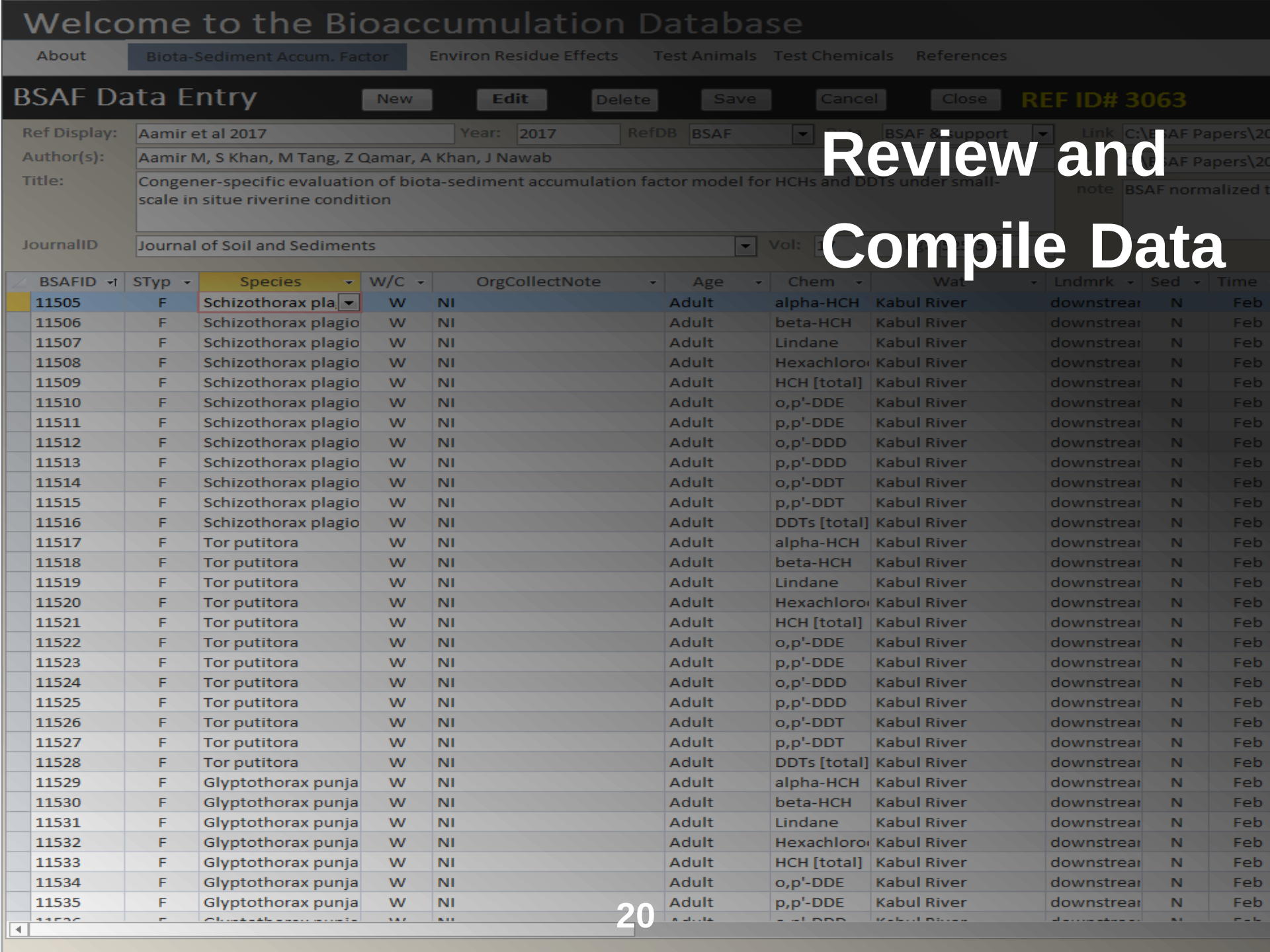
https://bsaf.el.erdc.dren.mil/



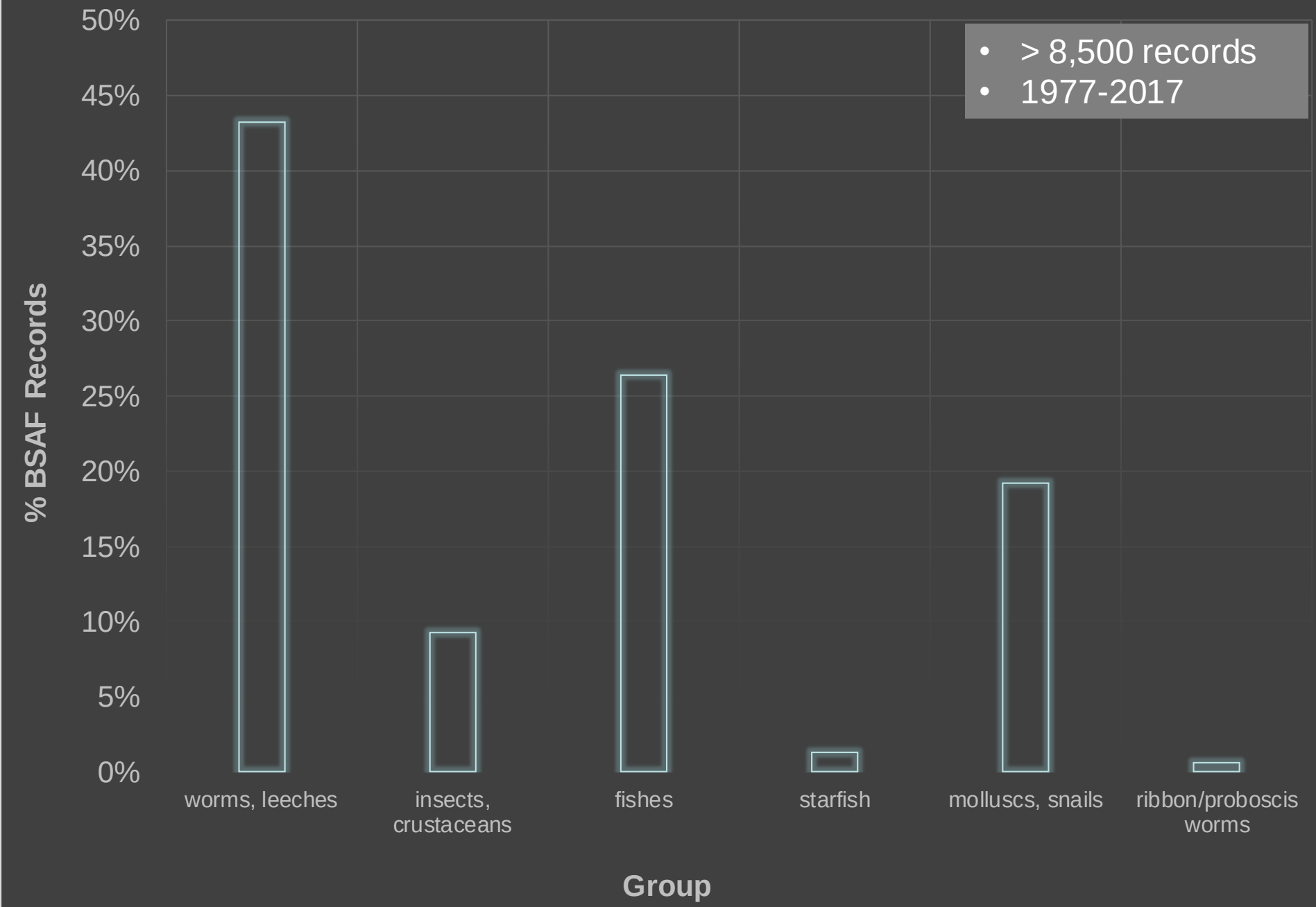


Search for BSAF data

- BSAF formula defined
- Exposure to organic compound
- Chemical clearly identified
- Fish or other aquatic organism


Welcome to the Bioaccumulation Database
About
Biota-Sediment Accum. Factor
Environ Residue Effects
Test Animals
Test Chemicals
References
BSAF Data Entry
New
Edit
Delete
Save
Cancel
Close
REF ID# 3063
Ref Display: Aamir et al 2017
Year: 2017
RefDB BSAF
BSAF & Support
Author(s): Aamir M, S Khan, M Tang, Z Qamar, A Khan, J Nawab
Title: Congener-specific evaluation of biota-sediment accumulation factor model for HCHs and DDTs under small-scale in situe riverine condition
JournalID Journal of Soil and Sediments
Vol:
Review and
Compile Data
BSAFID STyp Species W/C OrgCollectNote Age Chem Wat Lndmrk Sed Time
11505 F Schizothorax pla W NI Adult alpha-HCH Kabul River downstrea N Feb
11506 F Schizothorax plagio W NI Adult beta-HCH Kabul River downstrea N Feb
11507 F Schizothorax plagio W NI Adult Lindane Kabul River downstrea N Feb
11508 F Schizothorax plagio W NI Adult Hexachloro Kabul River downstrea N Feb
11509 F Schizothorax plagio W NI Adult HCH [total] Kabul River downstrea N Feb
11510 F Schizothorax plagio W NI Adult o,p'-DDE Kabul River downstrea N Feb
11511 F Schizothorax plagio W NI Adult p,p'-DDE Kabul River downstrea N Feb
11512 F Schizothorax plagio W NI Adult o,p'-DDD Kabul River downstrea N Feb
11513 F Schizothorax plagio W NI Adult p,p'-DDD Kabul River downstrea N Feb
11514 F Schizothorax plagio W NI Adult o,p'-DDT Kabul River downstrea N Feb
11515 F Schizothorax plagio W NI Adult p,p'-DDT Kabul River downstrea N Feb
11516 F Schizothorax plagio W NI Adult DDTs [total] Kabul River downstrea N Feb
11517 F Tor putitora W NI Adult alpha-HCH Kabul River downstrea N Feb
11518 F Tor putitora W NI Adult beta-HCH Kabul River downstrea N Feb
11519 F Tor putitora W NI Adult Lindane Kabul River downstrea N Feb
11520 F Tor putitora W NI Adult Hexachloro Kabul River downstrea N Feb
11521 F Tor putitora W NI Adult HCH [total] Kabul River downstrea N Feb
11522 F Tor putitora W NI Adult o,p'-DDE Kabul River downstrea N Feb
11523 F Tor putitora W NI Adult p,p'-DDE Kabul River downstrea N Feb
11524 F Tor putitora W NI Adult o,p'-DDD Kabul River downstrea N Feb
11525 F Tor putitora W NI Adult p,p'-DDD Kabul River downstrea N Feb
11526 F Tor putitora W NI Adult o,p'-DDT Kabul River downstrea N Feb
11527 F Tor putitora W NI Adult p,p'-DDT Kabul River downstrea N Feb
11528 F Tor putitora W NI Adult DDTs [total] Kabul River downstrea N Feb
11529 F Glyptothorax punja W NI Adult alpha-HCH Kabul River downstrea N Feb
11530 F Glyptothorax punja W NI Adult beta-HCH Kabul River downstrea N Feb
11531 F Glyptothorax punja W NI Adult Lindane Kabul River downstrea N Feb
11532 F Glyptothorax punja W NI Adult Hexachloro Kabul River downstrea N Feb
11533 F Glyptothorax punja W NI Adult HCH [total] Kabul River downstrea N Feb
11534 F Glyptothorax punja W NI Adult o,p'-DDE Kabul River downstrea N Feb
11535 F Glyptothorax punja W NI Adult p,p'-DDE Kabul River downstrea N Feb

Distribution of BSAF records



BSAF Website

- Constructed by ERDC
- Displays BSAF data

BSAF Data

Filters are used to view BSAF data for different species and chemicals. Data will be presented in a table for viewing and/or download. To download select "create excel spreadsheet". Additional supporting information such as full citation will be included in the download.

Alternatively, Press CTRL+A to select the entire table. Next, press CTRL+C to copy. Finally, open an Excel workbook and either Press CTRL+V to paste or right click your mouse and select the paste option. Optionally, you may save the results page as an HTML page and then open from MS Excel. In Internet Explorer save as type should be 'webpage, HTML only', while in Chrome save as type should be 'webpage, complete'.

Note: In an effort to help interpret BSAF numbers additional supporting information is currently being obtained from the literature. Unfortunately, BSAF numbers will not have the same level of supporting information nor do studies report the same level of detail. See the Structure page for data field information

Basic Search

Submit Organism

- or -

Submit Chemical

- or -

Chemical Group

- or -

Chemical CAS#

Environmental Residue Effects Database (ERED)

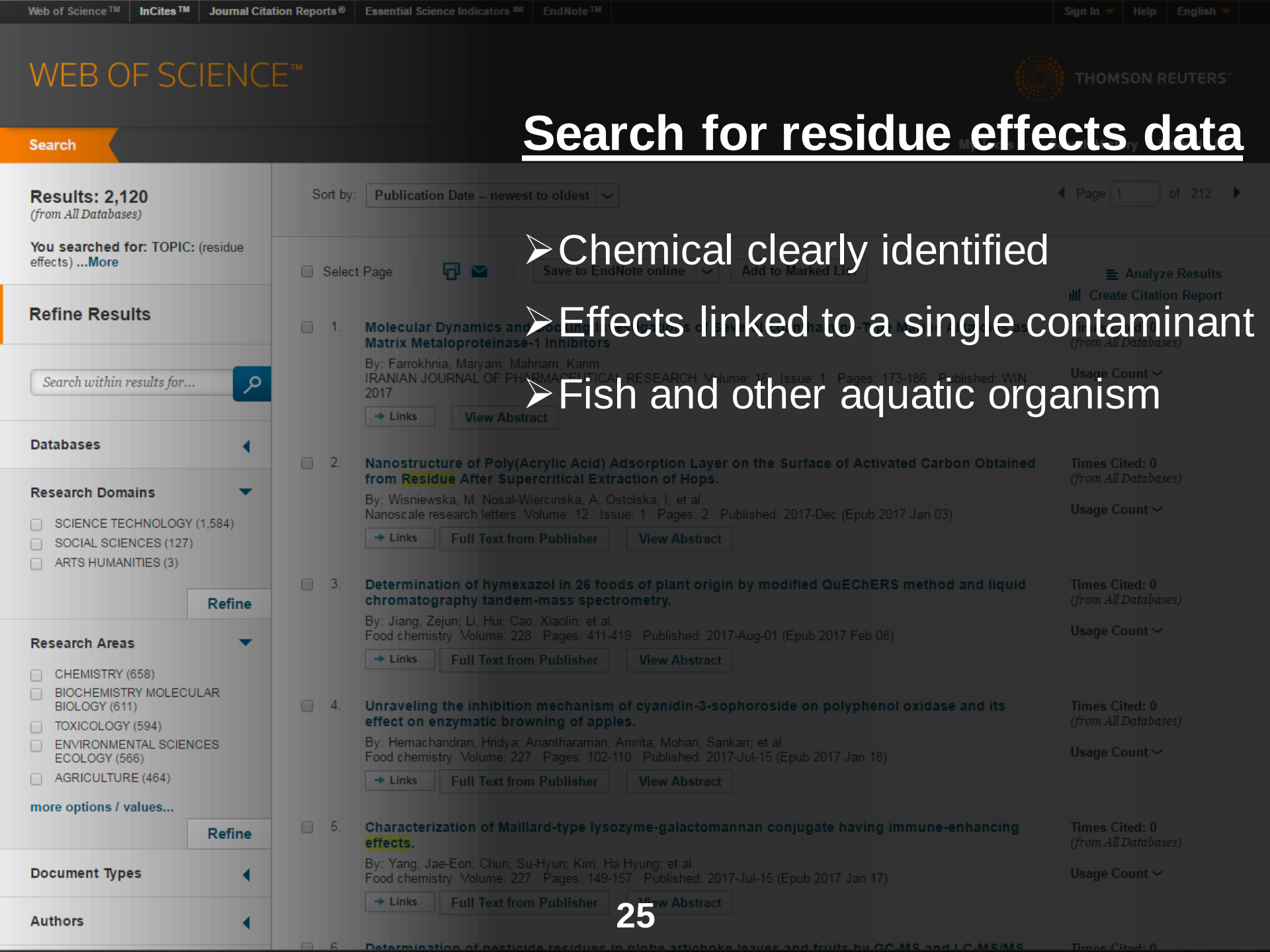
https://ered.el.erdc.dren.mil/

res·i·due

/ˈrezəˌd(y)o͞o/

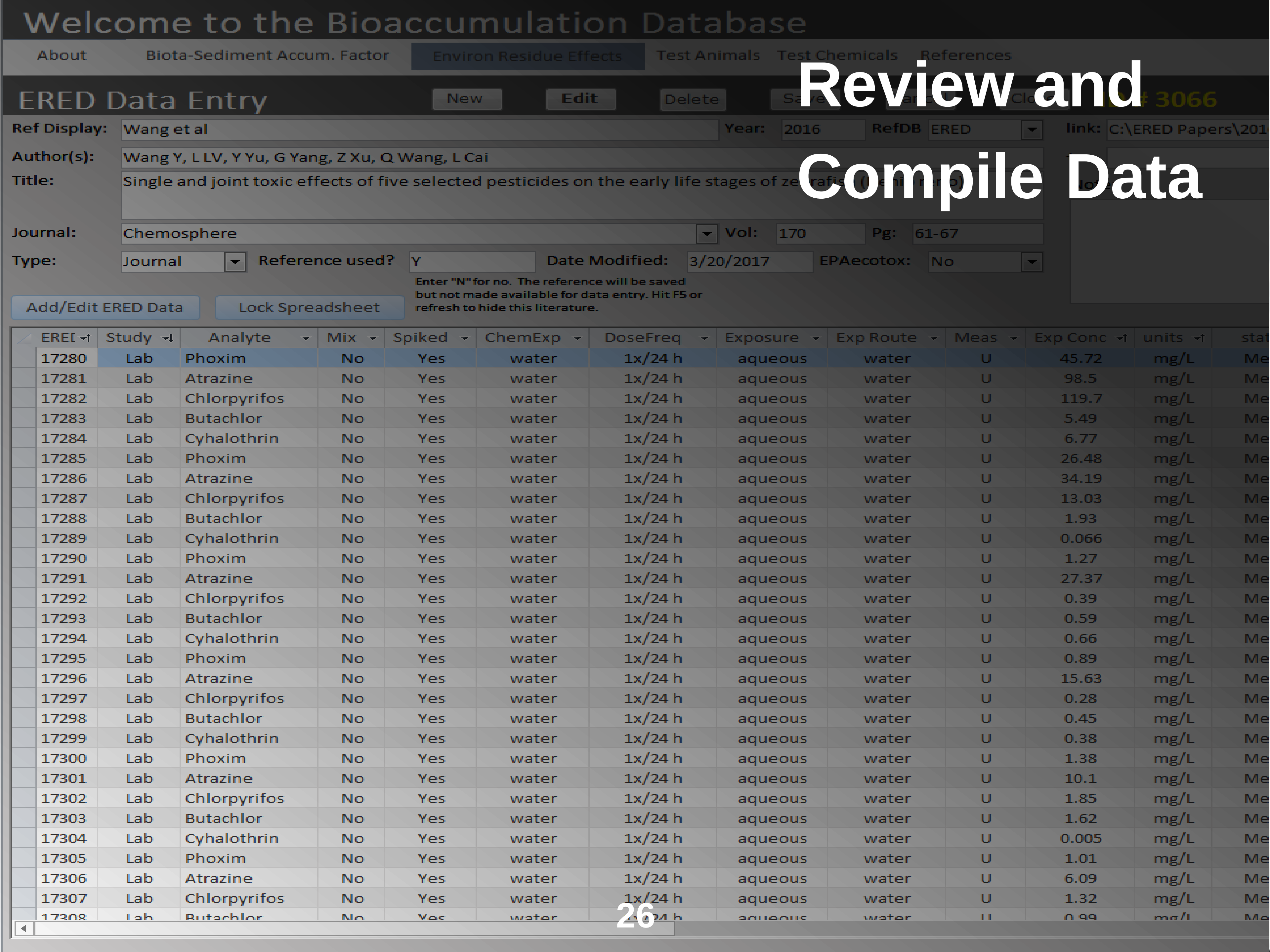
noun

a small amount of something that remains after the main part has gone or been taken or used.
synonyms: remainder, remaining part, rest, remnant(s); More



- Chemical clearly identified
- Effects linked to a single contaminant
- Fish and other aquatic organism

Review and Compile Data



Welcome to the Bioaccumulation Database

About | Biota-Sediment Accum. Factor | Environ Residue Effects | Test Animals | Test Chemicals | References

ERED Data Entry

New | Edit | Delete

Ref Display: Wang et al

Year: 2016

RefDB: ERED

link: C:\ERED Papers\201

Author(s): Wang Y, L LV, Y Yu, G Yang, Z Xu, Q Wang, L Cai

Title: Single and joint toxic effects of five selected pesticides on the early life stages of ze

Journal: Chemosphere

Vol: 170

Pg: 61-67

Type: Journal

Reference used? Y

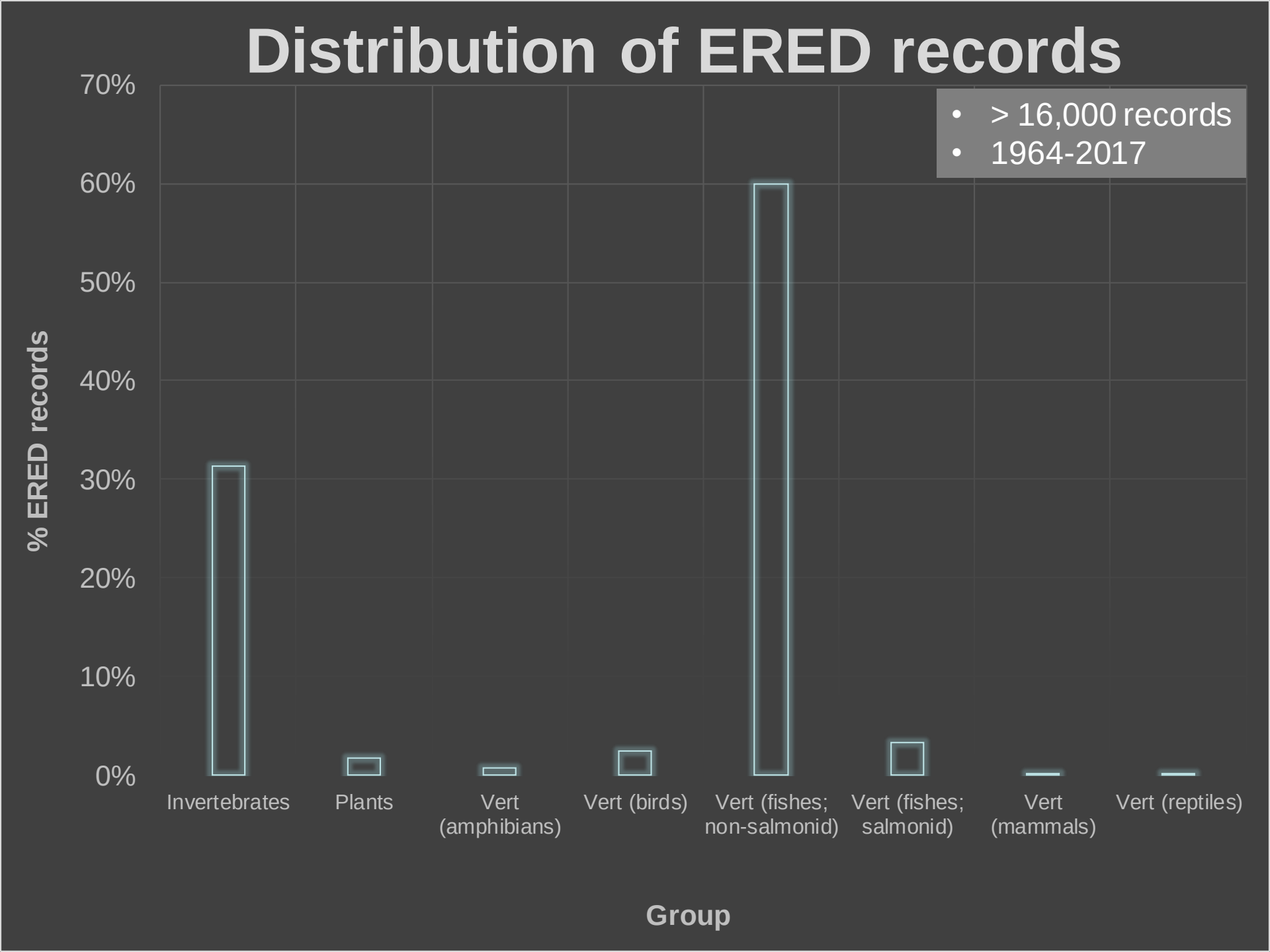
Date Modified: 3/20/2017

EPAecotox: No

Enter "N" for no. The reference will be saved but not made available for data entry. Hit F5 or refresh to hide this literature.

Add/Edit ERED Data | Lock Spreadsheet

EREI	Study	Analyte	Mix	Spiked	ChemExp	DoseFreq	Exposure	Exp Route	Meas	Exp Conc	units	sta
17280	Lab	Phoxim	No	Yes	water	1x/24 h	aqueous	water	U	45.72	mg/L	Me
17281	Lab	Atrazine	No	Yes	water	1x/24 h	aqueous	water	U	98.5	mg/L	Me
17282	Lab	Chlorpyrifos	No	Yes	water	1x/24 h	aqueous	water	U	119.7	mg/L	Me
17283	Lab	Butachlor	No	Yes	water	1x/24 h	aqueous	water	U	5.49	mg/L	Me
17284	Lab	Cyhalothrin	No	Yes	water	1x/24 h	aqueous	water	U	6.77	mg/L	Me
17285	Lab	Phoxim	No	Yes	water	1x/24 h	aqueous	water	U	26.48	mg/L	Me
17286	Lab	Atrazine	No	Yes	water	1x/24 h	aqueous	water	U	34.19	mg/L	Me
17287	Lab	Chlorpyrifos	No	Yes	water	1x/24 h	aqueous	water	U	13.03	mg/L	Me
17288	Lab	Butachlor	No	Yes	water	1x/24 h	aqueous	water	U	1.93	mg/L	Me
17289	Lab	Cyhalothrin	No	Yes	water	1x/24 h	aqueous	water	U	0.066	mg/L	Me
17290	Lab	Phoxim	No	Yes	water	1x/24 h	aqueous	water	U	1.27	mg/L	Me
17291	Lab	Atrazine	No	Yes	water	1x/24 h	aqueous	water	U	27.37	mg/L	Me
17292	Lab	Chlorpyrifos	No	Yes	water	1x/24 h	aqueous	water	U	0.39	mg/L	Me
17293	Lab	Butachlor	No	Yes	water	1x/24 h	aqueous	water	U	0.59	mg/L	Me
17294	Lab	Cyhalothrin	No	Yes	water	1x/24 h	aqueous	water	U	0.66	mg/L	Me
17295	Lab	Phoxim	No	Yes	water	1x/24 h	aqueous	water	U	0.89	mg/L	Me
17296	Lab	Atrazine	No	Yes	water	1x/24 h	aqueous	water	U	15.63	mg/L	Me
17297	Lab	Chlorpyrifos	No	Yes	water	1x/24 h	aqueous	water	U	0.28	mg/L	Me
17298	Lab	Butachlor	No	Yes	water	1x/24 h	aqueous	water	U	0.45	mg/L	Me
17299	Lab	Cyhalothrin	No	Yes	water	1x/24 h	aqueous	water	U	0.38	mg/L	Me
17300	Lab	Phoxim	No	Yes	water	1x/24 h	aqueous	water	U	1.38	mg/L	Me
17301	Lab	Atrazine	No	Yes	water	1x/24 h	aqueous	water	U	10.1	mg/L	Me
17302	Lab	Chlorpyrifos	No	Yes	water	1x/24 h	aqueous	water	U	1.85	mg/L	Me
17303	Lab	Butachlor	No	Yes	water	1x/24 h	aqueous	water	U	1.62	mg/L	Me
17304	Lab	Cyhalothrin	No	Yes	water	1x/24 h	aqueous	water	U	0.005	mg/L	Me
17305	Lab	Phoxim	No	Yes	water	1x/24 h	aqueous	water	U	1.01	mg/L	Me
17306	Lab	Atrazine	No	Yes	water	1x/24 h	aqueous	water	U	6.09	mg/L	Me
17307	Lab	Chlorpyrifos	No	Yes	water	1x/24 h	aqueous	water	U	1.32	mg/L	Me
17308	Lab	Butachlor	No	Yes	water	1x/24 h	aqueous	water	U	0.99	mg/L	Me


Distribution of ERED records
70%
60%
50%
40%
30%
20%
10%
0%
% ERED records
• > 16,000 records
• 1964-2017
Invertebrates
Plants
Vert (amphibians)
Vert (birds)
Vert (fishes; non-salmonid)
Vert (fishes; salmonid)
Vert (mammals)
Vert (reptiles)
Group

ENVIRONMENTAL RESIDUE-EFFECTS DATABASE (ERED)

Welcome to ERED

The ERED is a collection of residue-effects data obtained from peer-reviewed literature and reports submitted by U.S. government agencies. The database was developed by researchers at the U.S. Army Engineer Research and Development Center Environmental Laboratory through support provided by the Dredging Operations Technical Support program. The ERED data are useful for comparing measured tissue concentrations from a bioaccumulation test - such as those performed to evaluate dredged sediments - to published information that describes the relationship between contaminant tissue concentration and the likelihood of an adverse effect.

Features

Search by species (Specific Search)

Search by group of animals and chemicals (Range Search)

Browse by references and retrieve data (References)

Show ▾ entries

Search:

		ERED Records	Data
Invert (corals, anemones, hydras)	Metals	42	Click here
Invert (insects, crustaceans)	Dioxins	15	Click here
Invert (insects, crustaceans)	Explosives	45	Click here
Invert (insects, crustaceans)	Metals	1064	Click here
Invert (insects, crustaceans)	Organotins	23	Click here
Invert (insects, crustaceans)	PAHs	250	Click here
Invert (insects, crustaceans)	PCBs	113	Click here
Invert (insects, crustaceans)	Pesticides	432	Click here
Invert (insects, crustaceans)	Pharm./Personal Care Products	31	Click here
Invert (insects, crustaceans)	Phenols	17	Click here
Invert (insects, crustaceans)	Phthalates	26	Click here
Invert (insects, crustaceans)	VOCs	71	Click here
Invert (molluscs, snails)	Amines, Anilines	8	Click here
Invert (molluscs, snails)	Dioxins	5	Click here
Invert (molluscs, snails)	Explosives	7	Click here

Showing 1 to 15 of 104 entries

Copy

Search:

Author(s), year, title, journal/book/report	ERED records	Data
Abalos et al. 2008. Effects on growth and biochemica responses in juvenile gilthead seabream Sparus aurata after long-term dietary exposure to low levels of dioxins. Chemosphere 73:5305-5310	14	Click here
Abbas et al. 1996. Toxicokinetics of Parathion and Paraoxon in Rainbow Trout After Intravascular Administration and Water Exposure. Toxicol Appl Pharm 136:194-199	2	Click here
Abel and Barlocher. 1988. Uptake of Cadmium by Gammarus fossarum (Amphipoda) From Food and Water. J Appl Ecol 25:223-231	6	Click here
Absil et al. 1996. The Influence of Sediment, Food and Organic Ligands on the Uptake of Copper by Sediment-Dwelling Bivalves. Aquat Toxicol 34:13-29	6	Click here
Addison and Zinck. 1977. Rate of Conversion of 14C-p,p'-DDT to p,p'-DDE by Brook Trout (Salvelinus fontinalis): Absence of Effect of Pretreatment of Fish with Compounds Related to p,p'-DDT. J Fish Res Board Can 34:119-122	7	Click here
Addison et al. 1976. Metabolism of Single and Combined Doses of 14c-Aldrin and 3h-p,p'-DDT by Atlantic Salmon (Salmo salar) Fry. J Fish Res Board Can 33:2073-2076	2	Click here
Addison et al. 1978. Induction of Hepatic mixed-function oxidase (MFO) Enzymes in Trout (Salvelinus fontinalis) by Feeding Aroclor 1254 or 3-Methylcholanthrene. Comp Biochem Phys C 61:323-325	4	Click here
Ahrens et al. 2002. Sensitivity of Juvenile Macoma liliana (Bivalvia) to UV-Photoactivated Fluoranthene Toxicity. Environ Toxicol 17:567-577	4	Click here
Ahsanullah and Williams. 1991. Sublethal Effects and Bioaccumulation of Cadmium, Chromium, Copper and Zinc in the Marine Amphipod Allorchestes compressa. Mar Biol 108:59-65	9	Click here
Aisemberg et al. 2005. Comparative Study on Two Freshwater Invertebrates for Monitoring Environmental Lead Exposure. Toxicology 210:45-53	11	Click here

You are viewing ERED for Abalos et al.2008.Chemosphere 73:5305-5310.

Copy CSV Excel

Search:

Type	Genus Species	desc	life stage	Analyte Name	CAS No	Mix	Conc. Wet (mg/kg)	No. Reps	Exp Route	fraction	Effect	Risk	% effect	trend	Comments	Source
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00487	2	Ingestion	Muscle	Biochemical	ED 177	N/I	N/I	Up regulated EROD	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00487	2	Ingestion	Muscle	Biochemical	IP 706	N/I	N/I	Up regulated AhR expression	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00487	2	Ingestion	Muscle	Biochemical	NOEC	N/I	N/I	GST	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00487	2	Ingestion	Muscle	Biochemical	NOEC	N/I	N/I	catalase	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00487	2	Ingestion	Muscle	Biochemical	NOEC	N/I	N/I	T-GPx	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00487	2	Ingestion	Muscle	Biochemical	NOEC	N/I	N/I	Lipid peroxidation as MDA	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00487	2	Ingestion	Muscle	Cellular	NOEC	N/I	N/I	CYP1A1	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00783	2	Ingestion	Liver	Biochemical	ED 177	N/I	N/I	Up regulated EROD	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00783	2	Ingestion	Liver	Biochemical	IP 706	N/I	N/I	Up regulated AhR expression	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00783	2	Ingestion	Liver	Biochemical	NOEC	N/I	N/I	GST	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00783	2	Ingestion	Liver	Biochemical	NOEC	N/I	N/I	catalase	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00783	2	Ingestion	Liver	Biochemical	NOEC	N/I	N/I	T-GPx	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00783	2	Ingestion	Liver	Biochemical	NOEC	N/I	N/I	Lipid peroxidation as MDA	Abalos et al.2008.Chemosphere 73:5305-5310
Lab	Sparus aurata	ray-finned	Juvenile	2,3,7,8-TCDD	1746-01-6	No	0.00783	2	Ingestion	Liver	Cellular	NOEC	N/I	N/I	CYP1A1	Abalos et al.2008.Chemosphere 73:5305-5310

Showing 1 to 14 of 14 entries

Previous 1 Next

Transferring knowledge through databases

- Ocean Disposal Database (ODD)
  - https://odd.el.erdc.dren.mil/
- Biota-Sediment Accumulation Factor Database (BSAF)
  - https://bsaf.el.erdc.dren.mil/
- Environmental Residue Effects Database (ERED)
  - https://ered.el.erdc.dren.mil/


Questions?