# Annual Western Dredging Association and Texas A&M University Center for Dredging Studies Dredging Summit and Expo 2015

Houston, Texas, USA 22 – 25 June 2015

**Editor:** 

Robert E. Randall

ISBN: 978-1-5108-0901-7

#### Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by Western Dredging Association All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact Western Dredging Association at the address below.

Western Dredging Association P.O. Box 5797 Vancouver, WA 98668-5797

Phone: (360) 750-0209 Fax: (360) 750-1445

weda@comcast.net

#### Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com

# TABLE OF CONTENTS

Page
x
xiii
xxiv
•

#### TEXAS A&M DREDGING SEMINAR

## Tuesday, June 23, 2015

Session 1a: Dredging Research	Paper Number	Page Number
The Slip Ratio or Holdup Function in Slurry Transport Sape Miedema (Delft University)	1a-1	1
The Impact Wear Behaviour of Large Rocks on Slurry Pump Materials and Equipment Robert Visintainer (GIW Industries) and Dan Wolfe (Syncrude Canada)	1a-2	14
The Delft Sand, Clay & Rock Cutting Model Sape Miedema (Delft University)	1a-3	29
The Influence of Adhesion on Cutting Processes in Dredging Thomas Combe and Sape Miedema (Delft University)	1a-4	41
In-Situ Sample Core Scanning for Preparation of Dredging Works Koen Geirnaert, P. Staelens, and Louis-Robert Cool (dotOceanNV) S. Sargis (International Entrepreneurship Center)	1a-5	57

Session 1b: Mitigation and Restoration	Paper Number	Page Number
Oyster Reef Mitigation for the Bayport Ship Channel Improvement Project Carl Sepulveda and Ashley Judith (AECOM) Dana Cheney (Gahagan & Bryant Associates Inc.) David Casebeer (Port of Houston Authority)	1b-1	71
Saving Buried Oysters David Buzan and Cris Weber (Freese and Nichols, Inc.) Bill Rodney and Bryan Legare (Texas Parks and Wildlife Department)	1b-2	88
A Case Study on the Engineering and Design of the Cole's Bayou Marsh Restoration Project Amanda Taylor (Louisiana Coastal Protection and Restoration Authority) John Foret (NOAA's National Marine Fisheries Service)	1b-3	103
Dredging of the Historical Cedar Bayou Tidal Inlet on the Texas Gulf Coast Aaron Horine, Josh Carter, M.Campbell and Patrick McLaughlin (Coast & Harbor Engineering, A Division of Hatch Mott MacDonald)	1b-4	115
Dredging for Mitigation Banks at Rockefeller Wildlife Refuge Erin Rooney (HDR) Philip Trosclair (Rockefeller Wildlife Refuge)	1b-5	133

## TEXAS A&M DREDGING SEMINAR

# Tuesday, June 23, 2015

Session 2a: Beneficial Use and Engineering with Nature	Paper Number	Page Number
Beneficial Use of Dredged Material Alice Miano (University of New Orleans)	2a-1	141
Lessons Learned from Coastal Beneficial Use Features in Galveston Bay and Application to Engineering With Nature Georganna Collins (Ecology and Environment, Inc.) Edmund Russo (USACE, Galveston District) Todd Bridges (US Army Engineer Research and Development Center)	2a-2	148
<b>Evolving Dredging Practices to Engineer With Nature</b> Todd Bridges, Edmond Russo and Cynthia Banks (U.S. Army Engineer Research and Development Center) (presentation only))	2a-3	N/A
Engineering With Nature Geographic Project Mapping Tool Cynthia Banks, Burton Suedel and Michelle Bourne (U.S. Army Engineer Research and Development Center)	2a-4	161
Session 2b: Water and Fill Treatment	Paper Number	Page Number
Insitu Treatment of Contaminated Fill in a Former Cove Saves Millions in Remediation Costs and Prepared Site for New Building at Naval Base Charles Wilk (ALLU Group Incorporated) (presentation only)	2b-1	N/A
Electrocoagulation (EC) and Chitosan Enhanced Sand Filtration (CESF) Treatment Technologies for Dredge Return Water: Two Case Studies on the Lower Duwamish Waterway in Seattle, Washington Liisa Doty (Water Tectonics, Inc.)	2b-2	176
Lessons Learned: Electrocoagulation Treatment of Dredge Return Water to Acute and Chronic Water Quality Criteria for Dissolved Metals, Total PCBs, pH, and Turbidity Patrick Hsieh (AMEC Environment & Infrastructure, Inc.)	2b-3	189
Bruce Lesikar (Baker Corp) Rob Webb P.E. (Dalton, Olmsted & Fuglevand, Inc.)  Maintenance Material and Bird Island Restoration at Sundown/Chester Island, Matagorda Bay, Texas  Cris Weber, Dave Buzan and Tom Dixon (Freese and Nichols, Inc.) Iliana Pena and Tim Wilkinson (Audubon Texas, National Audubon Society)	2b-4	208

#### TEXAS A&M DREDGING SEMINAR

## Tuesday, June 23, 2015

Session 3a: Coastal Restoration	Paper Number	Page Number
Hurricane Sandy Dredging Projects: Sand and More Kenneth S. Goldberg (US Army Corps of Engineers, Philadelphia District) (presentation only)	3a-1	N/A
Tampa Harbor Maintenance Dredging with Egmont Key Beneficial Re-use of High Silt Content Material Using a Traditional Template Versus Cross Shore Swash Zone Placement Coraggio Maglio (US Army Engineer Research and Development Center), Jase Ousley, Aubree Hershorin and Millan Mora (U.S. Army Corps of Engineers, Jacksonville District)	3a-2	216
The Delaware Bay Beaches: Sand Needs for Coastal Protection and Resiliency Jonathan Barker and Clay Bryant (Gahagan and Bryant Associates) Kimberly McKenna (Delaware Department of Natural Resources and Environmental Control) Steven Shaw (Sevenson Environmental)	3a-3	227
Innovations in Stabilization Treatment of Dredged Material Placement Areas Charles Wilk (ALLU Group Incorporated)	3a-4	244
Session 3b: Dredging for Navigation and Construction	Paper Number	Page Number
Dredging Works and Geotextile Tube Applications for Construction of the Longest Sea-Crossing Bridge in Vietnam Tack Wen Yee (TenCate Geosynthetics)	3b-1	255
Navigation Channel Depth for Ibaka Deep Seaport in Nigeria Ephraim Paul, David Brooks, and James Kaihatu (Texas A&M University) Uwemedimo Ebong (Akwa Iborn State University)	3b-2	275

3b-3

286

of Maintenance Dredging
John Dawson and Shane Phillips (Coast & Harbor Engineering, Inc.)

City of Renton Seaplane Base Maintenance Dredging, Challenges beyond the Scope

## WESTERN DREDGING ASSOCIATION TECHNICAL SESSIONS

# Wednesday June 24, 2015

Session 4a: Safety Initiatives	Paper Number	Page Number
Building a Proactive Safety Culture in the Dredging Industry Through Use of Job Safety Analysis and Job Safety Analysis Audits Ashley Roznowski (Great Lakes Dredge & Dock Company)	4a-1	295
A 100 Day Approach to Hand Safety John Henriksen, Mike Warwick, F. Ray, and J. Santie (Manson Construction Co.)	4a-2	306
Enhancing Safety and Health Programs with Technology and Mobile Applications Paul DiFrenna (Cashman Dredging and Marine Contracting Company, LLC)	4a-3	314

Session 4b: Precision Excavation	Paper Number	Page Number
Innovative Precision Dredging and Excavation Technology Steve Aitken (X-Subsea)	4b-1	320
Environmental Dredging Productivity for Precision Excavator Dredges Robert Webb, Teal Dreher and Paul Fuglevand (Dalton, Olmsted & Fuglevand, Inc.)	4b-2	326
Environmental Dredging at High Depth Dam Cleaning Dredging Matteo Benassuti, Alfredo Ranaldi and Maurice Freivokh (Dragflow SRL)	4b-3	334

#### WESTERN DREDGING ASSOCIATION TECHNICAL SESSIONS

Stewards to the Environment While Improving Your Bottom Line

#### **WEDA Safety Commission Panel**

#### Wednesday, June 24, 2015

Jared Mikacich (PANOLIN America)

Session 5a: Dredge Design: Challenges and Opportunities	Paper Number	Page Number
Challenges of Dredging in the Arctic and Other Deep Ocean Locations Robert Randall and Chung-Kuk Jin (Texas A&M University)	5a-1	345
Expected Future Applications of Artificial Intelligence on Dredgers Riny Mourik and J. Osnabrugge (IHC Systems)	5a-2	360
Maximizing Potential - How Converting and Upgrading Existing Dredgers Can Help Your Company Basel Yousef and Manish Jangir (Dredge Yard)	5a-3	373

 Session 5b: Environmental Lubricants
 Paper Number
 Page Number

 New EPA Regulations for Environmentally Acceptable Lubricants and Their Effect on the Dredging Industry Matthew Houston (RSC Bio Solutions)
 5b-1
 384

 Picking the Right Environmentally Acceptable Lubricant (EAL): Meeting Environmental Regulations, Maximizing Performance Raymond McDonald (ExxonMobil)
 5b-2
 392

5b-3

397

## WESTERN DREDGING ASSOCIATION TECHNICAL SESSIONS

## Wednesday, June 24, 2015

Session 6a: Trailing Suction Hopper Dredgers	Paper Number	Page Number
New Dredging Equipment: The USACE Shallow Draft Split-Hull Dredge MURDEN Alexandra Scrimgeour and Thomas Verna (U.S. Army Corps of Engineers, Institute for Water Resources)	6a-1	403
Trends in Design of Trailing Suction Hopper Dredges; Brown or Blue Oceans Erik van der Blom and Andre Kik (IHC Holland BV Dredgers) Leo van Ingen (Dredge Technology Corporation)	6a-2	411
Engineering Analysis of Turtle Exclusion Device John Henriksen, Mike Warwick, Ryan Munger and Shannon Kay (Manson Construction Co).	6a-3	426
Session 6b: Survey and Modeling	Paper Number	Page Number
Dynamic Underwater 3D Survey and Monitoring During Recent Platform Dredging Operation: Reducing Risk and Exposure, While Improving Safety and Productivity David Boulet (Tusk Subsea Services) Blair Cunningham (Coda Octopus Products, Inc.)	6b-1	438
Advanced Sonar Technology Improves Port Expansion Project in Sao Luis, Brazil Peter Mac Dermott (Baird & Associates) Chris Gorman (Coda Octopus) Mathews Morais (VALE)	6b-2	446
Hydrodynamic and Sediment Transport Modeling for Horeshoe Bend Island Creation in the Lower Atchafalaya River, Louisiana Sung-Chan Kim and Burton Suedel (U.S. Army Engineer Research and Development Center)	6b-3	453

#### **WEDA Environmental Commission Panel**

## Thursday, June 25, 2015

Session 7a: Past, Present and Future of Dredging	Paper Number	Page Number
The History of Dredging at the Port of Houston: Ditching High and Low to Build a Port  Mark Vincent (Port of Houston Authority) Lisa F. Glahn and Rebecca Raphaelson (Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.)	7a-1	469
The Permitting Journey to Deepening and Widening a Federal Navigation Channel Carl Sepulveda and Ashley Judith (AECOM), Dana Cheney (Gahagan & Bryant Associates Inc.), David Casebeer (Port of Houston Authority)	7a-2	487
Quantitative Approach to Navigation Channels Asset Management Lauren Dunkin and Ned Mitchell (U.S. Army Engineer Research and Development Center)	7a-3	504
Certification for Dredge Professions – The Why and How Alan Alcorn (Moffatt & Nichol), Donald Hayes (University of Nevada, Las Vegas), Robert Randall (Texas A&M University)	7a-4	519
<b>Dredging Industry Trends</b> Robert Wetta and Charles Johnson (DSC Dredge, LLC)	7a-5	523
Session 7b: Dredging Solutions	Paper Number	Page Number
Texas Coastal Geological Dredging vs. Geotechnical Dredging: Can We Anticipate the Future?  Juan Moya, Cris Weber and Tom Dixon (Freese and Nichols, Inc.)  Matthew Mahoney (Texas Department of Transportation)  Tim Dellapenna (Texas A&M University Galveston)	7b-1	531
Turning Failure into Success with Innovative Dredging Solutions for Aquatic Preserve Restoration  John Adams, William Couglin and Jacob Sheets (Gator Dredging)	7b-2	537
Sediment Cap Installation and River Bank Cleanup on the Ohio River Walter Dinicola, Ram Mohan, T. Merritts, P. LaRosa, J. Cornetta (Anchor QEA, LLC), J. Caryl (AmecFoster Wheeler), C. Geadelmann (Honeywell International Inc.), D. Doven (Terra, a Great Lakes Company)	7b-3	542
Esquimalt Graving Dock Waterlot South Jetty Demolition and Remediation Design Challenges  Dan Berlin, Tom Wang and M. Woltman (Anchor QEA, LLC)  G. Cooper (Klohn Crippen Berger), A. Mylly and C. Major (Public Works and Government Services Canada)	7b-4	551
A Case Study on the Engineering and Design of the Lost Lake Marsh Creation and Hydrologic Restoration Project (CWPPRA Project TE-72) Shannon Haynes (Louisiana CPRA) and Kevin Roy (USFWS)	7b-5	565